The Combined

PAFP CME Conference & Penn State Health... Primary Care Across the Lifespan

Master Collection of Handouts

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REMS Education – Safe Prescribing, Changing Lives

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

REMS Education – Safe Prescribing, Changing Lives

Edwin Salsitz, MD, FASAM

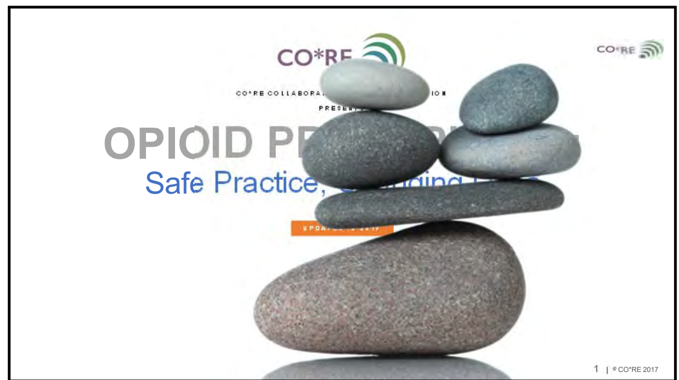
Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

This educational activity is supported by an independent educational grant from the ER/LA Opioid Analgesic REMS Program Companies. Please see http://www.er-la-opioidrems.com/IwgUI/rems/products.action for a listing of the member companies. This activity is intended to be fully compliant with the ER/LA Opioid Analgesic REMS education requirements issued by the US Food & Drug Administration.


CO*RE
OPIOID PR
Safe Practice,
1 | © CO*RE 2017

CO*RE
CHAPTER 1
WELCOME
Remember to complete the session evaluations.
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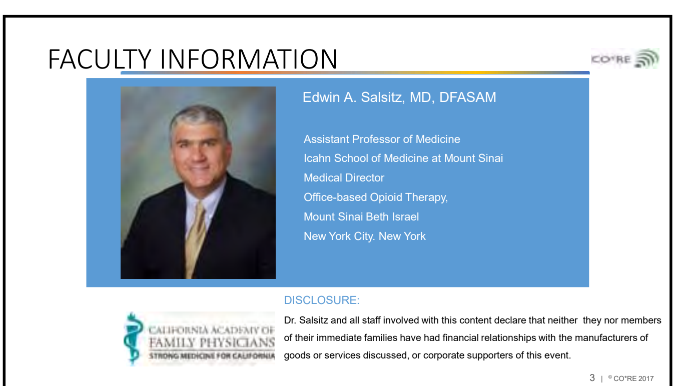
FACULTY INFORMATION
CO*RE
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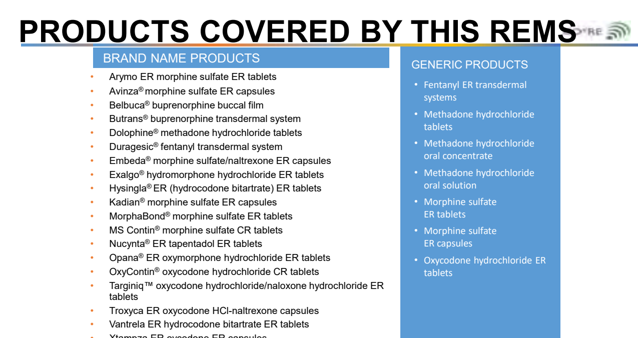
ACKNOWLEDGEMENT

Presented by the California Academy of Family Physicians (CAFP) a member of the Collaborative on REMS Education (CO*RE), 11 interdisciplinary organizations working together to improve pain management and prevent adverse outcomes.

This educational activity is supported by an independent educational grant from the ER/LA Opioid Analgesic REMS Program Companies. Please see http://www.er-la-opioidrems.com/IwgUI/rems/products.action for a listing of the member companies. This activity is intended to be fully compliant with the ER/LA Opioid Analgesic REMS education requirements issued by the US Food & Drug Administration.


PRODUCTS COVERED BY THIS REMS
CO*RE
BRAND NAME PRODUCTS
Arymo ER morphine sulfate ER tablets
Avinza® morphine sulfate ER capsules
Belbuca® buprenorphine buccal film
Butrans® buprenorphine transdermal system
Dolophine® methadone hydrochloride tablets
Duragesic® fentanyl transdermal system
Embeda® morphine sulfate/naltrexone ER capsules
Exalgo® hydromorphone hydrochloride ER tablets
Hysingla® ER (hydrocodone bitartrate) ER tablets
Kadian® morphine sulfate ER capsules
MorphaBond® morphine sulfate ER tablets
MS Contin® morphine sulfate CR tablets
Nucynta® ER tapentadol ER tablets
Opana® ER oxymorphone hydrochloride ER tablets
OxyContin® oxycodone hydrochloride CR tablets
Targiniq™ oxycodone hydrochloride/naloxone hydrochloride ER tablets
Troxyca ER oxycodone HCl-naltrexone capsules
Vantrela ER hydrocodone bitartrate ER tablets
Xtampza ER oycodone ER capsules
Zohydro® hydrocodone bitartrate ER capsules
GENERIC PRODUCTS
Fentanyl ER transdermal systems
Methadone hydrochloride tablets
Methadone hydrochloride oral concentrate
Methadone hydrochloride oral solution
Morphine sulfate ER tablets
Morphine sulfate ER capsules
Oxycodone hydrochloride ER tablets
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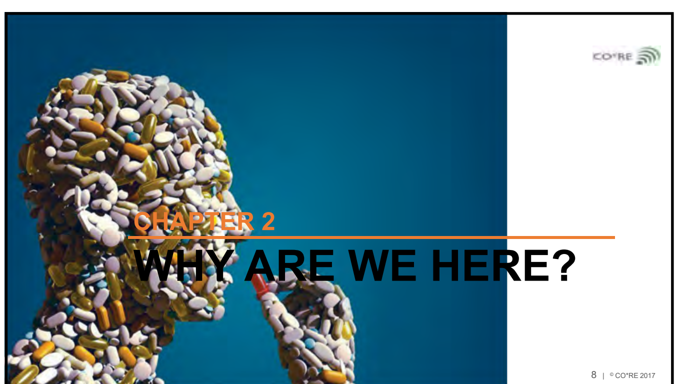
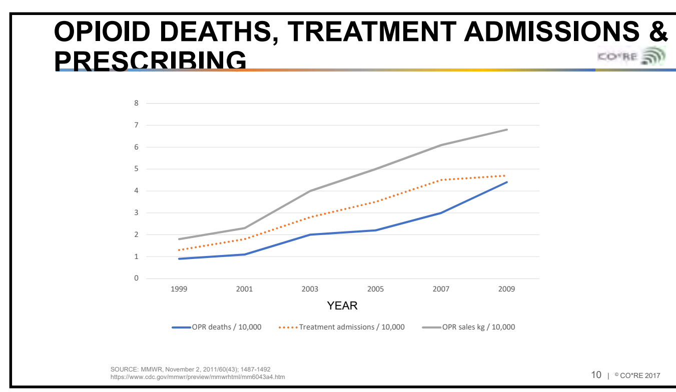
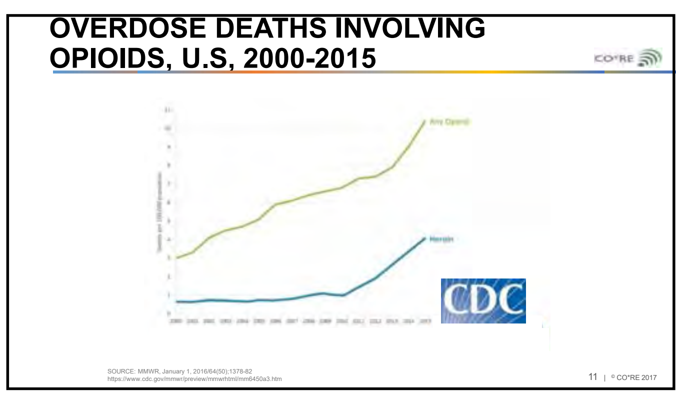

CO*RE
CHAPTER 2
WHY ARE WE HERE?
8 | © CO*RE 2017


OPIOID DEATHS, TREATMENT ADMISSIONS & PRESCRIBING
CO*RE
8
7
6
5
4
3
2
1
0
1999
2001
2003
2005
2007
2009
YEAR
OPR deaths / 10,000
Treatment admissions / 10,000
OPR sales kg / 10,000
SOURCE: MMWR, November 2, 2011/60(43); 1487-1492
https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6043a4.htm
10 | © CO*RE 2017


OVERDOSE DEATHS INVOLVING OPIOIDS, U.S, 2000-2015
CO*RE
CDC
SOURCE: MMWR, January 1, 2016/64(50);1378-82
https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm
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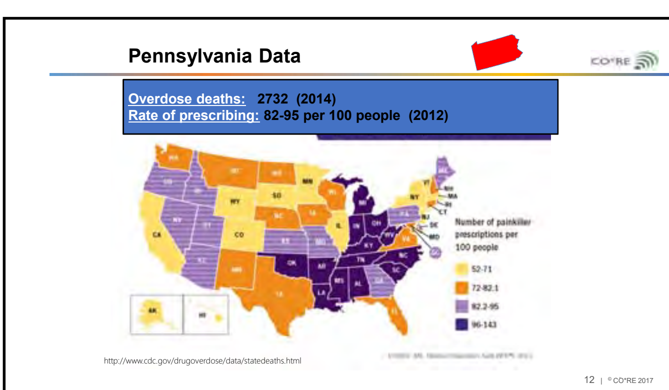
Pennsylvania Data
CO*RE
Overdose deaths: 2732 (2014)
Rate of prescribing: 82-95 per 100 people (2012)
Number of painkiller prescriptions per 100 people
52-71
72-82.1
82.2-95
96-143
http://www.cdc.gov/drugoverdose/data/statedeaths.html
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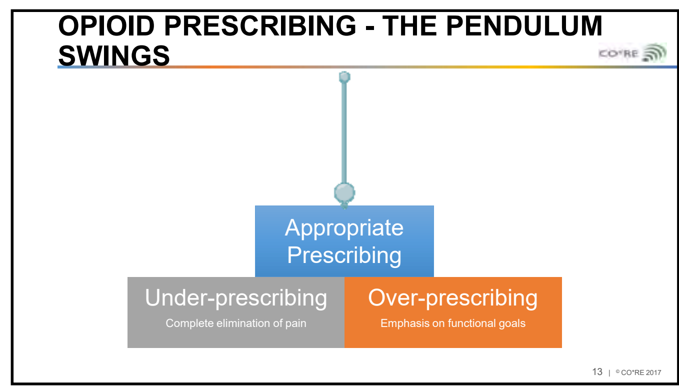
OPIOID PRESCRIBING - THE PENDULUM SWINGS
CO*RE
Appropriate Prescribing
Under-prescribing
Complete elimination of pain
Over-prescribing
Emphasis on functional goals
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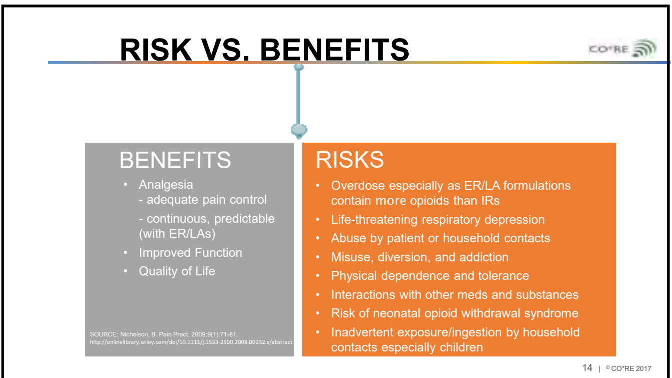
RISK VS. BENEFITS
CO*RE
BENEFITS
• Analgesia
- adequate pain control
- continuous, predictable (with ER/LAs)
• Improved Function
• Quality of Life
SOURCE: Nicholson, B. Pain Pract. 2009;9(1):71-81.
http://onlinelibrary.wiley.com/doi/10.1111/j.1533-2500.2008.00232.x/abstract
RISKS
• Overdose especially as ER/LA formulations contain more opioids than IRs
• Life-threatening respiratory depression
• Abuse by patient or household contacts
• Misuse, diversion, and addiction
• Physical dependence and tolerance
• Interactions with other meds and substances
• Risk of neonatal opioid withdrawal syndrome
• Inadvertent exposure/ingestion by household contacts especially children
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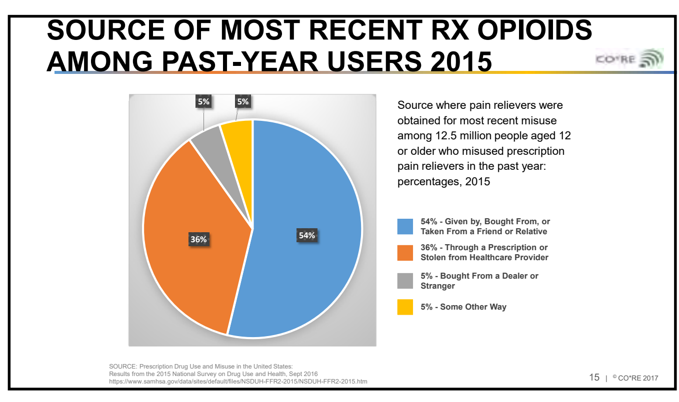
SOURCE OF MOST RECENT RX OPIOIDS AMONG PAST-YEAR USERS 2015
CO*RE
5%
5%
36%
54%
Source where pain relievers were obtained for most recent misuse among 12.5 million people aged 12 or older who misused prescription pain relievers in the past year: percentages, 2015
54% - Given by, Bought From, or Taken From a Friend or Relative
36% - Through a Prescription or Stolen from Healthcare Provider
5% - Bought From a Dealer or Stranger
5% - Some Other Way
SOURCE: Prescription Drug Use and Misuse in the United States:
Results from the 2015 National Survey on Drug Use and Health, Sept 2016
https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR2-2015/NSDUH-FFR2-2015.htm
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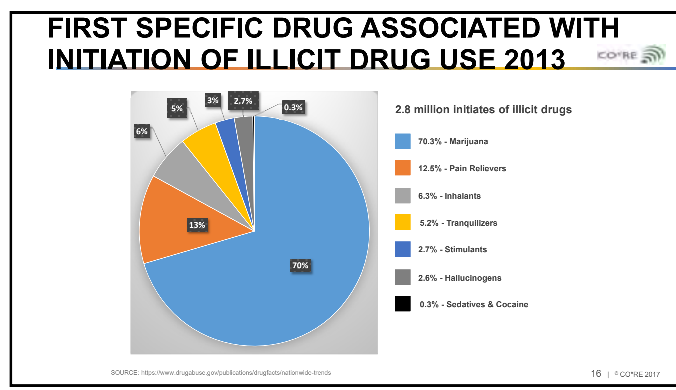
FIRST SPECIFIC DRUG ASSOCIATED WITH INITIATION OF ILLICIT DRUG USE 2013
2.8 million initiates of illicit drugs
70.3% - Marijuana
12.5% - Pain Relievers
6.3% - Inhalants
5.2% - Tranquilizers
2.7% - Stimulants
2.6% - Hallucinogens
0.3% - Sedatives & Cocaine
70%
13%
6%
5%
3%
2.7%
0.3%
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THE FEDERAL PLAYERS
Many agencies involved
OPIOIDS
SURGEON GENERAL
CDC
NIH
SAMHSA
WE ARE HERE BECAUSE OF …
FDA
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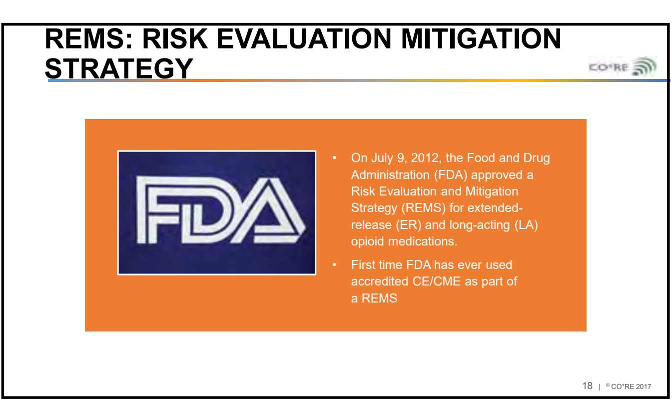
REMS: RISK EVALUATION MITIGATION STRATEGY
FDA
On July 9, 2012, the Food and Drug Administration (FDA) approved a Risk Evaluation and Mitigation Strategy (REMS) for extended-release (ER) and long-acting (LA) opioid medications.
First time FDA has ever used accredited CE/CME as part of a REMS
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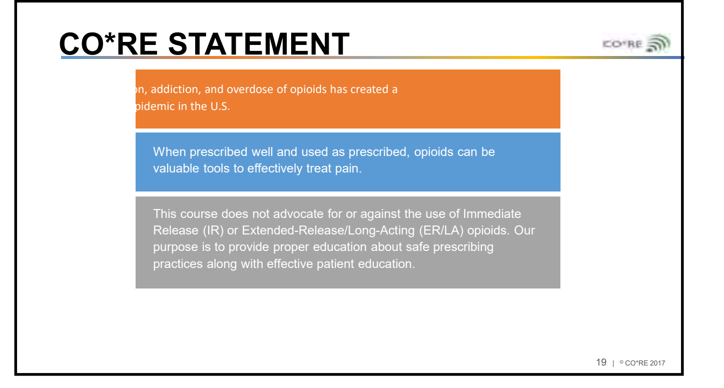
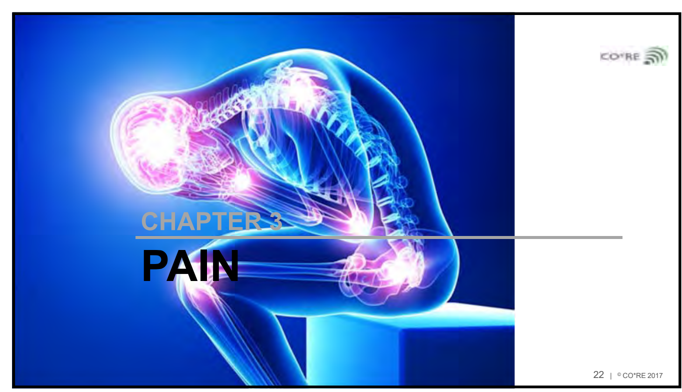
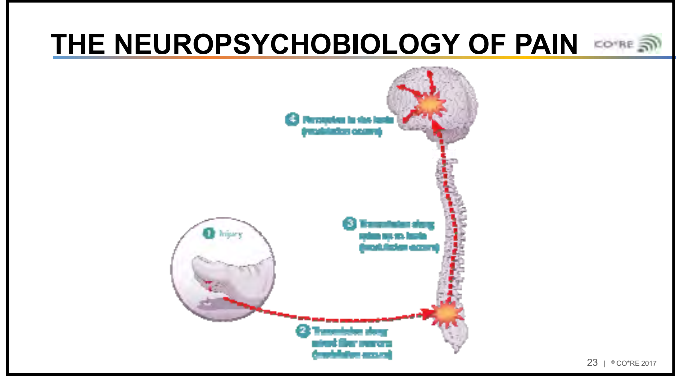


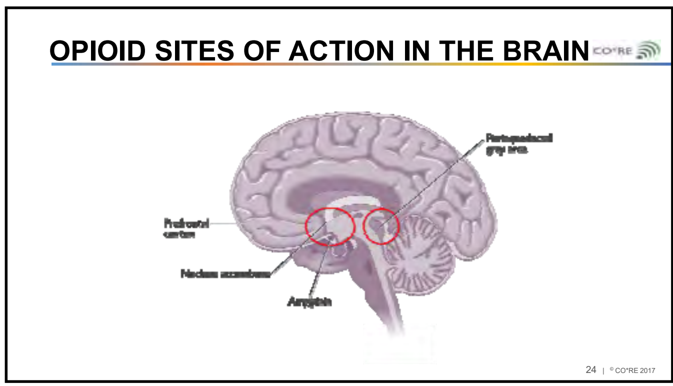
LEARNING OBJECTIVES

- Accurately assess patients with pain for consideration of an opioid trial
- Establish realistic goals for pain management and restoration of function
- Initiate opioid treatment (IR and ER/LA) safely and judiciously, maximizing efficacy while minimizing risks
- Monitor and re-evaluate treatment continuously; discontinue safely when appropriate
- Counsel patients and caregivers about use, misuse, abuse, diversion, and overdose
- Educate patients about safe storage and disposal of opioids
- Demonstrate working knowledge and ability to access general and specific information about opioids, especially those used in your practice

You and Your Team *can* have an immediate and positive impact on this crisis while also caring for your patients appropriately.


CO*RE
CHAPTER 3
PAIN
22 | © CO*RE 2017


THE NEUROPSYCHOBIOLOGY OF PAIN
CO*RE
1 Injury
23 | © CO*RE 2017


OPIOID SITES OF ACTION IN THE BRAIN
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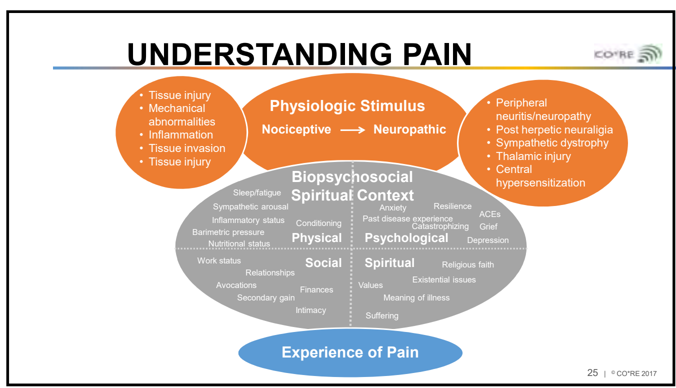
UNDERSTANDING PAIN
CO*RE
Tissue injury
Mechanical abnormalities
Inflammation
Tissue invasion
Tissue injury
Physiologic Stimulus
Nociceptive
Neuropathic
Peripheral neuritis/neuropathy
Post herpetic neuraligia
Sympathetic dystrophy
Thalamic injury
Central hypersensitization
Biopsychosocial Spiritual Context
Sleep/fatigue
Sympathetic arousal
Inflammatory status
Barimetric pressure
Nutritional status
Conditioning
Physical
Anxiety
Resilience
Past disease experience
Catastrophizing
ACEs
Grief
Psychological
Depression
Work status
Relationships
Avocations
Secondary gain
Finances
Intimacy
Social
Spiritual
Religious faith
Existential issues
Values
Meaning of illness
Suffering
Experience of Pain
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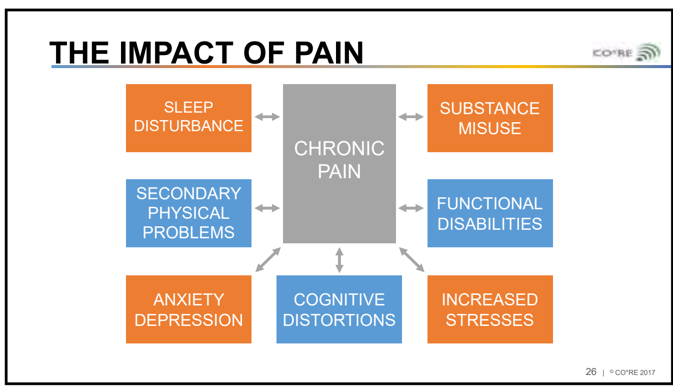
THE IMPACT OF PAIN
CO*RE
SLEEP DISTURBANCE
CHRONIC PAIN
SUBSTANCE MISUSE
SECONDARY PHYSICAL PROBLEMS
FUNCTIONAL DISABILITIES
ANXIETY DEPRESSION
COGNITIVE DISTORTIONS
INCREASED STRESSES
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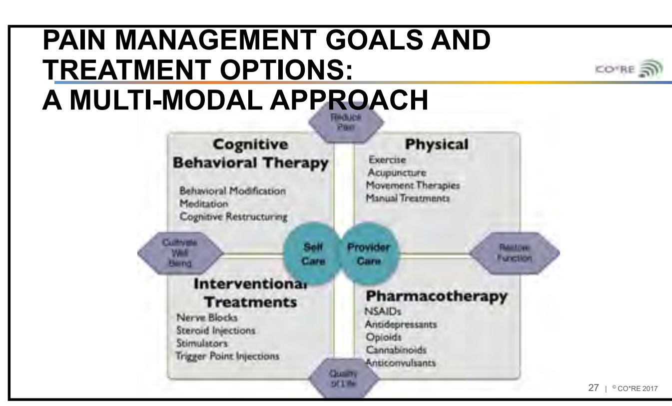
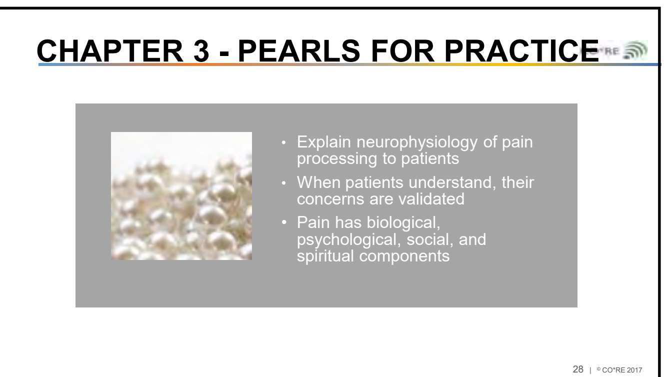

PAIN MANAGEMENT GOALS AND TREATMENT OPTIONS:
A MULTI-MODAL APPROACH
CO*RE
Reduce Pain
Cognitive Behavioral Therapy
Behavioral Modification
Meditation
Cognitive Restructuring
Physical
Exercise
Acupuncture
Movement Therapies
Manual Treatments
Cultivate Well Being
Self Care
Provider Care
Restore Function
Interventional Treatments
Nerve Blocks
Steroid Injections
Stimulators
Trigger Point Injections
Pharmacotherapy
NSAIDs
Antidepressants
Opioids
Cannabinoids
Anticonvulsants
Quality of Life
27 | © CO*RE 2017


CHAPTER 3 - PEARLS FOR PRACTICE
Explain neurophysiology of pain processing to patients
When patients understand, their concerns are validated
Pain has biological, psychological, social, and spiritual components
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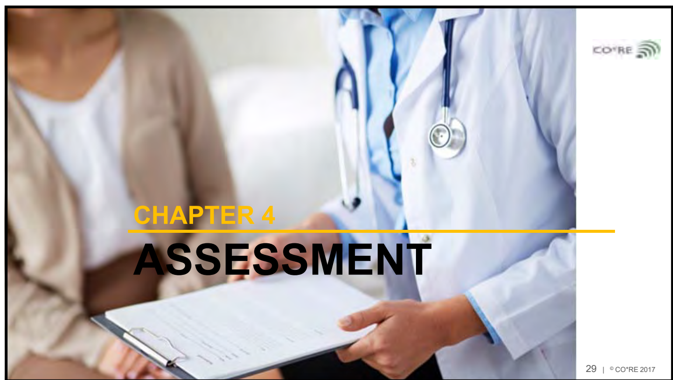
CO*RE
CHAPTER 4
ASSESSMENT
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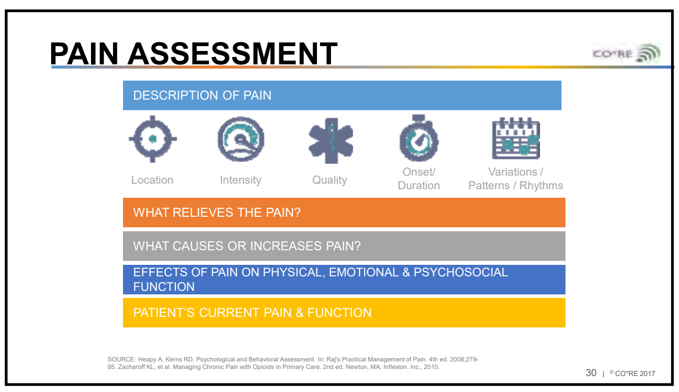
PAIN ASSESSMENT
CO*RE
DESCRIPTION OF PAIN
Location
Intensity
Quality
Onset/ Duration
Variations / Patterns / Rhythms
WHAT RELIEVES THE PAIN?
WHAT CAUSES OR INCREASES PAIN?
EFFECTS OF PAIN ON PHYSICAL, EMOTIONAL & PSYCHOSOCIAL FUNCTION
PATIENT'S CURRENT PAIN & FUNCTION
SOURCE: Heapy A, Kerns RD. Psychological and Behavioral Assessment. In: Raj's Practical Management of Pain. 4th ed. 2008;279-95. Zacharoff KL, et al. Managing Chronic Pain with Opioids in Primary Care. 2nd ed. Newton, MA: Inflexion, Inc., 2010.
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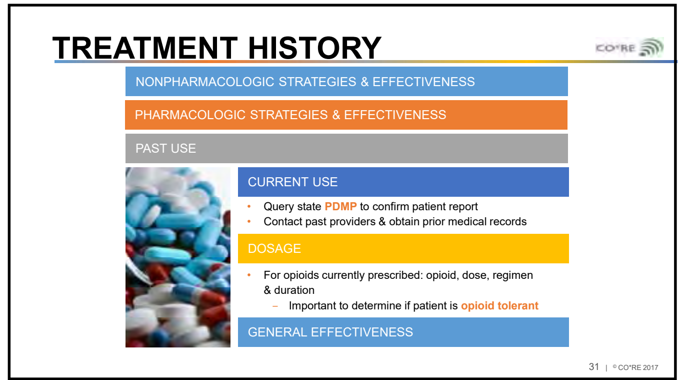

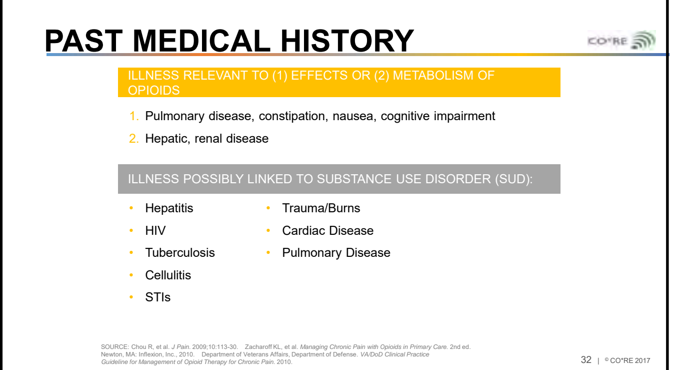

OBTAIN A COMPLETE HISTORY OF CURRENT & PAST SUBSTANCE USE

CO*RE

RISK FACTORS FOR OPIOID ABUSE

- Prescription drugs, controlled medications (Benzodiazepine)
- Alcohol & tobacco
  - Substance abuse Hx does not prohibit treatment w/ ER/LA opioids but may require additional monitoring & expert consultation/referral
- History of sexual abuse
- Family Hx of substance abuse & psychiatric disorders
- Age (16-45 YO)

SOCIAL HISTORY

Employment, cultural background, social network, marital history, legal history & other behavioral patterns

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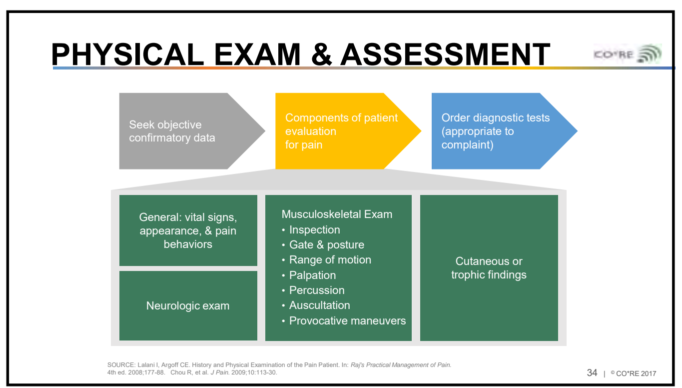

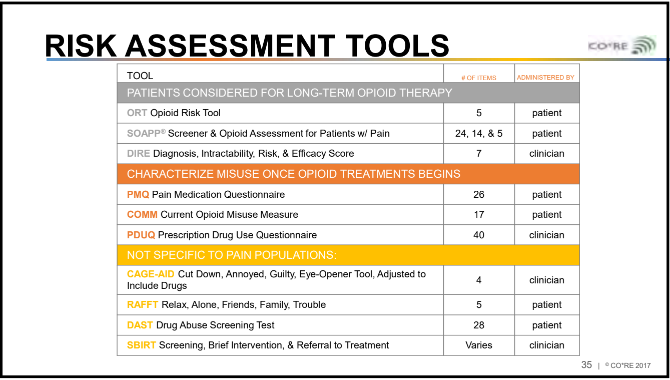

RISK ASSESSMENT TOOLS

TOOL	# OF ITEMS	ADMINISTERED BY
PATIENTS CONSIDERED FOR LONG-TERM OPIOID THERAPY		
ORT Opioid Risk Tool	5	patient
SOAPP® Screener & Opioid Assessment for Patients w/ Pain	24, 14, & 5	patient
DIRE Diagnosis, Intractability, Risk, & Efficacy Score	7	clinician
CHARACTERIZE MISUSE ONCE OPIOID TREATMENTS BEGINS		
PMQ Pain Medication Questionnaire	26	patient
COMM Current Opioid Misuse Measure	17	patient
PDUQ Prescription Drug Use Questionnaire	40	clinician
NOT SPECIFIC TO PAIN POPULATIONS:		
CAGE-AID Cut Down, Annoyed, Guilty, Eye-Opener Tool, Adjusted to Include Drugs	4	clinician
RAFFT Relax, Alone, Friends, Family, Trouble	5	patient
DAST Drug Abuse Screening Test	28	patient
SBIRT Screening, Brief Intervention, & Referral to Treatment	Varies	clinician

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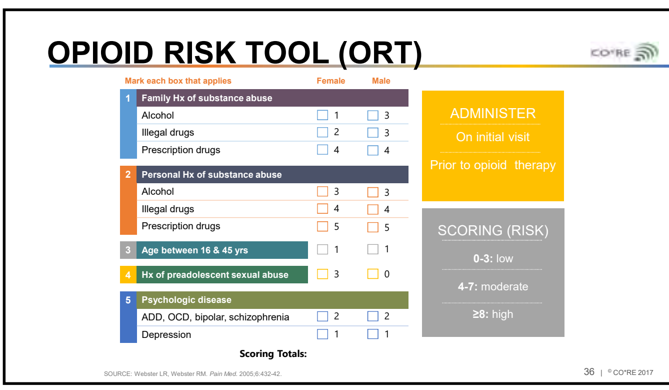

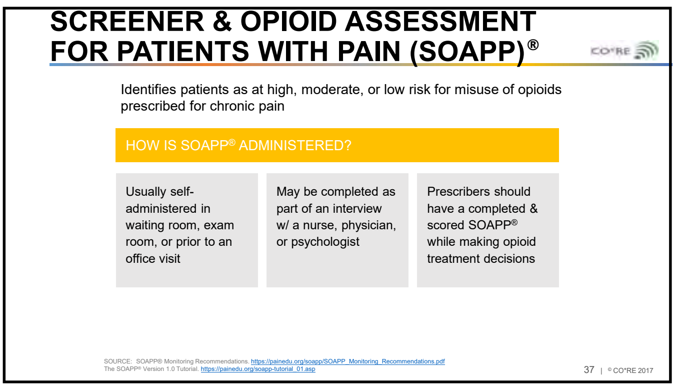
SCREENER & OPIOID ASSESSMENT FOR PATIENTS WITH PAIN (SOAPP)®
Identifies patients as at high, moderate, or low risk for misuse of opioids prescribed for chronic pain
HOW IS SOAPP® ADMINISTERED?
Usually self-administered in waiting room, exam room, or prior to an office visit
May be completed as part of an interview w/ a nurse, physician, or psychologist
Prescribers should have a completed & scored SOAPP® while making opioid treatment decisions
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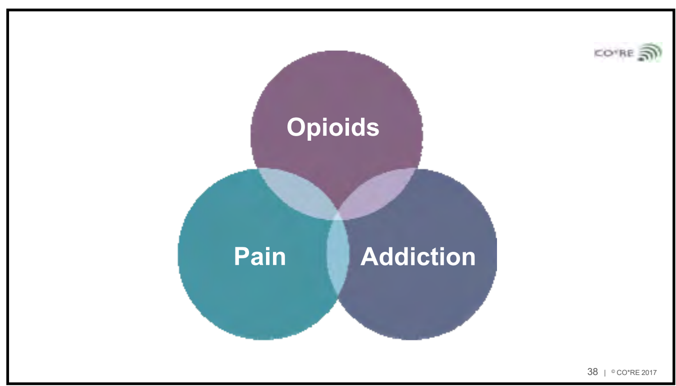
Opioids
Pain
Addiction
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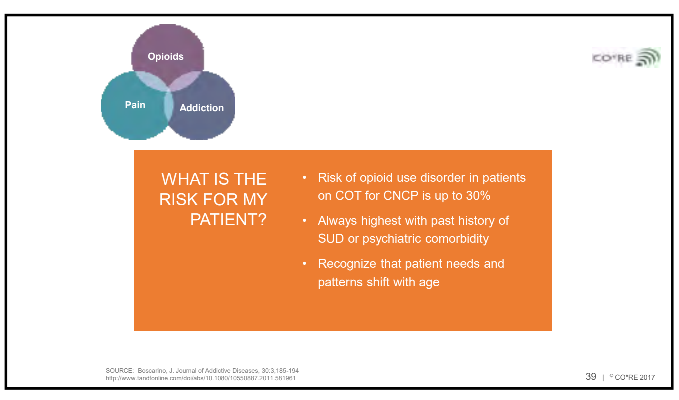
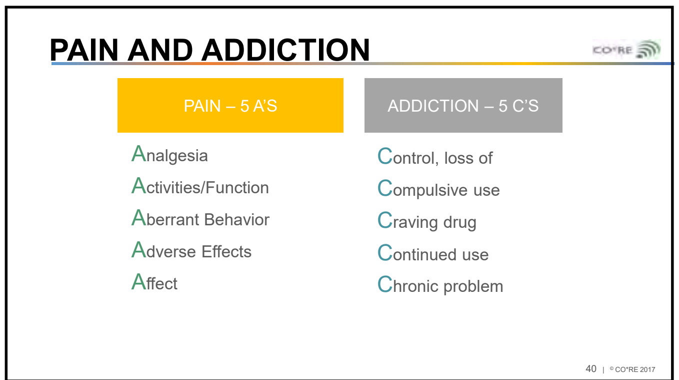
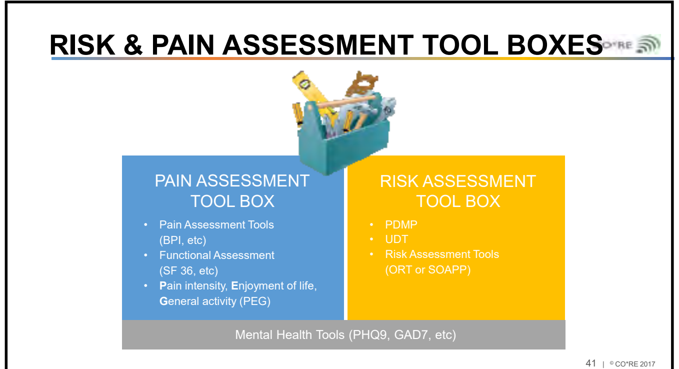

Opioids
Pain
Addiction
WHAT IS THE RISK FOR MY PATIENT?
Risk of opioid use disorder in patients on COT for CNCP is up to 30%
Always highest with past history of SUD or psychiatric comorbidity
Recognize that patient needs and patterns shift with age
39 | © CO*RE 2017


PAIN AND ADDICTION
CO*RE
PAIN – 5 A'S
ADDICTION – 5 C'S
Analgesia
Activities/Function
Aberrant Behavior
Adverse Effects
Affect
Control, loss of
Compulsive use
Craving drug
Continued use
Chronic problem
40 | © CO*RE 2017


RISK & PAIN ASSESSMENT TOOL BOXES
PAIN ASSESSMENT TOOL BOX
Pain Assessment Tools (BPI, etc)
Functional Assessment (SF 36, etc)
Pain intensity, Enjoyment of life, General activity (PEG)
RISK ASSESSMENT TOOL BOX
PDMP
UDT
Risk Assessment Tools (ORT or SOAPP)
Mental Health Tools (PHQ9, GAD7, etc)
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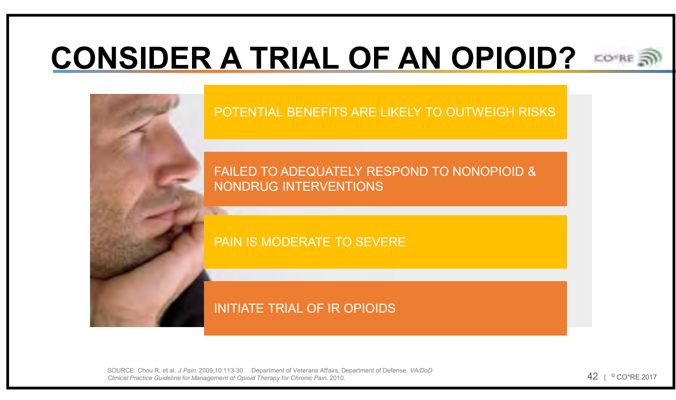
CONSIDER A TRIAL OF AN OPIOID?
CO*RE
POTENTIAL BENEFITS ARE LIKELY TO OUTWEIGH RISKS
FAILED TO ADEQUATELY RESPOND TO NONOPIOID & NONDRUG INTERVENTIONS
PAIN IS MODERATE TO SEVERE
INITIATE TRIAL OF IR OPIOIDS
SOURCE: Chou R, et al. J Pain. 2009;10:113-30. Department of Veterans Affairs, Department of Defense. VA/DoD Clinical Practice Guideline for Management of Opioid Therapy for Chronic Pain. 2010.
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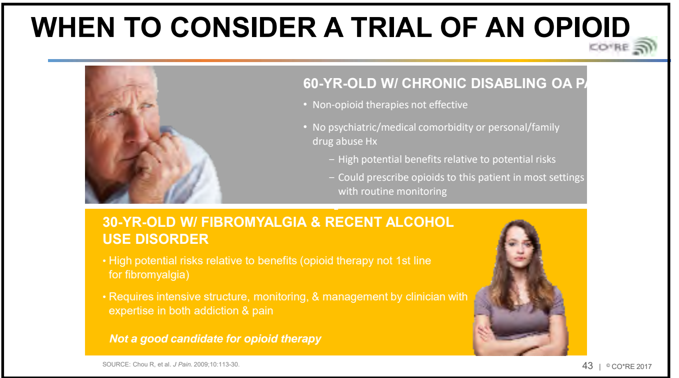

INITIATING OPIOIDS: CDC GUIDELINE

- Begin with IR
- Prescribe the lowest effective dosage
- Use caution at any dosage, but particularly when
  - Increasing dosage to ≥50 morphine milligram equivalents (MME)/day
  - Carefully justify a decision to titrate dosage to ≥90 MME/day
- For acute pain, prescribe lowest effective dose of IRs, no more than needed
- Re-evaluate risks/benefits within 1 - 4 weeks of initiation or dose escalation
- Re-evaluate risks/benefits every 3 months; if benefits do not outweigh harms optimize other therapies, work to taper and discontinue
- Link to the Guideline: https://www.cdc.gov/drugoverdose/prescribing/providers.html

Cancer pain, hospice and palliative care patients are not covered by CDC Guideline

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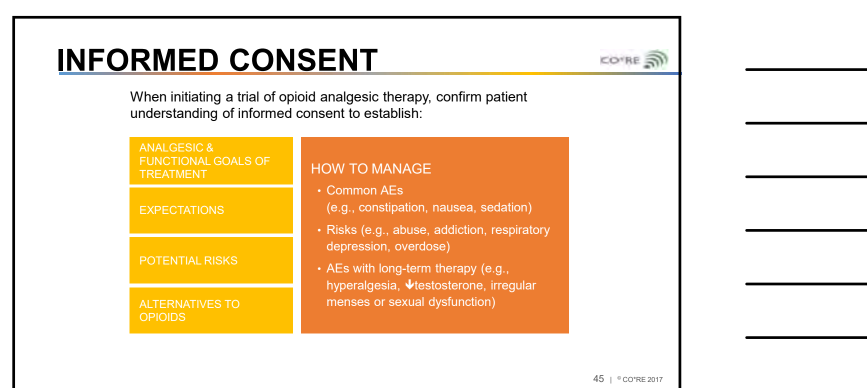

PATIENT-PRESCRIBER AGREEMENT (PPA)

Document signed by both patient & prescriber at time an opioid is prescribed

- CLARIFY TREATMENT PLAN & GOALS OF TREATMENT W/ PATIENT, PATIENT'S FAMILY, & OTHER CLINICIANS INVOLVED IN PATIENT'S CARE
- ASSIST IN PATIENT EDUCATION
- DISCUSS MEDICATION SAFE HANDLING, STORAGE, AND DISPOSAL
- DOCUMENT PATIENT & PRESCRIBER RESPONSIBILITIES

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PATIENT PROVIDER AGREEMENT (PPA)

REINFORCE EXPECTATIONS FOR APPROPRIATE & SAFE OPIOID USE

- One prescriber
- Consider one pharmacy
- Safeguard
  - Do not store in medicine cabinet
  - Keep locked (medication safe)
  - Do not share or sell
- Instructions for disposal when no longer needed
- Prescriber notification for any event resulting in a pain medication Rx.
- Follow-up
- Monitoring
  - Random UDT & pill counts
- Refills
- Identify behaviors for discontinuation
- Exit strategy

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MONITOR ADHERENCE AND ABERRANT BEHAVIOR

ROUTINELY MONITOR PATIENT ADHERENCE TO TREATMENT PLAN

- Recognize & document aberrant drug-related behavior
  - In addition to patient self-report also use:
    - State PDMPs
    - UDT
      - Positive for nonprescribed drugs
      - Positive for illicit substance
      - Negative for prescribed opioid
- Family member or caregiver interviews
- Monitoring tools such as the COMM, PADT, PMQ, or PDUQ
- Medication reconciliation (e.g., pill counts)

PADT=Pain Assessment & Documentation Tool

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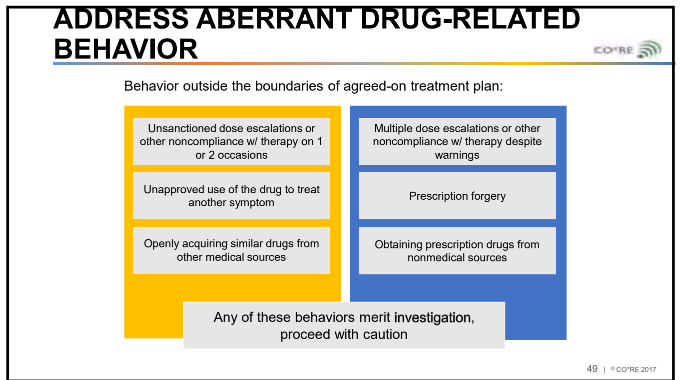

CO*RE

Adequately **DOCUMENT**
all patient interactions,
assessments, test results,
& treatment plans.

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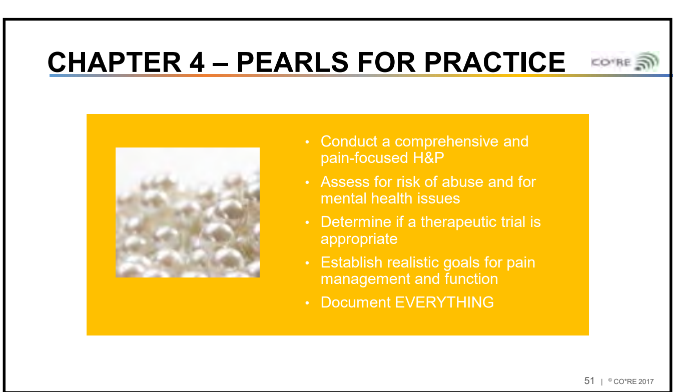

CO*RE
CHAPTER 5
MANAGEMENT
MONITORING AND DISCONTINUING
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CO*RE
PART I
MONITORING
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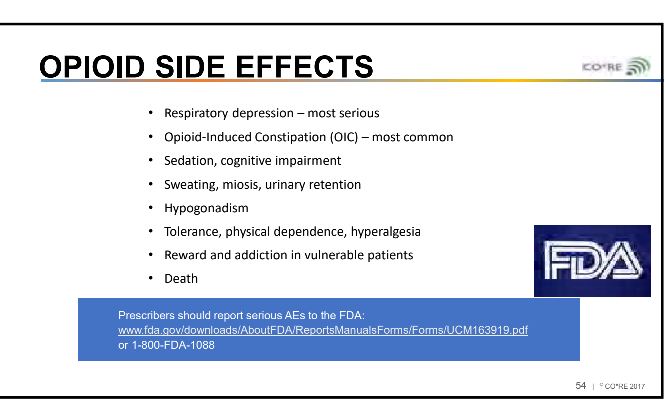
OPIOID SIDE EFFECTS
CO*RE
• Respiratory depression – most serious
• Opioid-Induced Constipation (OIC) – most common
• Sedation, cognitive impairment
• Sweating, miosis, urinary retention
• Hypogonadism
• Tolerance, physical dependence, hyperalgesia
• Reward and addiction in vulnerable patients
• Death
FDA
Prescribers should report serious AEs to the FDA:
www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM163919.pdf
or 1-800-FDA-1088
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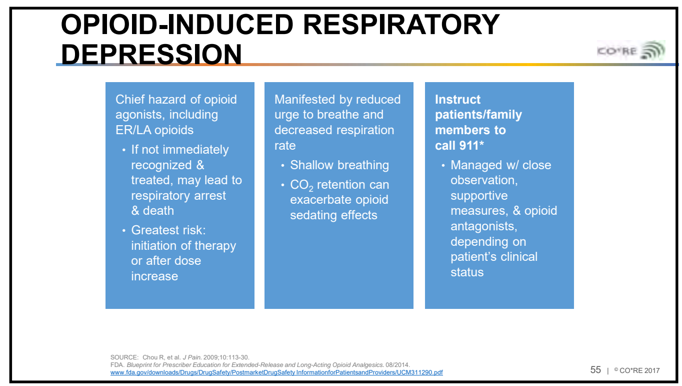
OPIOID-INDUCED RESPIRATORY DEPRESSION
CO*RE
Chief hazard of opioid agonists, including ER/LA opioids
If not immediately recognized & treated, may lead to respiratory arrest & death
Greatest risk: initiation of therapy or after dose increase
Manifested by reduced urge to breathe and decreased respiration rate
Shallow breathing
CO_2 retention can exacerbate opioid sedating effects
Instruct patients/family members to call 911*
Managed w/ close observation, supportive measures, & opioid antagonists, depending on patient's clinical status
SOURCE: Chou R, et al. J Pain. 2009;10:113-30.
FDA. Blueprint for Prescriber Education for Extended-Release and Long-Acting Opioid Analgesics. 08/2014.
www.fda.gov/downloads/Drugs/DrugSafety/PostmarketDrugSafety InformationforPatientsandProviders/UCM311290.pdf
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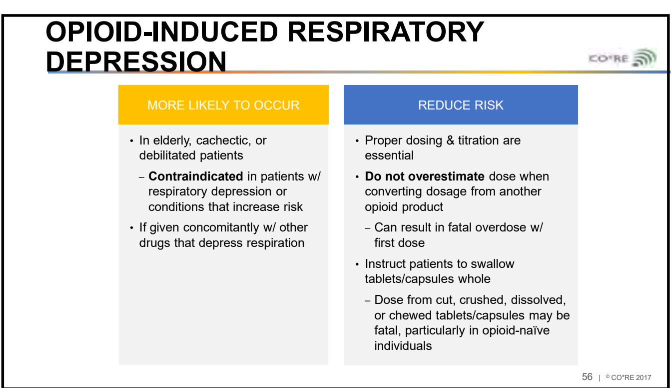
OPIOID-INDUCED RESPIRATORY DEPRESSION
CO*RE
MORE LIKELY TO OCCUR
In elderly, cachectic, or debilitated patients
Contraindicated in patients w/ respiratory depression or conditions that increase risk
If given concomitantly w/ other drugs that depress respiration
REDUCE RISK
Proper dosing & titration are essential
Do not overestimate dose when converting dosage from another opioid product
Can result in fatal overdose w/ first dose
Instruct patients to swallow tablets/capsules whole
Dose from cut, crushed, dissolved, or chewed tablets/capsules may be fatal, particularly in opioid-naïve individuals
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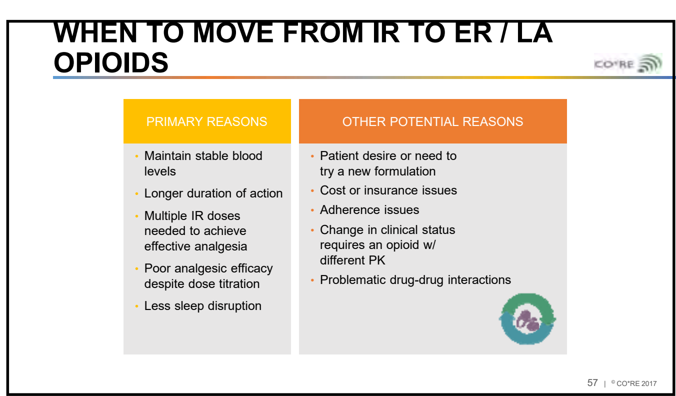
WHEN TO MOVE FROM IR TO ER / LA OPIOIDS
CO*RE
PRIMARY REASONS
Maintain stable blood levels
Longer duration of action
Multiple IR doses needed to achieve effective analgesia
Poor analgesic efficacy despite dose titration
Less sleep disruption
OTHER POTENTIAL REASONS
Patient desire or need to try a new formulation
Cost or insurance issues
Adherence issues
Change in clinical status requires an opioid w/ different PK
Problematic drug-drug interactions
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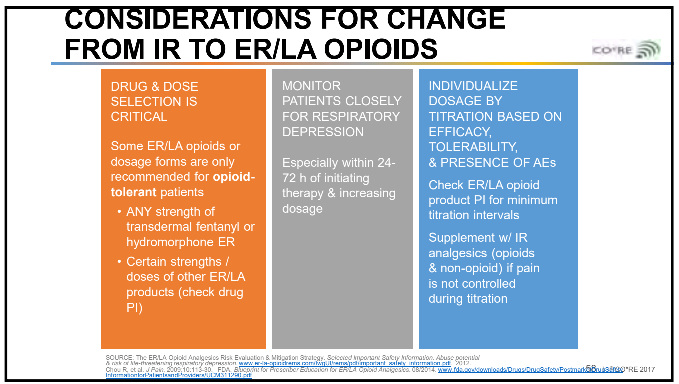
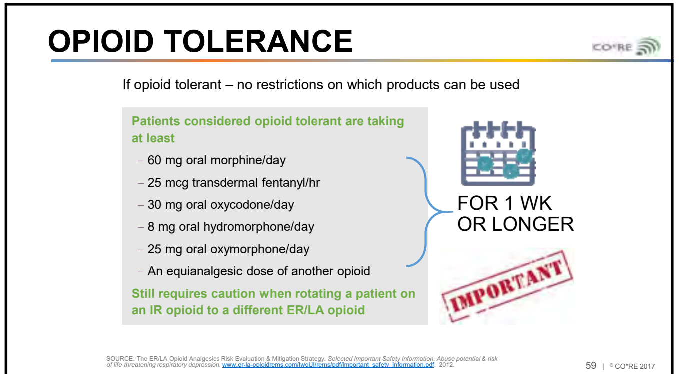

CONSIDERATIONS FOR CHANGE FROM IR TO ER/LA OPIOIDS
DRUG & DOSE SELECTION IS CRITICAL
Some ER/LA opioids or dosage forms are only recommended for opioid-tolerant patients
ANY strength of transdermal fentanyl or hydromorphone ER
Certain strengths / doses of other ER/LA products (check drug PI)
MONITOR PATIENTS CLOSELY FOR RESPIRATORY DEPRESSION
Especially within 24-72 h of initiating therapy & increasing dosage
INDIVIDUALIZE DOSAGE BY TITRATION BASED ON EFFICACY, TOLERABILITY, & PRESENCE OF AEs
Check ER/LA opioid product PI for minimum titration intervals
Supplement w/ IR analgesics (opioids & non-opioid) if pain is not controlled during titration


OPIOID TOLERANCE
If opioid tolerant – no restrictions on which products can be used
Patients considered opioid tolerant are taking at least
60 mg oral morphine/day
25 mcg transdermal fentanyl/hr
30 mg oral oxycodone/day
8 mg oral hydromorphone/day
25 mg oral oxymorphone/day
An equianalgesic dose of another opioid
FOR 1 WK OR LONGER
IMPORTANT
Still requires caution when rotating a patient on an IR opioid to a different ER/LA opioid
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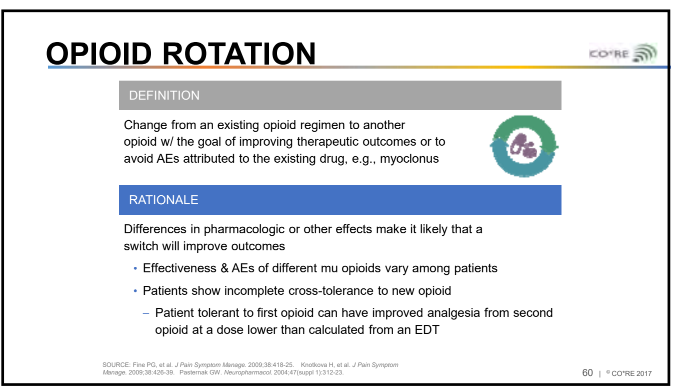
OPIOID ROTATION
DEFINITION
Change from an existing opioid regimen to another opioid w/ the goal of improving therapeutic outcomes or to avoid AEs attributed to the existing drug, e.g., myoclonus
RATIONALE
Differences in pharmacologic or other effects make it likely that a switch will improve outcomes
Effectiveness & AEs of different mu opioids vary among patients
Patients show incomplete cross-tolerance to new opioid
Patient tolerant to first opioid can have improved analgesia from second opioid at a dose lower than calculated from an EDT
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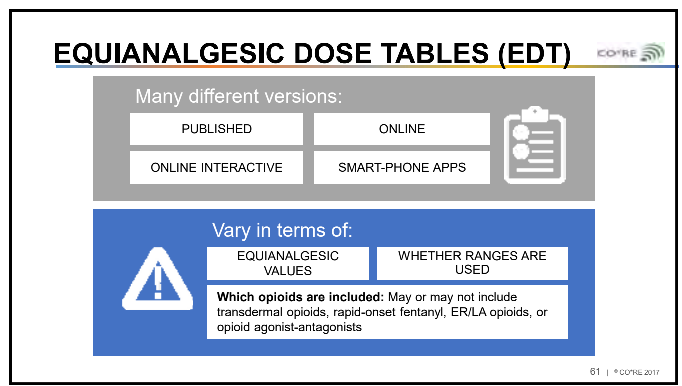
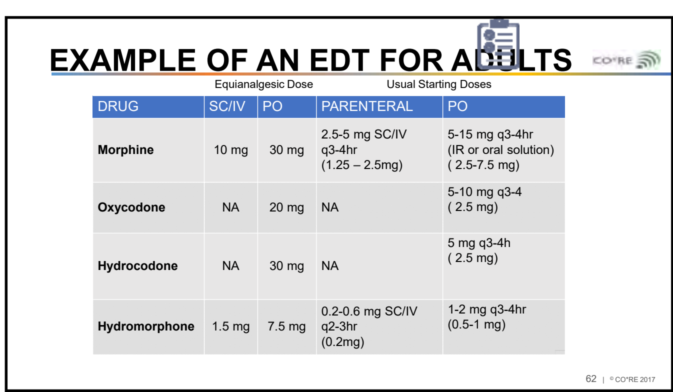
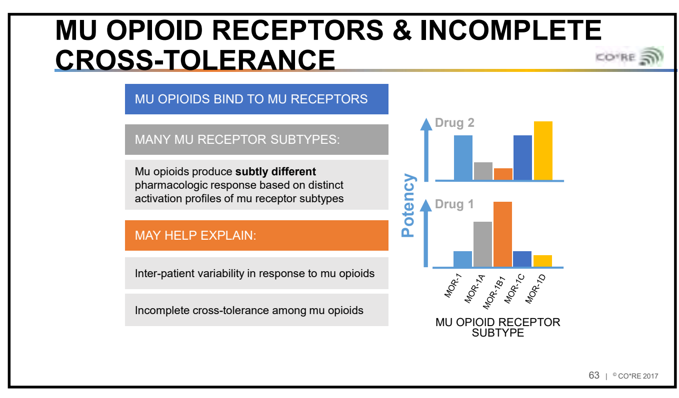
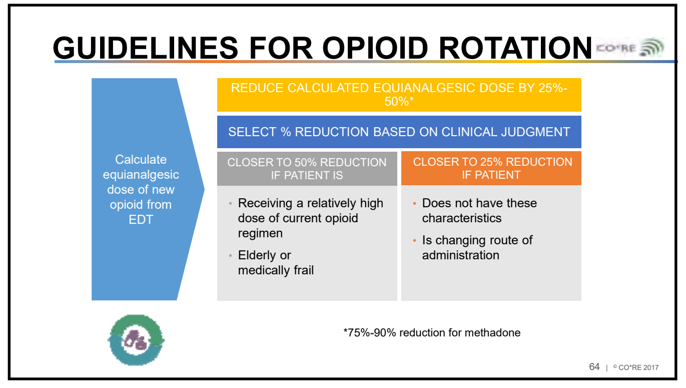




	Equianalgesic Dose		Usual Starting Doses	
DRUG	SC/IV	PO	PARENTERAL	PO
Morphine	10 mg	30 mg	2.5-5 mg SC/IV q3-4hr (1.25 – 2.5mg)	5-15 mg q3-4hr (IR or oral solution) (2.5-7.5 mg)
Oxycodone	NA	20 mg	NA	5-10 mg q3-4 (2.5 mg)
Hydrocodone	NA	30 mg	NA	5 mg q3-4h (2.5 mg)
Hydromorphone	1.5 mg	7.5 mg	0.2-0.6 mg SC/IV q2-3hr (0.2mg)	1-2 mg q3-4hr (0.5-1 mg)




GUIDELINES FOR OPIOID ROTATION
CO*RE
Calculate equianalgesic dose of new opioid from EDT
REDUCE CALCULATED EQUIANALGESIC DOSE BY 25%-50%*
SELECT % REDUCTION BASED ON CLINICAL JUDGMENT
CLOSER TO 50% REDUCTION IF PATIENT IS
Receiving a relatively high dose of current opioid regimen
Elderly or medically frail
CLOSER TO 25% REDUCTION IF PATIENT
Does not have these characteristics
Is changing route of administration
*75%-90% reduction for methadone
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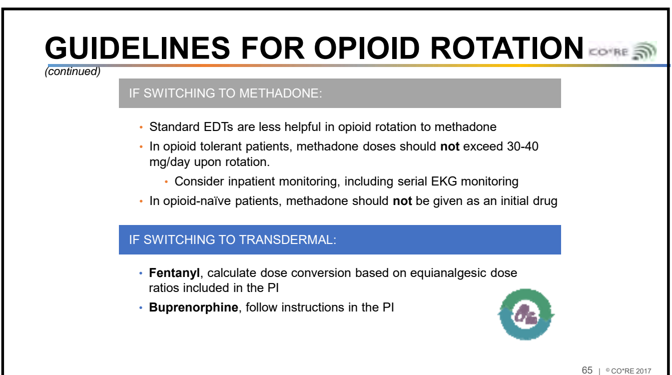
GUIDELINES FOR OPIOID ROTATION
(continued)
CO*RE
IF SWITCHING TO METHADONE:
Standard EDTs are less helpful in opioid rotation to methadone
In opioid tolerant patients, methadone doses should not exceed 30-40 mg/day upon rotation.
Consider inpatient monitoring, including serial EKG monitoring
In opioid-naïve patients, methadone should not be given as an initial drug
IF SWITCHING TO TRANSDERMAL:
Fentanyl, calculate dose conversion based on equianalgesic dose ratios included in the PI
Buprenorphine, follow instructions in the PI
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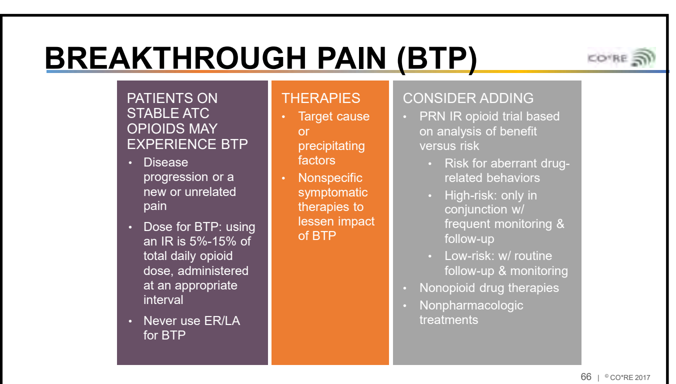
BREAKTHROUGH PAIN (BTP)
CO*RE
PATIENTS ON STABLE ATC OPIOIDS MAY EXPERIENCE BTP
Disease progression or a new or unrelated pain
Dose for BTP: using an IR is 5%-15% of total daily opioid dose, administered at an appropriate interval
Never use ER/LA for BTP
THERAPIES
Target cause or precipitating factors
Nonspecific symptomatic therapies to lessen impact of BTP
CONSIDER ADDING
PRN IR opioid trial based on analysis of benefit versus risk
Risk for aberrant drug-related behaviors
High-risk: only in conjunction w/ frequent monitoring & follow-up
Low-risk: w/ routine follow-up & monitoring
Nonopioid drug therapies
Nonpharmacologic treatments
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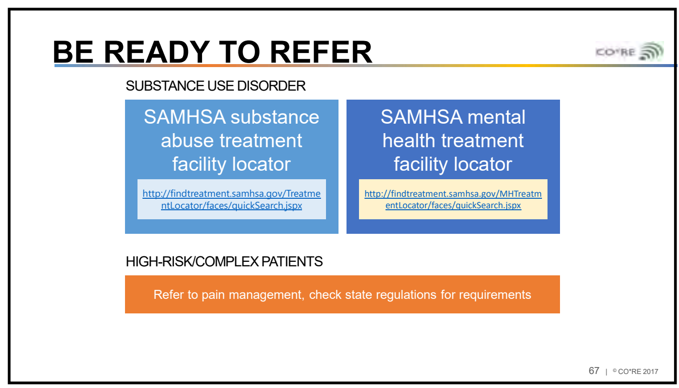
BE READY TO REFER
CO*RE
SUBSTANCE USE DISORDER
SAMHSA substance abuse treatment facility locator
http://findtreatment.samhsa.gov/TreatmentLocator/faces/quickSearch.jspx
SAMHSA mental health treatment facility locator
http://findtreatment.samhsa.gov/MHTreatmentLocator/faces/quickSearch.jspx
HIGH-RISK/COMPLEX PATIENTS
Refer to pain management, check state regulations for requirements
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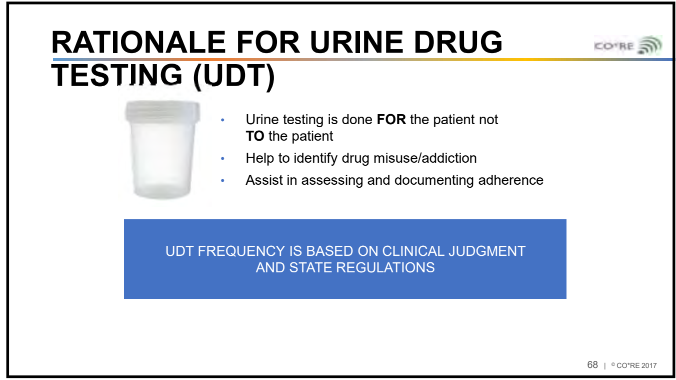
RATIONALE FOR URINE DRUG TESTING (UDT)
CO*RE
Urine testing is done FOR the patient not TO the patient
Help to identify drug misuse/addiction
Assist in assessing and documenting adherence
UDT FREQUENCY IS BASED ON CLINICAL JUDGMENT AND STATE REGULATIONS
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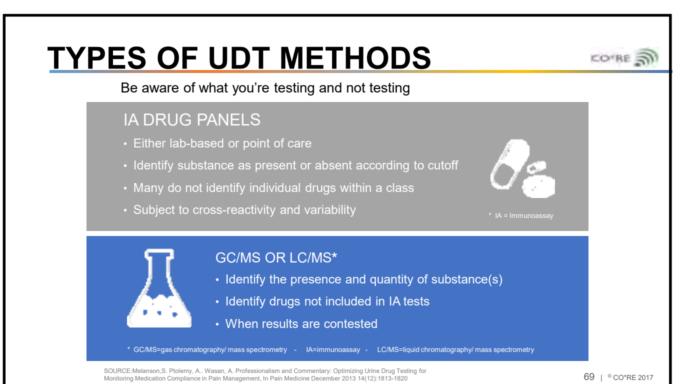
TYPES OF UDT METHODS
CO*RE
Be aware of what you're testing and not testing
IA DRUG PANELS
Either lab-based or point of care
Identify substance as present or absent according to cutoff
Many do not identify individual drugs within a class
Subject to cross-reactivity and variability
* IA = Immunoassay
GC/MS OR LC/MS*
Identify the presence and quantity of substance(s)
Identify drugs not included in IA tests
When results are contested
* GC/MS=gas chromatography/ mass spectrometry - IA=immunoassay - LC/MS=liquid chromatography/ mass spectrometry
SOURCE:Melanson,S. Ptolemy, A., Wasan, A. Professionalism and Commentary: Optimizing Urine Drug Testing for Monitoring Medication Compliance in Pain Management, In Pain Medicine December 2013 14(12):1813-1820
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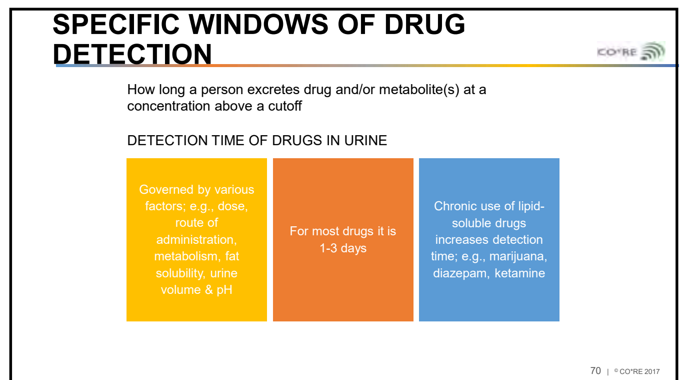
SPECIFIC WINDOWS OF DRUG DETECTION
How long a person excretes drug and/or metabolite(s) at a concentration above a cutoff
DETECTION TIME OF DRUGS IN URINE
Governed by various factors; e.g., dose, route of administration, metabolism, fat solubility, urine volume & pH
For most drugs it is 1-3 days
Chronic use of lipid-soluble drugs increases detection time; e.g., marijuana, diazepam, ketamine
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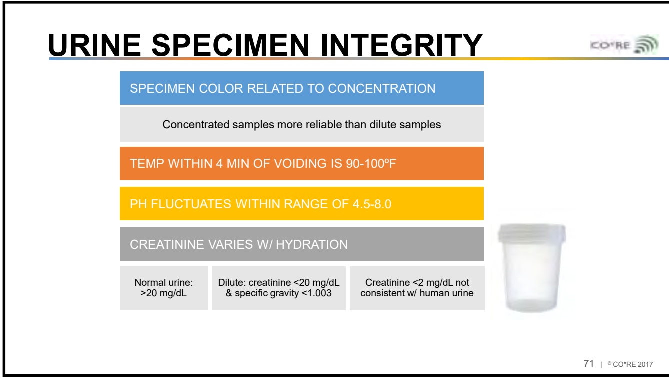
URINE SPECIMEN INTEGRITY
SPECIMEN COLOR RELATED TO CONCENTRATION
Concentrated samples more reliable than dilute samples
TEMP WITHIN 4 MIN OF VOIDING IS 90-100ºF
PH FLUCTUATES WITHIN RANGE OF 4.5-8.0
CREATININE VARIES W/ HYDRATION
Normal urine: >20 mg/dL
Dilute: creatinine <20 mg/dL & specific gravity <1.003
Creatinine <2 mg/dL not consistent w/ human urine
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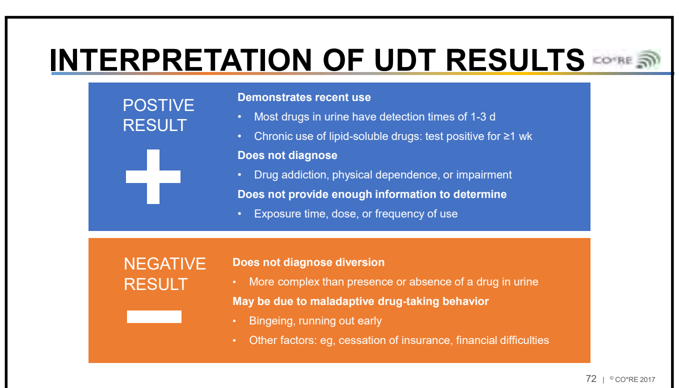
INTERPRETATION OF UDT RESULTS
POSTIVE RESULT
Demonstrates recent use
Most drugs in urine have detection times of 1-3 d
Chronic use of lipid-soluble drugs: test positive for ≥1 wk
Does not diagnose
Drug addiction, physical dependence, or impairment
Does not provide enough information to determine
Exposure time, dose, or frequency of use
NEGATIVE RESULT
Does not diagnose diversion
More complex than presence or absence of a drug in urine
May be due to maladaptive drug-taking behavior
Bingeing, running out early
Other factors: eg, cessation of insurance, financial difficulties
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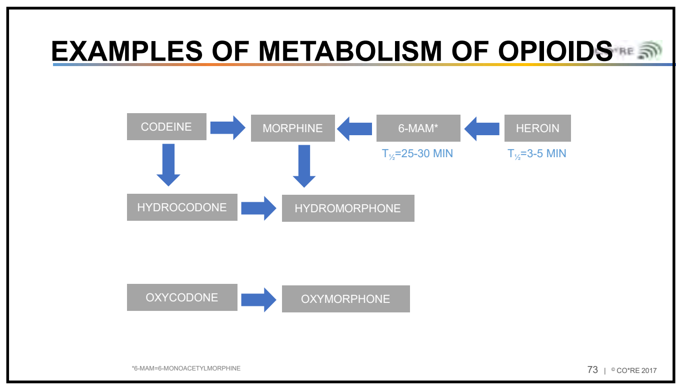
EXAMPLES OF METABOLISM OF OPIOIDS
CODEINE
MORPHINE
6-MAM*
HEROIN
T½=25-30 MIN
T½=3-5 MIN
HYDROCODONE
HYDROMORPHONE
OXYCODONE
OXYMORPHONE
*6-MAM=6-MONOACETYLMORPHINE
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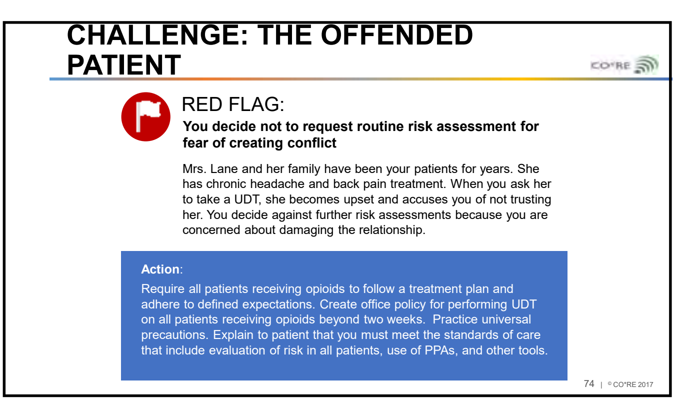
CHALLENGE: THE OFFENDED PATIENT
RED FLAG:
You decide not to request routine risk assessment for fear of creating conflict
Mrs. Lane and her family have been your patients for years. She has chronic headache and back pain treatment. When you ask her to take a UDT, she becomes upset and accuses you of not trusting her. You decide against further risk assessments because you are concerned about damaging the relationship.
Action:
Require all patients receiving opioids to follow a treatment plan and adhere to defined expectations. Create office policy for performing UDT on all patients receiving opioids beyond two weeks. Practice universal precautions. Explain to patient that you must meet the standards of care that include evaluation of risk in all patients, use of PPAs, and other tools.
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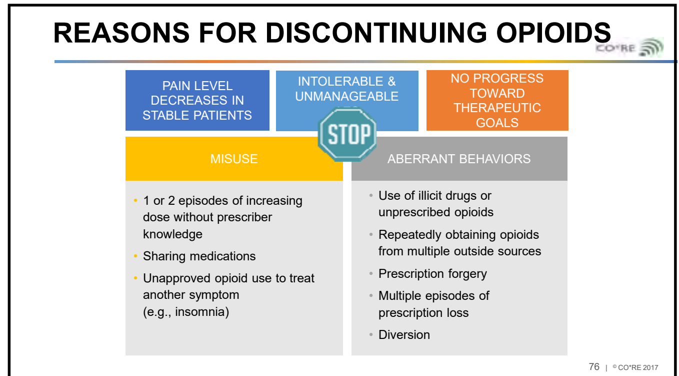
REASONS FOR DISCONTINUING OPIOIDS
CO*RE
PAIN LEVEL DECREASES IN STABLE PATIENTS
INTOLERABLE & UNMANAGEABLE
NO PROGRESS TOWARD THERAPEUTIC GOALS
STOP
MISUSE
ABERRANT BEHAVIORS
1 or 2 episodes of increasing dose without prescriber knowledge
Sharing medications
Unapproved opioid use to treat another symptom (e.g., insomnia)
Use of illicit drugs or unprescribed opioids
Repeatedly obtaining opioids from multiple outside sources
Prescription forgery
Multiple episodes of prescription loss
Diversion
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TAPER DOSE WHEN DISCONTINUING
CO*RE
Minimize withdrawal symptoms in opioid-dependent patient, consider medications to assist with withdrawal
May use a range of approaches from slow 10% dose reduction per week to more rapid 25%-50% reduction every few days
If opioid use disorder or a failed taper, refer to addiction specialist or consider opioid agonist therapy
Counseling and relaxation strategies needed
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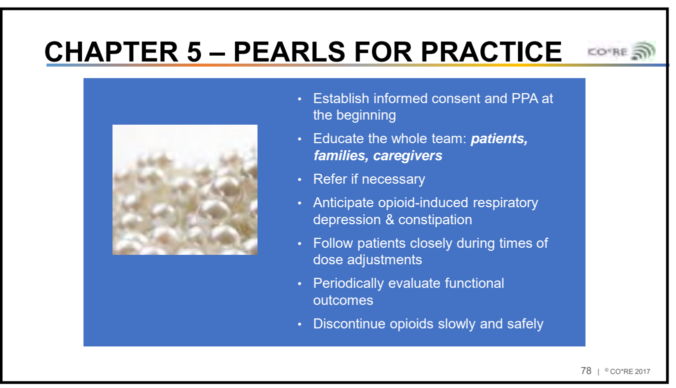
CHAPTER 5 – PEARLS FOR PRACTICE
CO*RE
Establish informed consent and PPA at the beginning
Educate the whole team: patients, families, caregivers
Refer if necessary
Anticipate opioid-induced respiratory depression & constipation
Follow patients closely during times of dose adjustments
Periodically evaluate functional outcomes
Discontinue opioids slowly and safely
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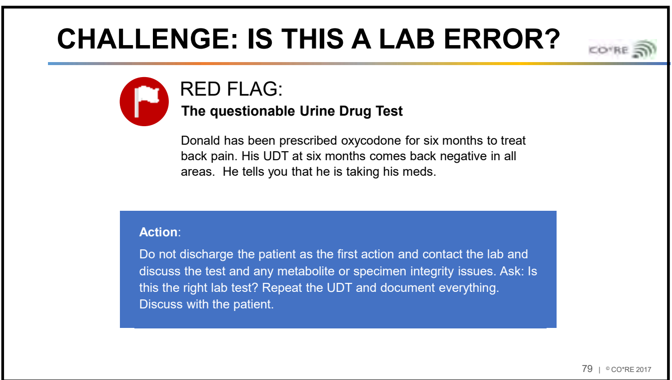
CHALLENGE: IS THIS A LAB ERROR?
CO*RE
RED FLAG:
The questionable Urine Drug Test
Donald has been prescribed oxycodone for six months to treat back pain. His UDT at six months comes back negative in all areas. He tells you that he is taking his meds.
Action:
Do not discharge the patient as the first action and contact the lab and discuss the test and any metabolite or specimen integrity issues. Ask: Is this the right lab test? Repeat the UDT and document everything. Discuss with the patient.
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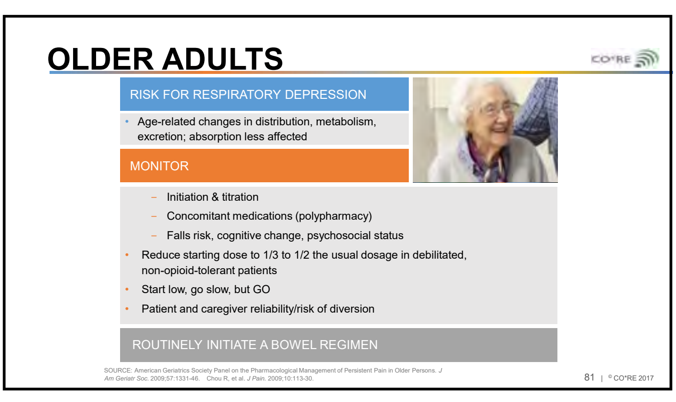
CHAPTER 6
SPECIAL POPULATIONS


OLDER ADULTS
CO*RE
RISK FOR RESPIRATORY DEPRESSION
Age-related changes in distribution, metabolism, excretion; absorption less affected
MONITOR
Initiation & titration
Concomitant medications (polypharmacy)
Falls risk, cognitive change, psychosocial status
Reduce starting dose to 1/3 to 1/2 the usual dosage in debilitated, non-opioid-tolerant patients
Start low, go slow, but GO
Patient and caregiver reliability/risk of diversion
ROUTINELY INITIATE A BOWEL REGIMEN
SOURCE: American Geriatrics Society Panel on the Pharmacological Management of Persistent Pain in Older Persons. J Am Geriatr Soc. 2009;57:1331-46. Chou R, et al. J Pain. 2009;10:113-30.
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WOMEN WITH CHILDBEARING POTENTIAL

KNOW THE REPRODUCTIVE PLANS & PREGNANCY STATUS OF YOUR PATIENTS

- 40% of women with childbearing potential are prescribed opioids
- Opioid exposure during pregnancy causes increased risk for fetus
- Most women don't know they're pregnant in first few weeks
- Therefore all women of childbearing age are at risk
- No adequate nor well-controlled studies of opioids for pain in pregnancy

SOURCE:Ailes, E., Dawson, A., Lind, J., Bilboa, S., Frey, M., Broussard, C., Honein, M., MMWR 64(2015) "Opioid Prescription Claims Among Women of Reproductive Age – United Sates, 2008-2012

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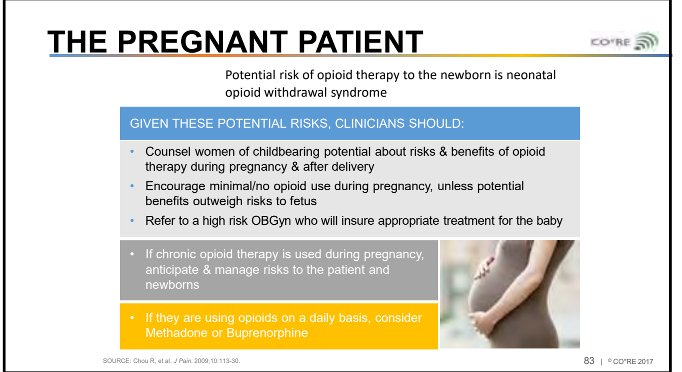
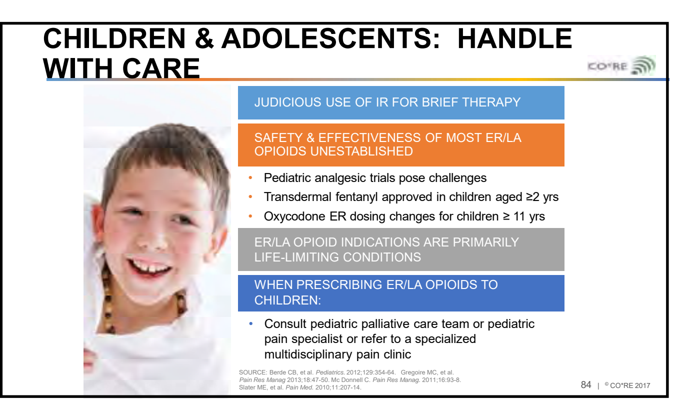




CHALLENGE: VULNERABILITY IN CO-DEPENDENT OLDER ADULTS

CO*RE

RED FLAG:

Questionable family diversion

78 year-old Thelma comes into clinic, accompanied by grandson, who is in the exam room with you and Thelma. Thelma says her oxycodone 10 mg tablets q 4 hours is no longer working for her back pain. She asks for more medicine. You ask grandson to leave the exam room so you can examine Thelma. In your exam you find bruising on right forearm. Thelma says she fell against the wall.

Action: Based on exam findings and her request for more medication:

- UDT and PDMP check
- Social service to see in clinic and at home for a vulnerable adult evaluation
- Patient education: Don't give opioids to another person. Store in secure place – locked. Let you know if medications are not secure or if she feels any pressure about sharing medications.

FEDERAL & STATE REGULATIONS

CO*RE

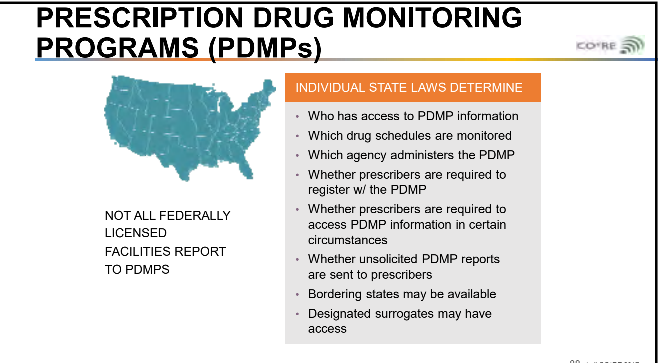
Comply with federal & state laws & regulations that govern the use of opioid therapy for pain

FEDERAL

- Code of Federal Regulations, Title 21 Section 1306: rules governing the issuance & filling of prescriptions pursuant to section 309 of the Act (21 USC 829)
  www.deadiversion.usdoj.gov/21cfr/cfr/2106cfrt.htm
- United States Code (USC) - Controlled Substances Act, Title 21, Section 829: prescriptions
  www.deadiversion.usdoj.gov/21cfr/21usc/829.htm

STATE

- Database of state statutes, regulations, & policies for pain management
  www.medscape.com/resource/pain/opioid-policies
  www.painpolicy.wisc.edu/database-statutes-regulations-other-policies-pain-management


PRESCRIPTION DRUG MONITORING PROGRAMS (PDMPs)
CO*RE
INDIVIDUAL STATE LAWS DETERMINE
Who has access to PDMP information
Which drug schedules are monitored
Which agency administers the PDMP
Whether prescribers are required to register w/ the PDMP
Whether prescribers are required to access PDMP information in certain circumstances
Whether unsolicited PDMP reports are sent to prescribers
Bordering states may be available
Designated surrogates may have access
NOT ALL FEDERALLY LICENSED FACILITIES REPORT TO PDMPS
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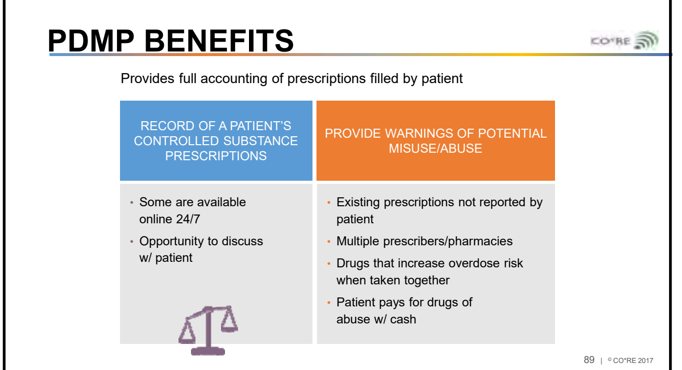
PDMP BENEFITS
CO*RE
Provides full accounting of prescriptions filled by patient
RECORD OF A PATIENT'S CONTROLLED SUBSTANCE PRESCRIPTIONS
Some are available online 24/7
Opportunity to discuss w/ patient
PROVIDE WARNINGS OF POTENTIAL MISUSE/ABUSE
Existing prescriptions not reported by patient
Multiple prescribers/pharmacies
Drugs that increase overdose risk when taken together
Patient pays for drugs of abuse w/ cash
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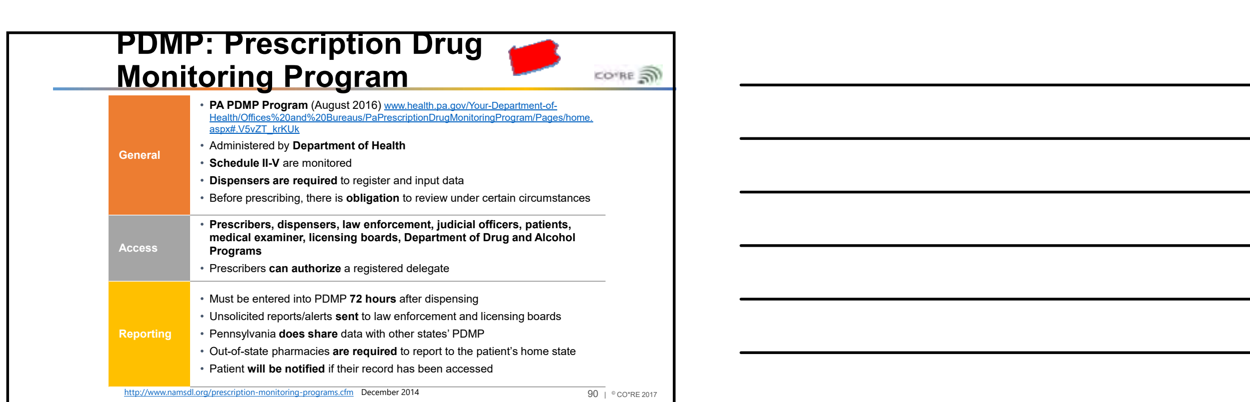
PDMP: Prescription Drug Monitoring Program
CO*RE
General
PA PDMP Program (August 2016) www.health.pa.gov/Your-Department-of-Health/Offices%20and%20Bureaus/PaPrescriptionDrugMonitoringProgram/Pages/home.aspx#.V5vZT_krKUk
Administered by Department of Health
Schedule II-V are monitored
Dispensers are required to register and input data
Before prescribing, there is obligation to review under certain circumstances
Access
Prescribers, dispensers, law enforcement, judicial officers, patients, medical examiner, licensing boards, Department of Drug and Alcohol Programs
Prescribers can authorize a registered delegate
Reporting
Must be entered into PDMP 72 hours after dispensing
Unsolicited reports/alerts sent to law enforcement and licensing boards
Pennsylvania does share data with other states' PDMP
Out-of-state pharmacies are required to report to the patient's home state
Patient will be notified if their record has been accessed
http://www.namsdl.org/prescription-monitoring-programs.cfm December 2014
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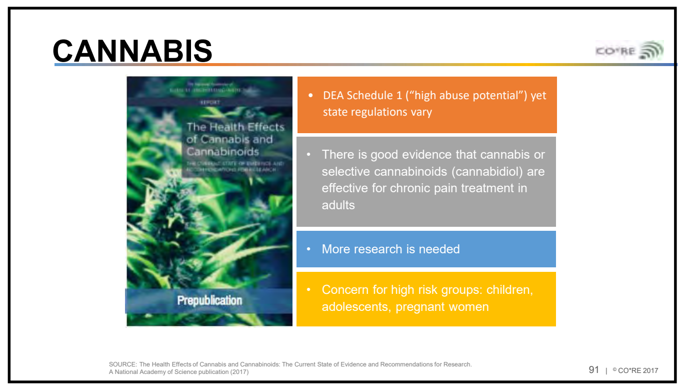
CANNABIS
CO*RE
The Health Effects of Cannabis and Cannabinoids
Prepublication
DEA Schedule 1 ("high abuse potential") yet state regulations vary
There is good evidence that cannabis or selective cannabinoids (cannabidiol) are effective for chronic pain treatment in adults
More research is needed
Concern for high risk groups: children, adolescents, pregnant women
SOURCE: The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. A National Academy of Science publication (2017)
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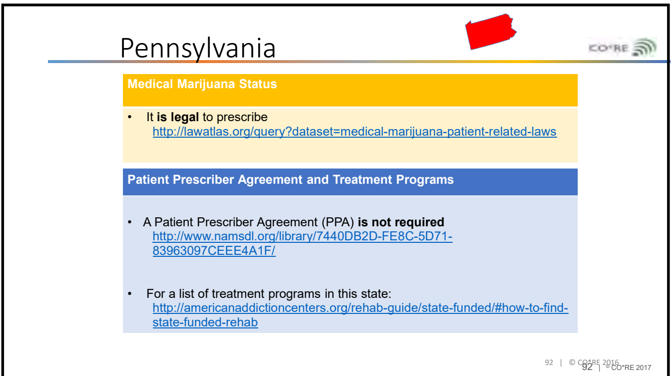
Pennsylvania
CO*RE
Medical Marijuana Status
It is legal to prescribe
http://lawatlas.org/query?dataset=medical-marijuana-patient-related-laws
Patient Prescriber Agreement and Treatment Programs
A Patient Prescriber Agreement (PPA) is not required
http://www.namsdl.org/library/7440DB2D-FE8C-5D71-83963097CEEE4A1F/
For a list of treatment programs in this state:
http://americanaddictioncenters.org/rehab-guide/state-funded/#how-to-find-state-funded-rehab
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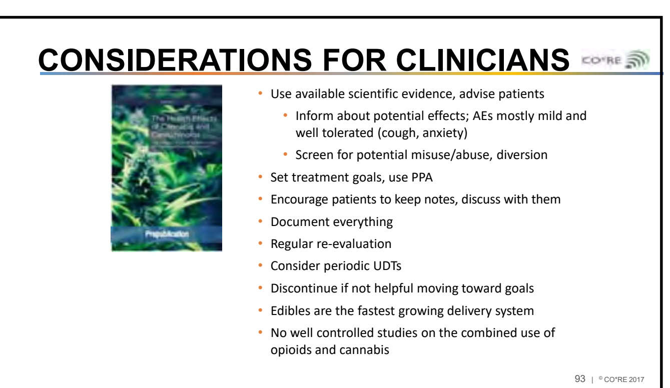
CONSIDERATIONS FOR CLINICIANS
CO*RE
Use available scientific evidence, advise patients
Inform about potential effects; AEs mostly mild and well tolerated (cough, anxiety)
Screen for potential misuse/abuse, diversion
Set treatment goals, use PPA
Encourage patients to keep notes, discuss with them
Document everything
Regular re-evaluation
Consider periodic UDTs
Discontinue if not helpful moving toward goals
Edibles are the fastest growing delivery system
No well controlled studies on the combined use of opioids and cannabis
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CO*RE
CHAPTER 8
COUNSELING PATIENTS & CAREGIVERS
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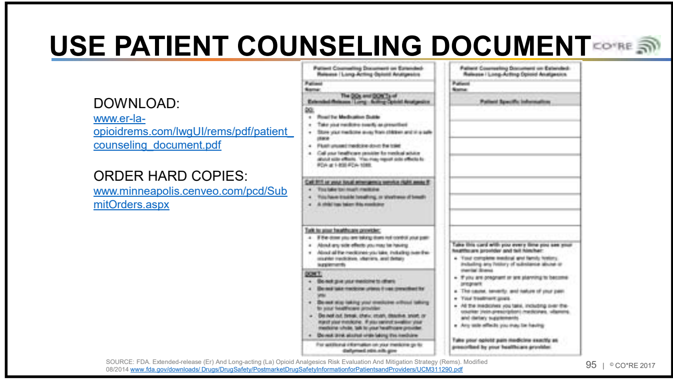
USE PATIENT COUNSELING DOCUMENT
CO*RE
DOWNLOAD:
www.er-la-opioidrems.com/lwgUI/rems/pdf/patient_counseling_document.pdf
ORDER HARD COPIES:
www.minneapolis.cenveo.com/pcd/SubmitOrders.aspx
SOURCE: FDA. Extended-release (Er) And Long-acting (La) Opioid Analgesics Risk Evaluation And Mitigation Strategy (Rems). Modified 08/2014 www.fda.gov/downloads/ Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/UCM311290.pdf
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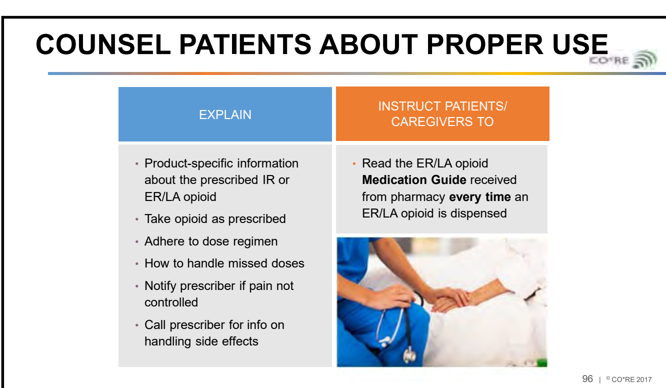
COUNSEL PATIENTS ABOUT PROPER USE
CO*RE
EXPLAIN
INSTRUCT PATIENTS/ CAREGIVERS TO
Product-specific information about the prescribed IR or ER/LA opioid
Take opioid as prescribed
Adhere to dose regimen
How to handle missed doses
Notify prescriber if pain not controlled
Call prescriber for info on handling side effects
Read the ER/LA opioid Medication Guide received from pharmacy every time an ER/LA opioid is dispensed
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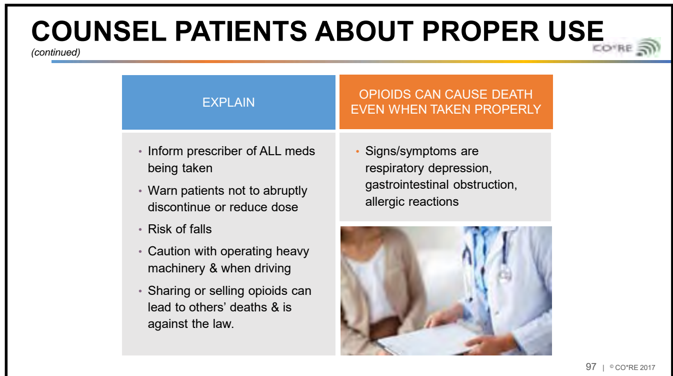
COUNSEL PATIENTS ABOUT PROPER USE
(continued)
EXPLAIN
OPIOIDS CAN CAUSE DEATH EVEN WHEN TAKEN PROPERLY
Inform prescriber of ALL meds being taken
Warn patients not to abruptly discontinue or reduce dose
Risk of falls
Caution with operating heavy machinery & when driving
Sharing or selling opioids can lead to others' deaths & is against the law.
Signs/symptoms are respiratory depression, gastrointestinal obstruction, allergic reactions
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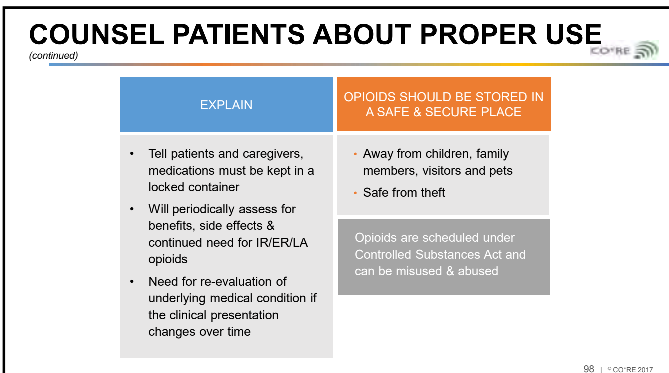
COUNSEL PATIENTS ABOUT PROPER USE
(continued)
EXPLAIN
OPIOIDS SHOULD BE STORED IN A SAFE & SECURE PLACE
Tell patients and caregivers, medications must be kept in a locked container
Will periodically assess for benefits, side effects & continued need for IR/ER/LA opioids
Need for re-evaluation of underlying medical condition if the clinical presentation changes over time
Away from children, family members, visitors and pets
Safe from theft
Opioids are scheduled under Controlled Substances Act and can be misused & abused
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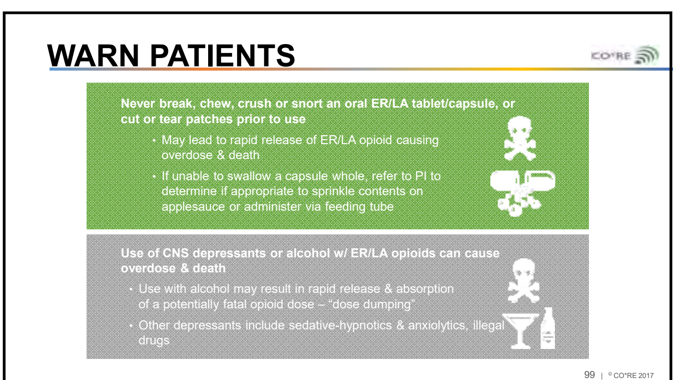
WARN PATIENTS
Never break, chew, crush or snort an oral ER/LA tablet/capsule, or cut or tear patches prior to use
May lead to rapid release of ER/LA opioid causing overdose & death
If unable to swallow a capsule whole, refer to PI to determine if appropriate to sprinkle contents on applesauce or administer via feeding tube
Use of CNS depressants or alcohol w/ ER/LA opioids can cause overdose & death
Use with alcohol may result in rapid release & absorption of a potentially fatal opioid dose – "dose dumping"
Other depressants include sedative-hypnotics & anxiolytics, illegal drugs
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OVERDOSE POISONING, CALL 911
CO*RE
Person can not be aroused or awakened or is unable to talk
Any trouble with breathing, heavy snoring is warning sign
Gurgling noises coming from mouth or throat
Body is limp, seems lifeless; face is pale, clammy
Fingernails or lips turn blue/purple
Slow, unusual heartbeat or stopped heartbeat
POISON Help
1-800-222-1222
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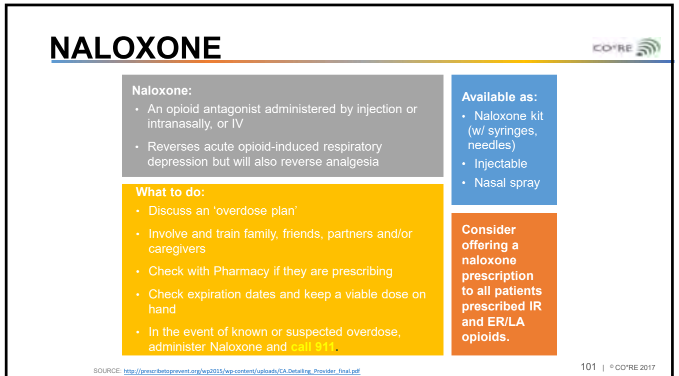
NALOXONE
CO*RE
Naloxone:
An opioid antagonist administered by injection or intranasally, or IV
Reverses acute opioid-induced respiratory depression but will also reverse analgesia
Available as:
Naloxone kit (w/ syringes, needles)
Injectable
Nasal spray
What to do:
Discuss an 'overdose plan'
Involve and train family, friends, partners and/or caregivers
Check with Pharmacy if they are prescribing
Check expiration dates and keep a viable dose on hand
In the event of known or suspected overdose, administer Naloxone and call 911.
Consider offering a naloxone prescription to all patients prescribed IR and ER/LA opioids.
SOURCE: http://prescribetoprevent.org/wp2015/wp-content/uploads/CA.Detailing_Provider_final.pdf
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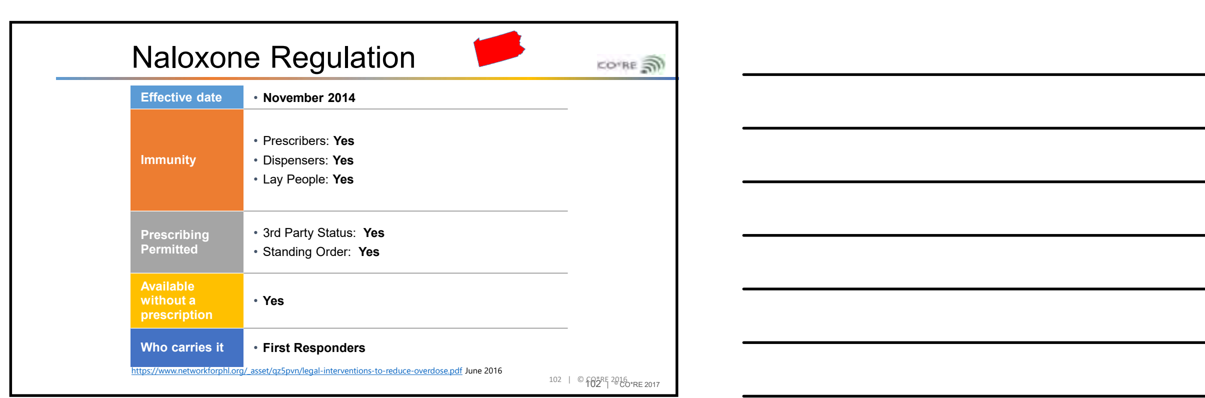
Naloxone Regulation
CO*RE
Effective date
November 2014
Immunity
Prescribers: Yes
Dispensers: Yes
Lay People: Yes
Prescribing Permitted
3rd Party Status: Yes
Standing Order: Yes
Available without a prescription
Yes
Who carries it
First Responders
https://www.networkforphl.org/_asset/qz5pvn/legal-interventions-to-reduce-overdose.pdf June 2016
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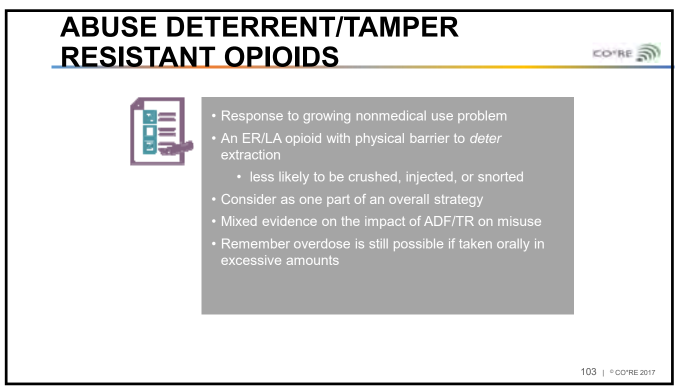
ABUSE DETERRENT/TAMPER RESISTANT OPIOIDS
CO*RE
• Response to growing nonmedical use problem
• An ER/LA opioid with physical barrier to deter extraction
• less likely to be crushed, injected, or snorted
• Consider as one part of an overall strategy
• Mixed evidence on the impact of ADF/TR on misuse
• Remember overdose is still possible if taken orally in excessive amounts
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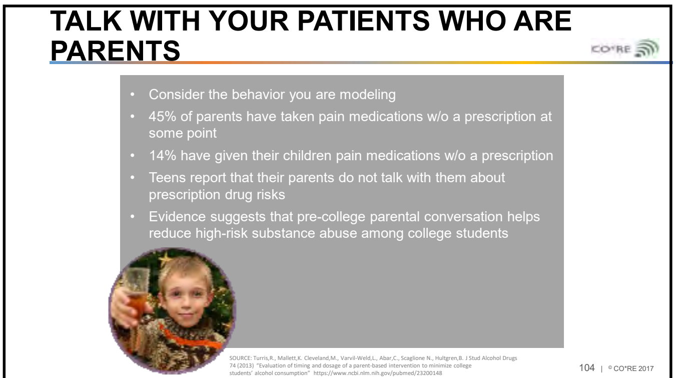
TALK WITH YOUR PATIENTS WHO ARE PARENTS
CO*RE
• Consider the behavior you are modeling
• 45% of parents have taken pain medications w/o a prescription at some point
• 14% have given their children pain medications w/o a prescription
• Teens report that their parents do not talk with them about prescription drug risks
• Evidence suggests that pre-college parental conversation helps reduce high-risk substance abuse among college students
SOURCE: Turris,R., Mallett,K. Cleveland,M., Varvil-Weld,L., Abar,C., Scaglione N., Hultgren,B. J Stud Alcohol Drugs 74 (2013) "Evaluation of timing and dosage of a parent-based intervention to minimize college students' alcohol consumption" https://www.ncbi.nlm.nih.gov/pubmed/23200148
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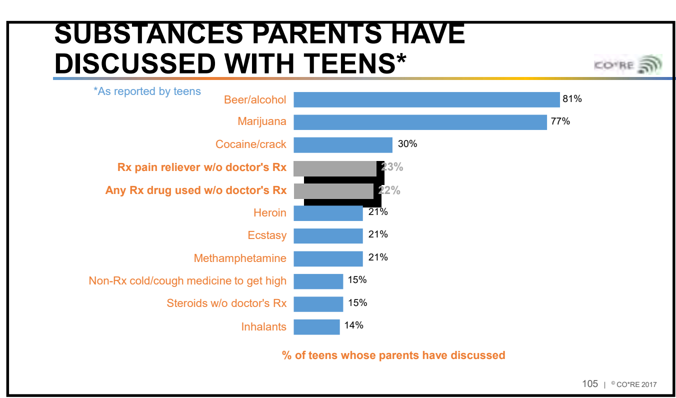
SUBSTANCES PARENTS HAVE DISCUSSED WITH TEENS*
CO*RE
*As reported by teens
Beer/alcohol 81%
Marijuana 77%
Cocaine/crack 30%
Rx pain reliever w/o doctor's Rx 23%
Any Rx drug used w/o doctor's Rx 22%
Heroin 21%
Ecstasy 21%
Methamphetamine 21%
Non-Rx cold/cough medicine to get high 15%
Steroids w/o doctor's Rx 15%
Inhalants 14%
% of teens whose parents have discussed
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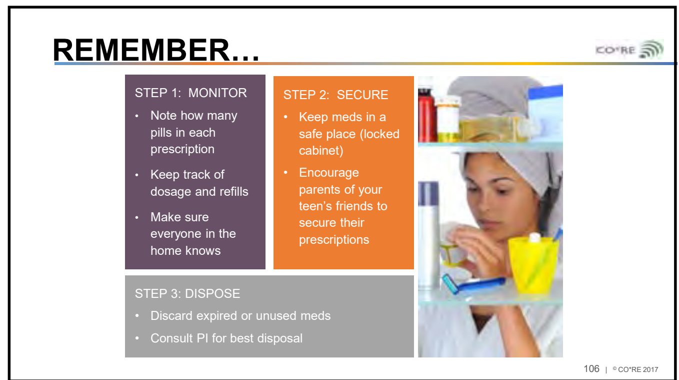
REMEMBER…
CO*RE
STEP 1: MONITOR
Note how many pills in each prescription
Keep track of dosage and refills
Make sure everyone in the home knows
STEP 2: SECURE
Keep meds in a safe place (locked cabinet)
Encourage parents of your teen's friends to secure their prescriptions
STEP 3: DISPOSE
Discard expired or unused meds
Consult PI for best disposal
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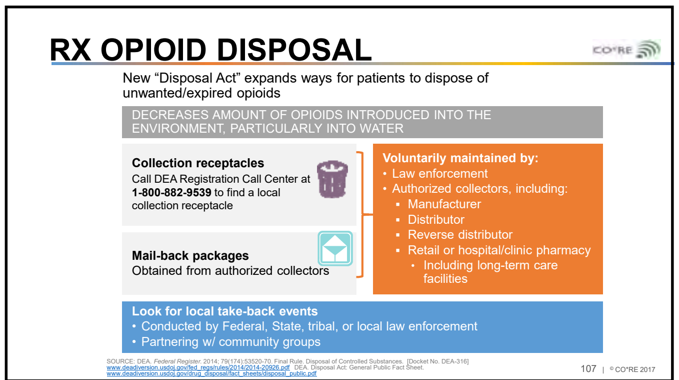
RX OPIOID DISPOSAL
CO*RE
New "Disposal Act" expands ways for patients to dispose of unwanted/expired opioids
DECREASES AMOUNT OF OPIOIDS INTRODUCED INTO THE ENVIRONMENT, PARTICULARLY INTO WATER
Collection receptacles
Call DEA Registration Call Center at 1-800-882-9539 to find a local collection receptacle
Mail-back packages
Obtained from authorized collectors
Voluntarily maintained by:
Law enforcement
Authorized collectors, including:
Manufacturer
Distributor
Reverse distributor
Retail or hospital/clinic pharmacy
Including long-term care facilities
Look for local take-back events
Conducted by Federal, State, tribal, or local law enforcement
Partnering w/ community groups
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OTHER METHODS OF OPIOID DISPOSAL
CO*RE
IF COLLECTION RECEPTACLE, MAIL-BACK PROGRAM, OR TAKE-BACK EVENT UNAVAILABLE, THROW OUT IN HOUSEHOLD TRASH
Take drugs out of original containers
Mix w/ undesirable substance
Place in sealable bag, can, or other container
Remove identifying info on label
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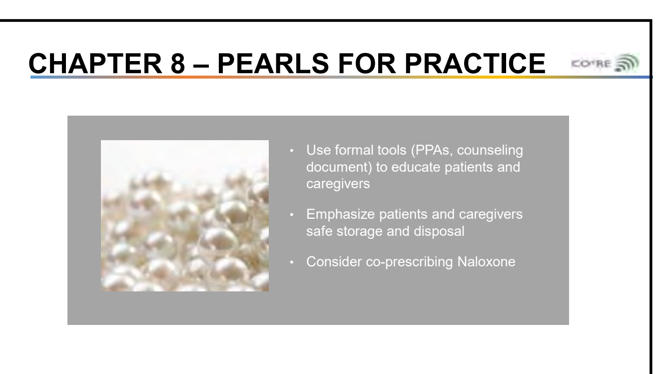
FDA: PRESCRIPTION DRUG DISPOSAL

FLUSH DOWN SINK/TOILET IF NO COLLECTION RECEPTACLE, MAIL-BACK PROGRAM, OR TAKE-BACK EVENT AVAILABLE

- As soon as they are no longer needed
- Includes transdermal adhesive skin patches
  - Used patch (3 days) still contains enough opioid to harm/kill a child
  - Dispose of used patches immediately after removing from skin
- Fold patch in half so sticky sides meet, then flush down toilet
- Do NOT place used or unneeded patches in household trash
  - Butrans exception: can seal in Patch-Disposal Unit provided & dispose of in the trash

CHAPTER 8 – PEARLS FOR PRACTICE



- Use formal tools (PPAs, counseling document) to educate patients and caregivers
- Emphasize patients and caregivers safe storage and disposal
- Consider co-prescribing Naloxone

CHALLENGE: THE DAUGHTER'S PARTY

RED FLAG:

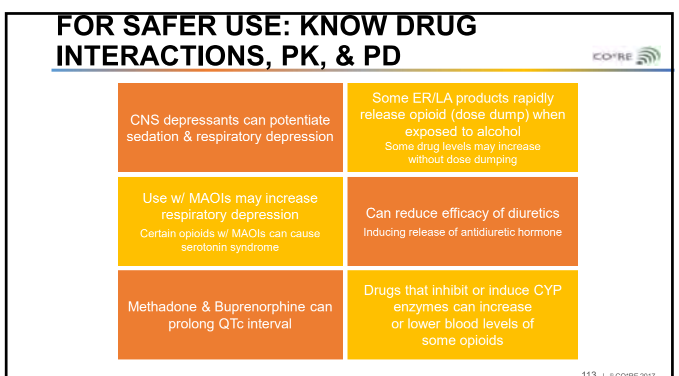
Patients do not safeguard their opioid medications correctly

Your patient's daughter stole her father's opioids from his bedside drawer to take to a "fishbowl party." Her best friend consumed a mix of opioids and alcohol and died of an overdose.

Action:

Always counsel patients about safe drug storage; warn patients about the serious consequences of theft, misuse, and overdose. Tell patients that taking another person's medication, even once, is against the law.

CHAPTER 9
DRUG CLASS CONSIDERATIONS


FOR SAFER USE: KNOW DRUG INTERACTIONS, PK, & PD
CO*RE
CNS depressants can potentiate sedation & respiratory depression
Some ER/LA products rapidly release opioid (dose dump) when exposed to alcohol
Some drug levels may increase without dose dumping
Use w/ MAOIs may increase respiratory depression
Certain opioids w/ MAOIs can cause serotonin syndrome
Can reduce efficacy of diuretics
Inducing release of antidiuretic hormone
Methadone & Buprenorphine can prolong QTc interval
Drugs that inhibit or induce CYP enzymes can increase or lower blood levels of some opioids
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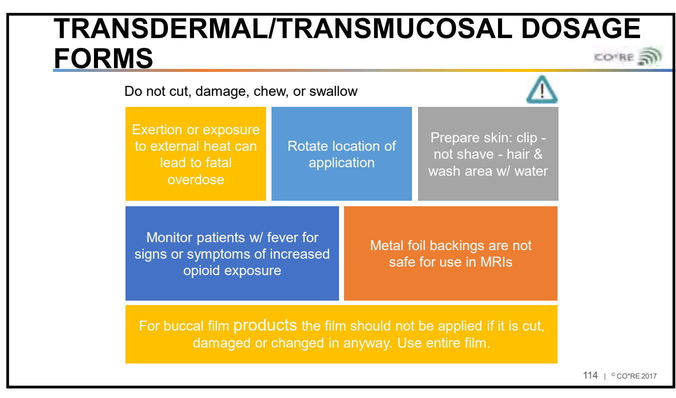
TRANSDERMAL/TRANSMUCOSAL DOSAGE FORMS
CO*RE
Do not cut, damage, chew, or swallow
Exertion or exposure to external heat can lead to fatal overdose
Rotate location of application
Prepare skin: clip - not shave - hair & wash area w/ water
Monitor patients w/ fever for signs or symptoms of increased opioid exposure
Metal foil backings are not safe for use in MRIs
For buccal film products the film should not be applied if it is cut, damaged or changed in anyway. Use entire film.
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DRUG INTERACTIONS COMMON TO OPIOIDS

- Concurrent use w/ other CNS depressants can increase risk of respiratory depression, hypotension, profound sedation, or coma
- Reduce initial dose of one or both agents

- Avoid concurrent use of partial agonists* or mixed agonist/antagonists† with full opioid agonist
- May reduce analgesic effect &/or precipitate withdrawal

- May enhance neuromuscular blocking action of skeletal muscle relaxants & increase respiratory depression

- Concurrent use w/ anticholinergic medication increases risk of urinary retention & severe constipation
- May lead to paralytic ileus

* Buprenorphine; †Pentazocine, nalbuphine, butorphanol

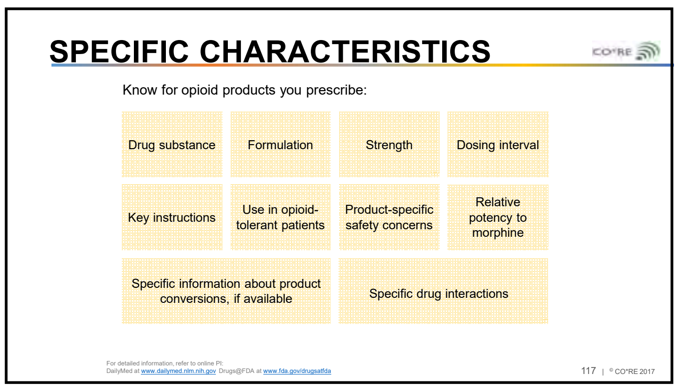
DRUG INFORMATION COMMON TO OPIOIDS

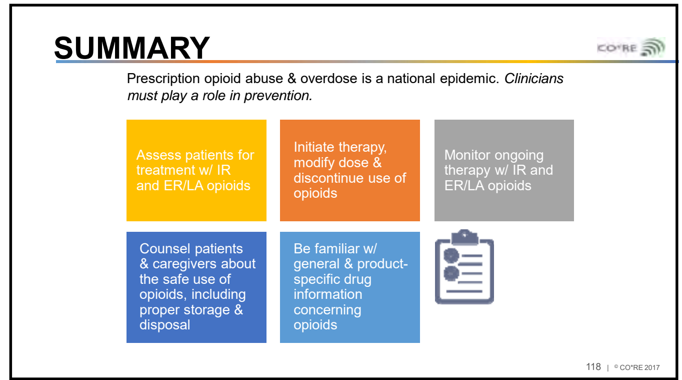
USE IN OPIOID-TOLERANT PATIENTS

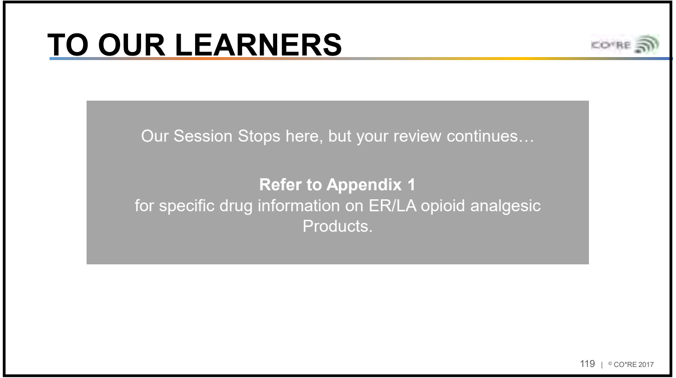
- See individual PI for products which:
  - Have strengths or total daily doses only for use in opioid-tolerant patients
  - Are only for use in opioid-tolerant patients at all strengths

CONTRAINDICATIONS

- Significant respiratory depression
- Acute or severe asthma in an unmonitored setting or in absence of resuscitative equipment
- Known or suspected paralytic ileus
- Hypersensitivity (e.g. anaphylaxis)
- See individual PI for additional contraindications







YOUR PARTICIPATION IS IMPORTANT

Thank you for completing the post-activity assessment for this CO*RE session.

Your participation in this assessment allows CO*RE to report de-identified numbers to the FDA.

A strong show of engagement will demonstrate that clinicians have voluntarily taken this important education and are committed to patient safety and improved outcomes.

THANK YOU!

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Appendix 1. Specific Drug Information for ER/LA Opioid Analgesic Products

For the ER/LA opioids you frequently use, know:
- Formulation availability
- Dosing intervals
- Key instructions
- Drug interactions
- Opioid-tolerant information
- Product specific adverse reactions
- Relative potency: morphine

Collaborative for REMS Education

Appendix 2. Detailed Disclosure Information for CO*RE Staff and Faculty

Collaborative for REMS Education

The following individuals disclose no relevant financial relationships:

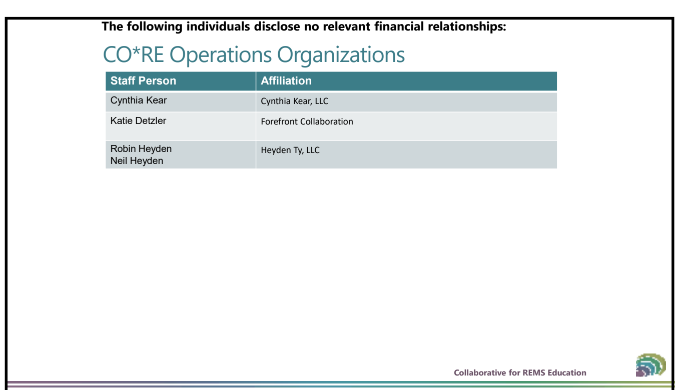
Faculty Advisory Panel & Reviewer COI

Faculty Advisory Panel	Affiliation
David Bazzo, MD	Clinical Professor of Family Medicine, University of California San Diego, School of Medicine
Ron Crossno, MD	Vice President, Medical Affairs and Chief Medical Officer at Kindred at Home
Katherine Galluzzi, DO	Professor and Chair, Department of Geriatrics, Philadelphia College of Osteopathic Medicine,
Carol Havens, MD	Director of Physician Education and Development, Kaiser Permanente, Northern California
Randall Steven Hudspeth PhD, MBA, MS, APRN-CNP, FRE, FAANP	Practice and Regulation Consultant in Advanced Practice Pain Management and Palliative Care
Catherine R. Judd, MS, MPA-C, DFAAPA	Senior Physician Assistant, Parkland Health and Hospital Systems
Barbara St. Marie, PhD, ANP, GNP	Assistant Professor, College of Nursing, University of Iowa
Edwin A. Salsitz, MD, DFASAM	Mount Sinai Beth Israel Medical Center, Division of Chemical Dependency; Assistant Professor, Icahn School of Medicine at Mount Sinai
Seddon Savage, MD	Associate Professor, Geisel School of Medicine, Dartmouth College, Director Dartmouth Center on Addiction Recovery and Education
External / Consulting Reviewers	**Affiliation**
Roberto Cardarelli, DO, MPH	Professor, Department of Family and Community Medicine, University of Kentucky College of Medicine
Marcia Jackson, PhD	CME by Design

The following individuals disclose no relevant financial relationships:

CO*RE Partner Staff COI

Staff Person	Partner Affiliation
Julie Bruno	American Academy of Hospice & Palliative Care
Michele McKay Anne Norman	American Association of Nurse Practitioners
Marie-Michele Leger Eric Peterson	American Academy of Physician Assistants
Stephanie Townsell	American Osteopathic Association
Conner Bellis, Arlene Deverman, Penny Mills, Molly Muzuk	American Society of Addiction Medicine
Brianna Wixted Catherine Underwood	American Pain Society
Jerri Davis Susan Hogeland	California Academy of Family Physicians
Mary Ales Kate Nisbet	Interstate Postgraduate Medical Association
Cyndi Grimes Piyali Chatterjee	Medscape
Pam Jenkins Phyllis Zimmer	Nurse Practitioner Healthcare Foundation
Tom McKeithen Chris Larrison	Healthcare Performance Consulting



The following individuals disclose no relevant financial relationships:

CO*RE Operations Organizations

Staff Person	Affiliation
Cynthia Kear	Cynthia Kear, LLC
Katie Detzler	Forefront Collaboration
Robin Heyden Neil Heyden	Heyden Ty, LLC

Return to Top
Lipids in Children

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Lipids in Children
Vivek Allada, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

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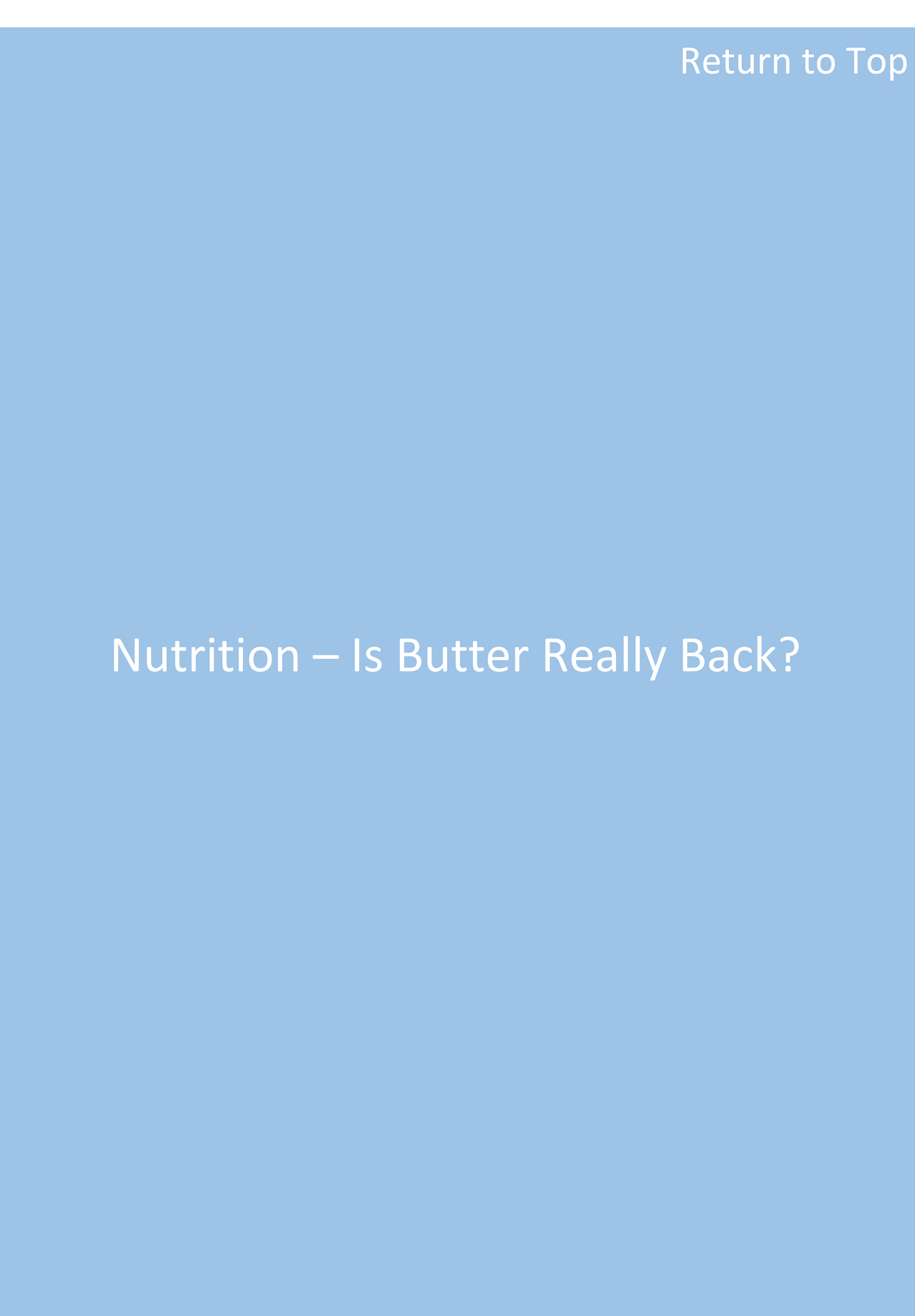
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Nutrition – Is Butter Really Back?

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Nutrition – Is Butter Really Back? The Skinny on Dietary Fats, Cholesterol, Heart Health and Weight

Gina McDonald, MS, EP-C, CPT & Emma Witmer

Disclosures:

Speakers have no disclosures and there are no conflicts of interest.

The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

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Disclosure

- The speakers have no conflict of interests, financial agreement, or working affiliation with any group or organization.

Please Remember to Complete Session Evaluation Online
https://www.surveymonkey.com/r/3_17_Nutrition

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Today's Presenters

Emma Witwer, RD, LDN
Registered Dietitian

Gina McDonald, MS, EP-C, CPT
Senior Health Coach

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Nutrition to Maximize Heart Health

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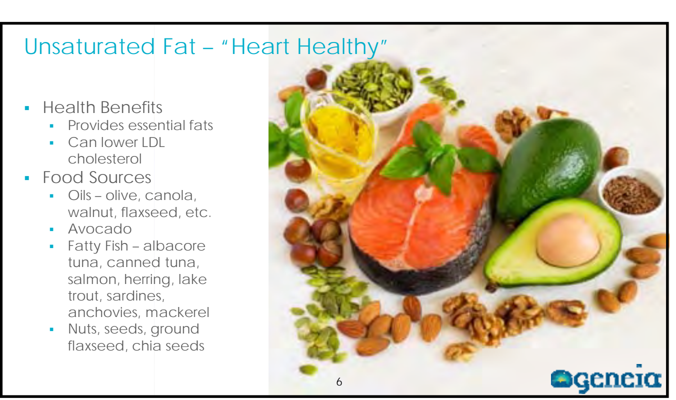

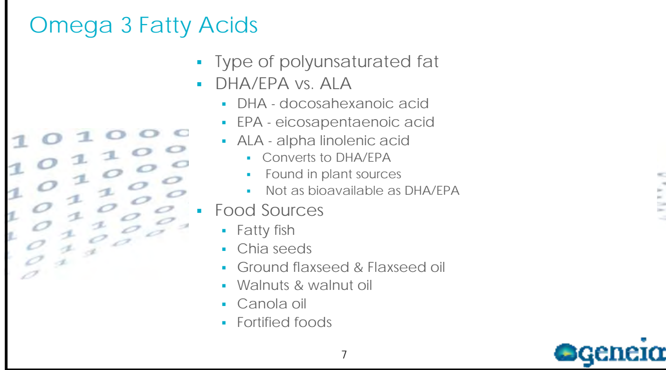
Omega 3 Fatty Acids
Type of polyunsaturated fat
DHA/EPA vs. ALA
DHA - docosahexanoic acid
EPA - eicosapentaenoic acid
ALA - alpha linolenic acid
Converts to DHA/EPA
Found in plant sources
Not as bioavailable as DHA/EPA
Food Sources
Fatty fish
Chia seeds
Ground flaxseed & Flaxseed oil
Walnuts & walnut oil
Canola oil
Fortified foods
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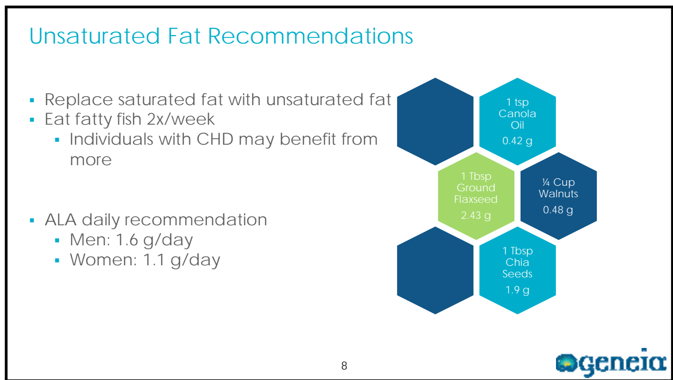
Unsaturated Fat Recommendations
Replace saturated fat with unsaturated fat
Eat fatty fish 2x/week
Individuals with CHD may benefit from more
ALA daily recommendation
Men: 1.6 g/day
Women: 1.1 g/day
1 tsp Canola Oil 0.42 g
1 Tbsp Ground Flaxseed 2.43 g
¼ Cup Walnuts 0.48 g
1 Tbsp Chia Seeds 1.9 g
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Saturated Fat – Eat Less Often
Effect on Health
Can raise LDL cholesterol
Food Sources
Fat of meat (poultry, red meat)
Butter
Whole fat dairy products (milk, yogurt, cheese)
Tropical oils (coconut oil, palm oil)
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Saturated Fat Recommendations

- USDA Dietary Guidelines for Americans
  - Limit calories from saturated fat to less than 10% of daily calories.
  - For a 2000 calorie diet, this equals 22 grams of saturated fat
- American Heart Association
  - For individuals with high cholesterol and heart disease, limit calories from saturated fat to no more than 6% of daily calories.
  - For a 2000 calorie diet, this equals 13 grams of saturated fat.

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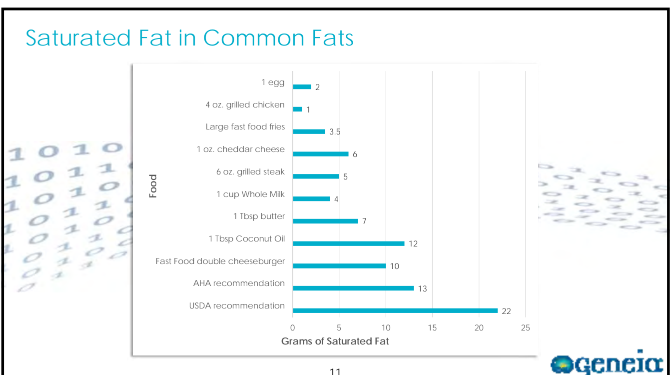
Saturated Fat in Common Fats



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Trans Fat - Avoid

- No longer recognized as "GRAS"
- Effect on Health
  - Can raise LDL cholesterol
  - Can lower HDL cholesterol
  - Increased risk of Type 2 diabetes
- Food Sources
  - Partially hydrogenated oils
  - Stick margarine
  - Some baked goods & fried foods

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Trans Fat Recommendations

- Eat as little as possible
- Read food labels
  - Look for "partially hydrogenated oils" in the ingredient list.
  - A food company can label a product "0 g trans fat" as long as the food has <0.5 g/serving.

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Cholesterol

- 2013-American College of Cardiology & American Heart Association:
  - Announced "dietary cholesterol is no longer a 'nutrient of concern.'"
- 2015-2020 USDA Dietary Guidelines for Americans
  - Removed cholesterol recommendation from list of Key Recommendations

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Additional Heart Healthy Recommendations

- Eat enough fiber, especially soluble fiber
  - 25-30 g fiber/day with special emphasis on soluble fiber
  - Recommend eating a variety of fruits, vegetables, whole grains, and nuts to meet this recommendation.
- Limit added sugar
  - American Heart Association
    - Men: <36 g/day (9 teaspoons)
    - Women: <24 g/day (6 teaspoons)
- Limit sodium
  - Daily sodium needs vary based on heart health
  - Low sodium food: <140 mg/serving
  - Low sodium meal: <500 mg/meal

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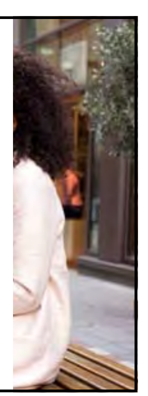
Communicating Recommendations to Patients

- Focus on food, not nutrients
- Encourage small shifts toward healthier eating
- Provide markers when appropriate



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Mediterranean & DASH Diet

- Rich in
  - Fruits & vegetables
  - Whole grains
  - Heart healthy fats like fatty fish & olive oil
  - Low fat dairy
  - Minimally processed foods
- Limits
  - Red meat
  - Added sugar
  - Sodium
  - Highly processed foods

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Resources for Patient Education

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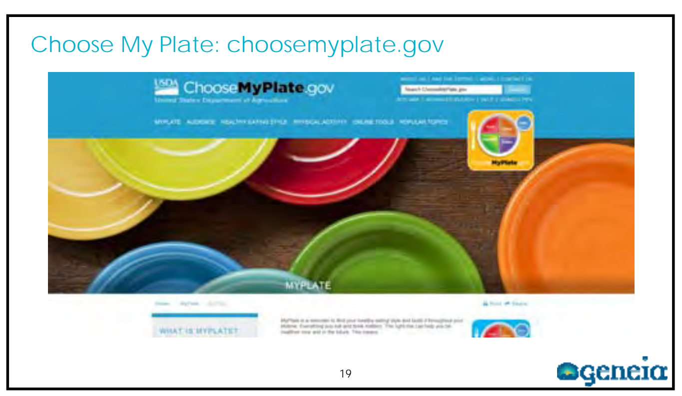
Choose My Plate: choosemyplate.gov
ChooseMyPlate.gov
MYPLATE
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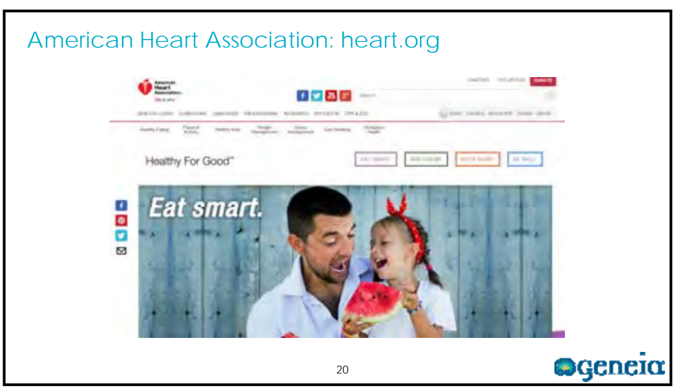
American Heart Association: heart.org
Healthy For Good
Eat smart.
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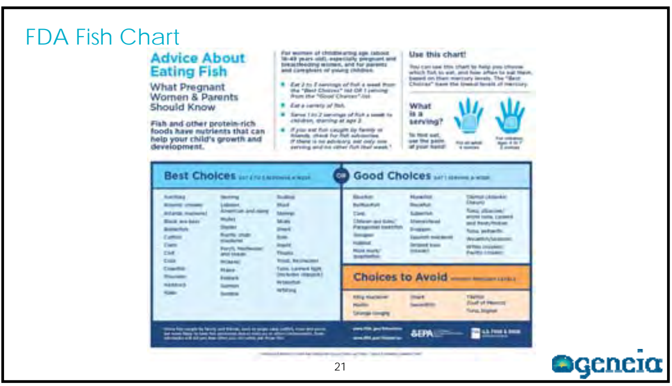
FDA Fish Chart
Advice About Eating Fish
What Pregnant Women & Parents Should Know
Fish and other protein-rich foods have nutrients that can help your child's growth and development.
Use this chart!
What is a serving?
Best Choices
Good Choices
Choices to Avoid
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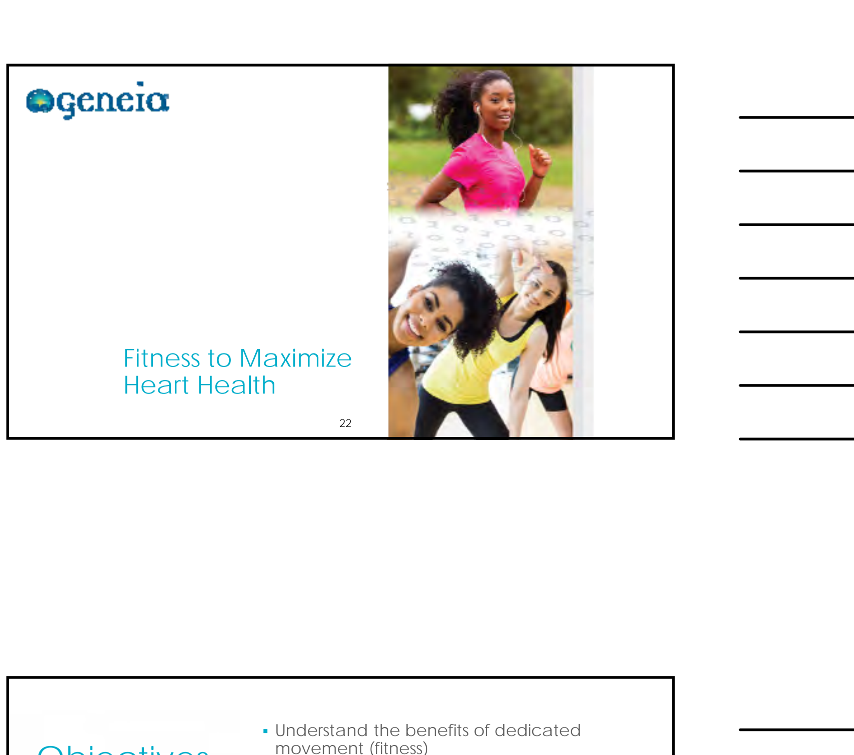

Fitness to Maximize Heart Health

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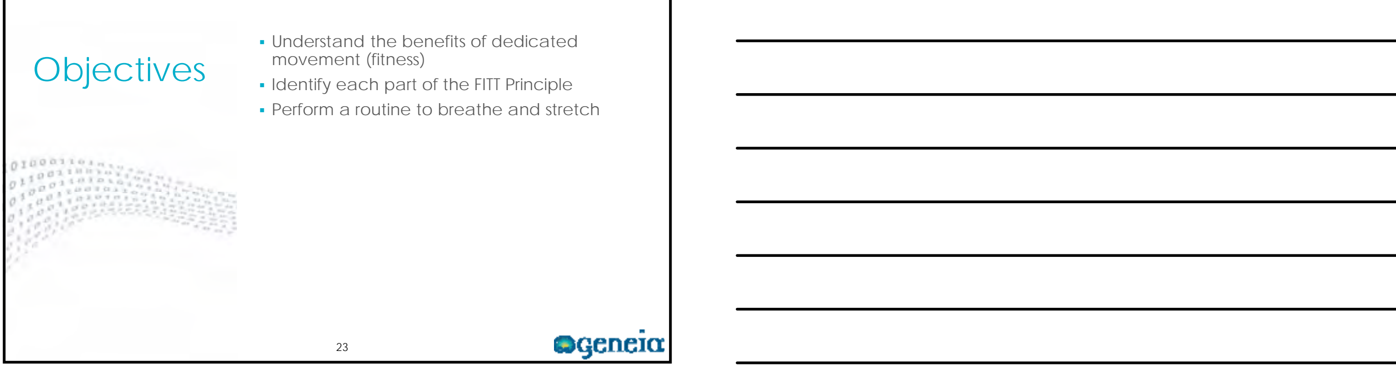

Objectives

- Understand the benefits of dedicated movement (fitness)
- Identify each part of the FITT Principle
- Perform a routine to breathe and stretch

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Benefits of Dedicated Movement: Reductions and Improvements

Reductions
- Cholesterol
- Blood Pressure
- Body Fat
- Stress/Anxiety
- Risk of Cancer
- Risk of Diabetes
- Risk of Heart Disease and Stroke

Improvements
- Bone Health
- Back Pain
- Muscular Strength
- Muscular Flexibility
- Immune System
- Energy
- Self Image

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FITT Principle:
Frequency, Intensity,
Time, Type

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Frequency: How Often?

- Most if not all days of the week.
- The end of the traditional "rest day"
- Daily movement to inspire intrinsic motivation for consistency (the want to do)
  - What movement brings happiness and satisfaction?

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Intensity: How to Challenge?

- Heart Rate
- Target Heart Rate Zone
- Rate of Perceived Exertion
- Talk Test

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Time: How Much?
General Recommendations:
150-300 minutes of moderate physical activity weekly
OR
75-150 minutes of vigorous physical activity weekly
Resistance Training – 2 times minimum, 3 times maximum weekly
Extras
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Daily Extras
Steps
Parking Lots
Malls/Grocery Stores
Household Chores
Less Sitting – hourly movement + standing
Activity Outings or Social Outings
Comfortable Clothing and Shoes
Creativity – When stationary, can you see possible movement inspirations?
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Type: How to Add Variety?
Body Composition Analysis
Cardiovascular Training
Muscular Strength
Muscular Endurance
Flexibility
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Let's Move Activity:
Breathe and Stretch
31
Activity: Breathe and Stretch
Breathe
4 count INHALE
4 count HOLD
4 count EXHALE
Repeat – 4 times
Stretch
20 second holds (if possible)
Head to toe
Neck
Shoulders
Chest
Back
Hips
Legs
Repeat (if possible)
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Heart Healthy
Recipes
33

Salmon Gyro with Greek Cucumber Salad

Prep Time: 45 Minutes | Serves: 4

Ingredients

Salmon Filling

- **1 10 ounce can** salmon
- **1 teaspoon** olive oil
- **1 teaspoon** oregano

Greek Cucumber Salad

- 1 cucumber, cubed
- 1 tomato, cubed
- ¼ red onion, diced
- ½ roasted red pepper, diced
- ½ ounce feta
- **1 tablespoon** balsamic vinegar
- **1 teaspoon** olive oil
- **½ teaspoon** garlic, minced

Tzatziki

- **1 cup** plain Greek yogurt
- **1 cup** cucumber, diced
- **1 teaspoon** garlic, minced
- **2 tablespoons** lemon juice
- **½ teaspoon** black pepper
- 4 whole wheat pitas, cut in half

Directions

1. In small mixing bowl, combine salmon, olive oil and oregano. Set aside.
2. To make cucumber salad, combine the vegetables in a medium bowl and toss. Mix the vinegar, olive oil and garlic together, and pour over vegetables. Sprinkle feta over salad, and lightly toss.
3. To make the tzatziki, combine all ingredients and mix well.
4. To make gyros, fill half of pita with marinated salmon, cucumber salad and dollop of tzatziki. Make 4 gyros.
5. Serve remaining pita with tzatziki.

Nutrition Information

Calories: 320 I Total fat: 11 g I Saturated Fat: 3 g I Carbohydrates: 25 g I Fiber: 4 g I Protein: 32 g I Sodium: 300 mg I Vitamin A: 45% I Vitamin C: 113%

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Butternut Squash & Pomegranate Winter Salad

Prep Time: 10 Minutes | Cook Time: 10 Minutes | Serves: 6, as a side salad

Ingredients

For Salad

- **6 cup** fresh spinach
- **1 ½ cup** butternut squash, diced
- **2 teaspoons** canola oil
- **1 teaspoon** mild curry powder
- **1 teaspoon** cinnamon
- **2 teaspoons** brown sugar
- **Dash** of pepper
- **¼ cup** barley, uncooked
- **¼ cup** walnuts
- **¾ cup** pomegranate arils
- **3 Tablespoons** feta

For Dressing

- **1/8 cup** apple cider vinegar
- **1/8 cup** canola oil
- **½ teaspoon** Dijon mustard
- **½ clov**e garlic, minced
- **Dash** of salt, pepper

Directions

1. Pre-heat oven to 400°F.
2. Toss butternut squash with canola oil, mild curry powder, cinnamon, brown sugar and pepper. Spread evenly on a roasting pan, and roast for 10 minutes (or until tender).
3. Cook barley according to directions on package.
4. Whisk together all salad dressing ingredients.
5. To assemble salad, top spinach with butternut squash, barley and pomegranates. Sprinkle salad with feta and walnuts to garnish. Serve with 1 tablespoon salad dressing.

Nutrition Information

Calories: 180 I Total fat: 11 g I Linolenic Acid: 100% I Carbohydrates: 20 g I Fiber: 4 g I Protein: 4 g I Sodium: 95 mg I Vitamin A: 54% I Vitamin C: 28% I Calcium: 10% I Iron: 12%

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Loaded Veggie Spaghetti

Prep Time: 20 Minutes | Cook Time: 20 Minutes | Serves: 4

This colorful fresh pasta dish is an excellent source of fiber and vegetables, making it a heart healthy entrée option. Using canola oil adds healthy omega-3 fatty acids, adding to the health benefits of this dish.

Ingredients

- **6 ounce** whole wheat pasta
- **2** bell peppers, diced
- **1** red onion, thinly sliced
- **1** clove garlic, minced
- **1** zucchini, diced
- **1** head broccoli, chopped
- **½ pound** shrimp, peeled
- **6** roma tomatoes, chopped
- **8** basil leaves, roughly chopped
- **4 ounce** fresh spinach
- **½ cup** freshly shredded Parmigiano-Reggiano cheese

Directions

1. Boil pasta according to directions on package.
2. Sauté the bell pepper, red onion and garlic in 2 teaspoons of canola oil.
3. When those vegetables are tender, add the zucchini, broccoli and peeled shrimp.
4. When shrimp is pink, add the chopped tomatoes, basil leaves and fresh spinach until the spinach wilts.
5. Place the pasta evenly over four plates. Serve the veggies and shrimp mixture over the pasta.
6. Sprinkle 2 tablespoons cheese over each plate.

Nutrition Information

Calories: 375 I Total fat: 10 g I Saturated Fat: 3 g I Carbohydrates: 47 g I Fiber: 9 g I Protein: 28 g I Sodium: 380 mg I Vitamin A: 120% I Vitamin C: 180% I Calcium: 38% I Iron: 27%

Healthy Substitutions

- Instead of whole wheat pasta, use spaghetti squash or zucchini noodles.

- Any meat can be substituted for shrimp. Try chicken for a lean option.

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Cranberry Salsa

Prep Time: 20 Minutes | Serves: 4 | Serving Size: ¾ Cup

A versatile salsa that is quick and simple to prepare. Enjoy with whole grain tortilla chips, over shrimp or as a garnish on white fish.

Ingredients

- **1 cup** cranberries, chopped
- **1 cup** pineapple, chopped (frozen or fresh)
- **½ cup** apple, chopped
- **½ cup** cucumber, chopped
- **½ cup** red onion, diced
- **½ cup** jalapeno, diced & seeds removed
- **¼ cup** fresh cilantro, roughly chopped
- **Dash** of salt
- **Splash** of fresh squeezed orange juice

Directions

1. Mix together all ingredients.

Nutrition Information

Calories: 55 I Total fat: 0 g I Saturated Fat: 0 g I Carbohydrates: 14 g I Fiber: 3 g I Added Sugar: 0 g I Protein: 1 g I Sodium: 40 mg I Vitamin C: 44 % I Calcium: 2% I Iron: 2%

Healthy Substitutions

If cranberries are not in season, consider using kiwi instead.

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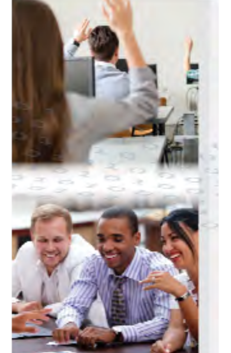

Questions?

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What are you taking away?

- What about dedicated movement is important to you?
- When looking forward, what do you envision for yourself?
- From this presentation what is one thing you are taking away?

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Resources

- Centers for Disease Control: www.cdc.gov
- American College of Sports Medicine: www.acsm.org
- National Academy of Sports Medicine: www.nasm.org
- ACE Fitness: www.acefitness.org
- SuperTracker: www.choosemyplate.gov

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The Message of the Yellow Airplane…A Family’s Journey with Cancer

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

The Message of the Yellow Airplane…A Family's Journey with Cancer

John Pfenninger, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

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Oral Cavity Lesions: the Good, the Bad, and the Ugly

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Oral Cavity Lesions: the Good, the Bad, and the Ugly

Neerav Goyal, MD, MPH

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Obesity: Addressing Long Term Follow-up and Complications from Surgical Interventions

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Obesity: Addressing Long Term Follow-up and Complications from Surgical Interventions

Ann Rogers, MD

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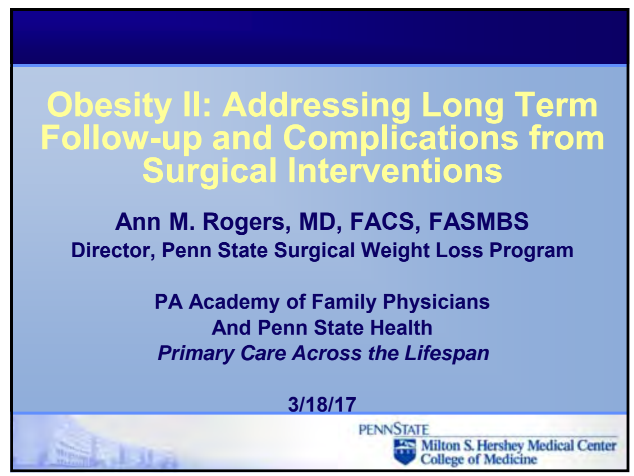
Obesity II: Addressing Long Term Follow-up and Complications from Surgical Interventions
Ann M. Rogers, MD, FACS, FASMBS
Director, Penn State Surgical Weight Loss Program
PA Academy of Family Physicians
And Penn State Health
Primary Care Across the Lifespan
3/18/17
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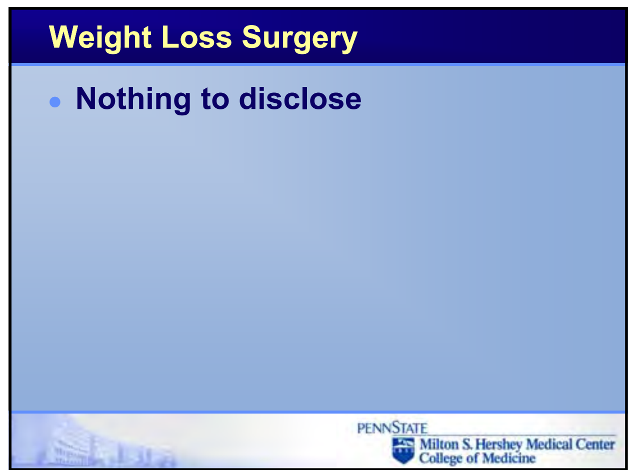
Weight Loss Surgery
Nothing to disclose
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Warning: Stigma Ahead
Warning
Shame
Ahead
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Myths

- Too risky!
- That's the easy way out!
- You could do it on your own!
- People with obesity are lazy and slothful.
- Bariatric patients regain all their weight.

Gastric bypass horror stories…

"My 600 Pound Life"

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Gastric bypass horror stories…

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Labeling Adds Stigma

Condition/Adjective	People 1st	Condition 1st
Autism/Autistic	4,030,000	579,000
Asthma/Asthmatic	3,570,000	125,000
Diabetes/Diabetic	4,920,000	230,000
Obesity/Obese	218,000	2,710,000

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People-first Language – Avoid Equating Patients with a Disease

Old	New
"The Obese"	People with Obesity
"An Obese Patient"	A Patient with Obesity
"Morbid Obesity"	Severe Obesity
"Candidate"	Patient who Qualifies
"Schizophrenics"	Patients with Schizophrenia

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"But how can you justify something so rash?..."

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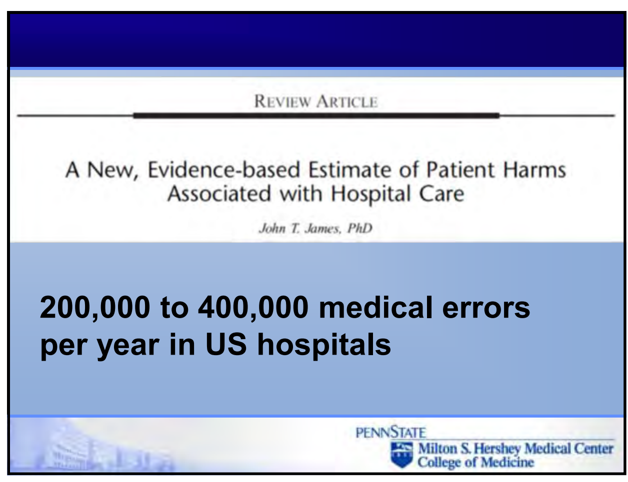
REVIEW ARTICLE
A New, Evidence-based Estimate of Patient Harms Associated with Hospital Care
John T. James, PhD
200,000 to 400,000 medical errors per year in US hospitals
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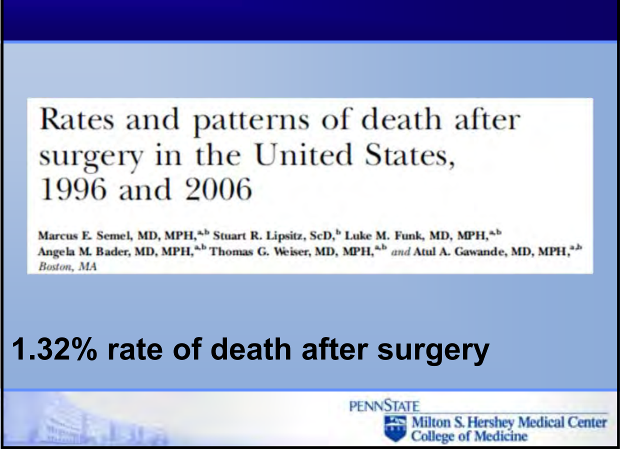
Rates and patterns of death after surgery in the United States, 1996 and 2006
Marcus E. Semel, MD, MPH, Stuart R. Lipsitz, ScD, Luke M. Funk, MD, MPH, Angela M. Bader, MD, MPH, Thomas G. Weiser, MD, MPH, and Atul A. Gawande, MD, MPH
Boston, MA
1.32% rate of death after surgery
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You too can die after a medical procedure!
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Review Article
Obesity and Trends in Life Expectancy
Helen L. Walls,1,2 Kathryn Backholer,1 Joseph Proietto,3 and John J. McNeil1
BMI categories
BMI distribution
Relative risk of mortality—males
Relative risk of mortality—females
Excess number of deaths per annum
Figure 1: Risk relationships between body weight and mortality.
But severe obesity cuts life expectancy by about 10 years…
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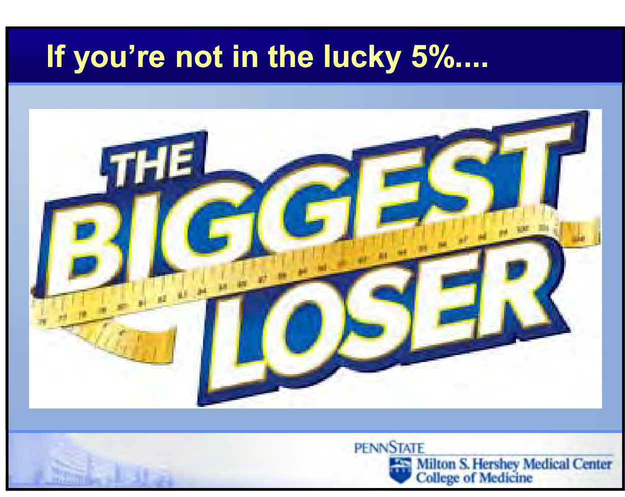
If you're not in the lucky 5%....
THE BIGGEST LOSER
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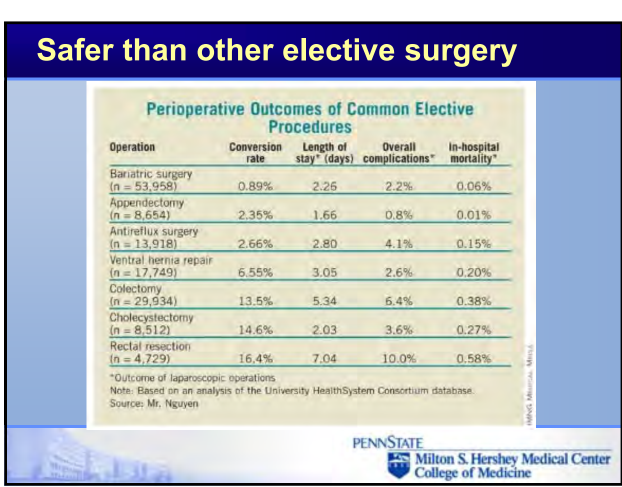
If you're not in the lucky 5%....

- Obesity is a chronic and recurrent disease
- WLS is the only effective way of losing a significant amount of weight and keeping it off long term
- The only hope for remission or improvement of diabetes and other weight-related conditions

Commonly Performed

Safer than other elective surgery



Perioperative Outcomes of Common Elective Procedures

Operation	Conversion rate	Length of stay* (days)	Overall complications*	In-hospital mortality*
Bariatric surgery (n = 53,958)	0.89%	2.26	2.2%	0.06%
Appendectomy (n = 8,654)	2.35%	1.66	0.8%	0.01%
Antireflux surgery (n = 13,918)	2.66%	2.80	4.1%	0.15%
Ventral hernia repair (n = 17,749)	6.55%	3.05	2.6%	0.20%
Colectomy (n = 29,934)	13.5%	5.34	6.4%	0.38%
Cholecystectomy (n = 8,512)	14.6%	2.03	3.6%	0.27%
Rectal resection (n = 4,729)	16.4%	7.04	10.0%	0.58%

*Outcome of laparoscopic operations
Note: Based on an analysis of the University HealthSystem Consortium database.
Source: Mr. Nguyen

Safer than other elective surgery

Perioperative Outcomes of Common Elective Procedures

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Safer than other elective surgery

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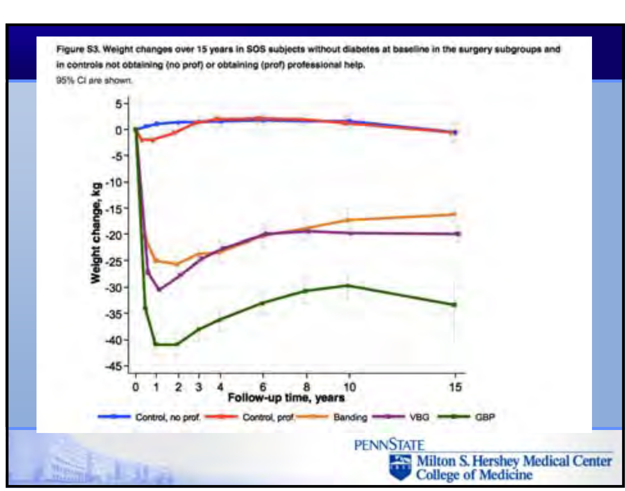

Do we really "choose" to have obesity?
Genetics
Gut hormones
Brain hormones
Processed food
Portion sizes
Advertising
Inactivity
Lack of sleep
Willpower
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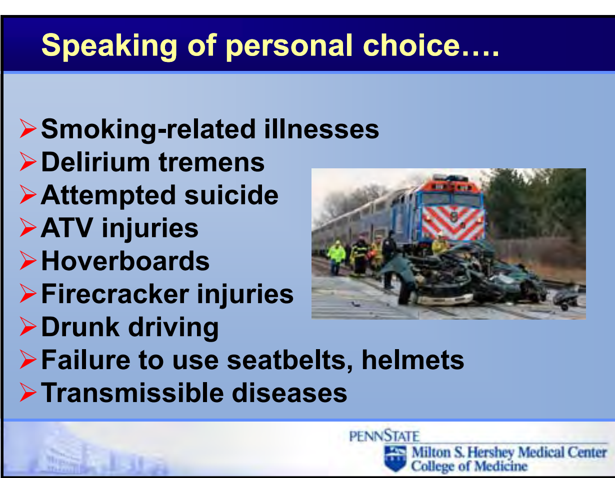
Speaking of personal choice….
Smoking-related illnesses
Delirium tremens
Attempted suicide
ATV injuries
Hoverboards
Firecracker injuries
Drunk driving
Failure to use seatbelts, helmets
Transmissible diseases
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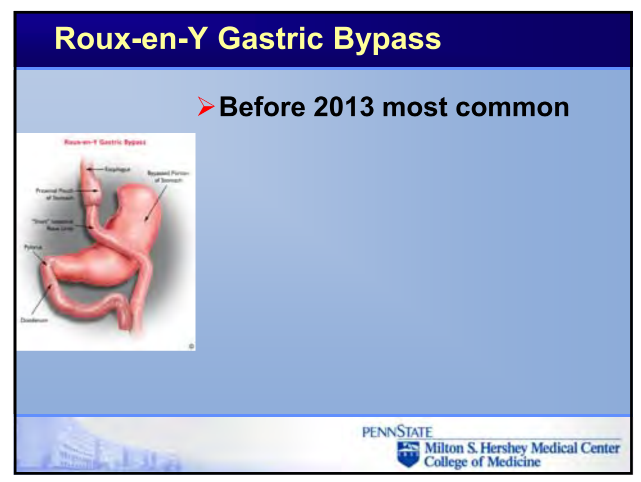
Roux-en-Y Gastric Bypass
Before 2013 most common
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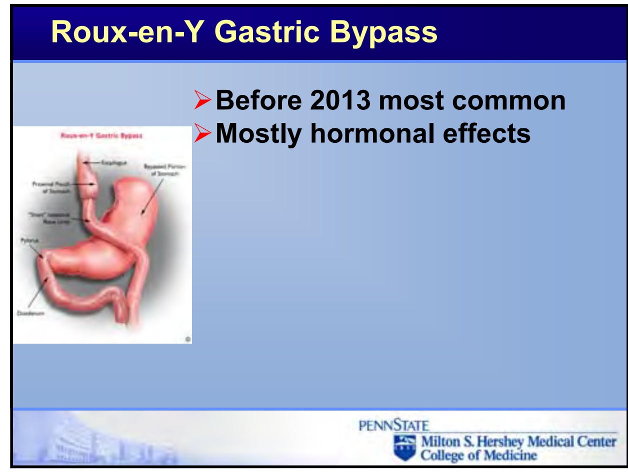
Roux-en-Y Gastric Bypass
Before 2013 most common
Mostly hormonal effects
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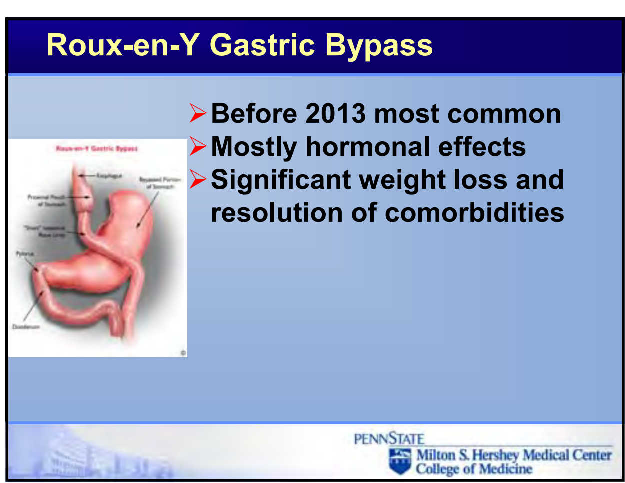
Roux-en-Y Gastric Bypass
Before 2013 most common
Mostly hormonal effects
Significant weight loss and resolution of comorbidities
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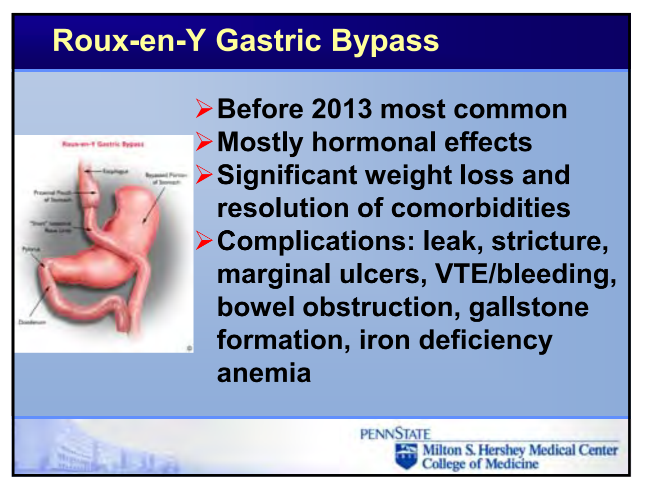
Roux-en-Y Gastric Bypass
Before 2013 most common
Mostly hormonal effects
Significant weight loss and resolution of comorbidities
Complications: leak, stricture, marginal ulcers, VTE/bleeding, bowel obstruction, gallstone formation, iron deficiency anemia
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Abdominal pain in bypass patients
Always deserves an initial evaluation
HERE WE GO AGAIN
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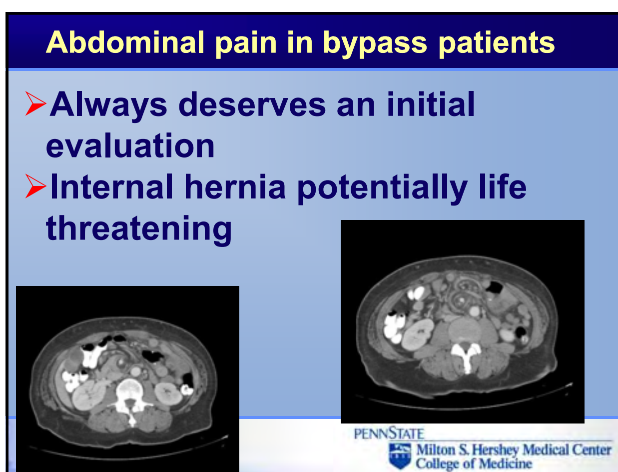
Abdominal pain in bypass patients
Always deserves an initial evaluation
Internal hernia potentially life threatening
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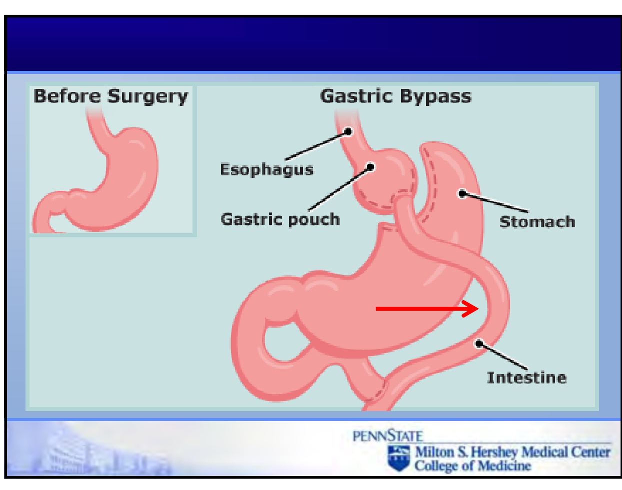
Before Surgery
Gastric Bypass
Esophagus
Gastric pouch
Stomach
Intestine
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Abdominal pain in bypass patients

- Always deserves an initial evaluation
- Internal hernia potentially life threatening
- Marginal ulcer

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Abdominal pain in bypass patients

- Always deserves an initial evaluation
- Internal hernia potentially life threatening
- Marginal ulcer
- Symptomatic gallstones

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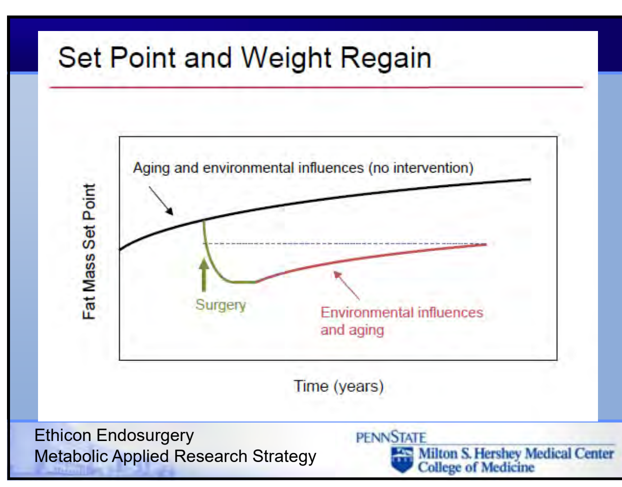
Abdominal pain in bypass patients

- ***Always*** deserves an initial evaluation

Can it be "transfer of addiction"??
Are they seeking narcs?
Sort that out later.


Set Point and Weight Regain
Aging and environmental influences (no intervention)
Fat Mass Set Point
Surgery
Environmental influences
and aging
Time (years)
Ethicon Endosurgery
Metabolic Applied Research Strategy
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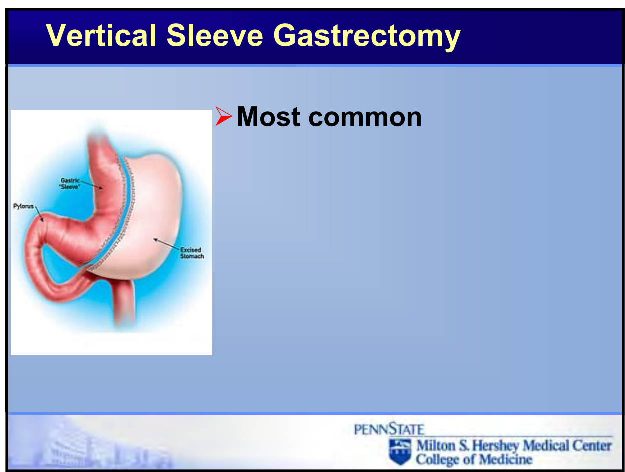
Vertical Sleeve Gastrectomy
Most common
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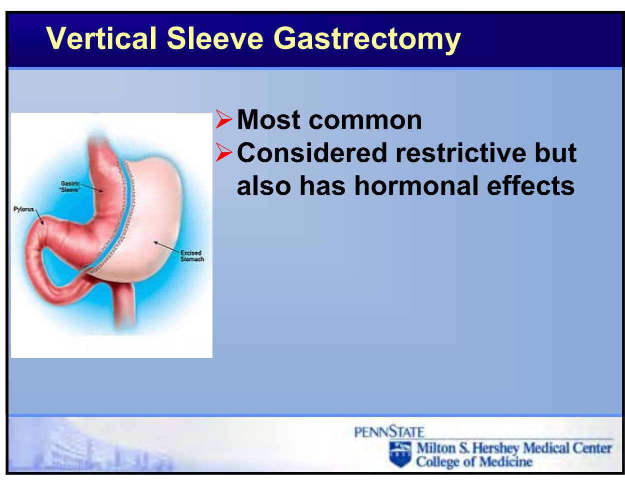
Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
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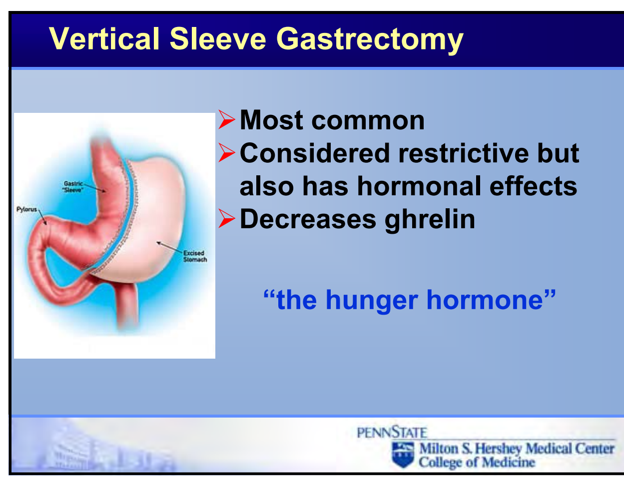
Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
Decreases ghrelin
“the hunger hormone”
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Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
Decreases ghrelin
Similar weight loss to GBP
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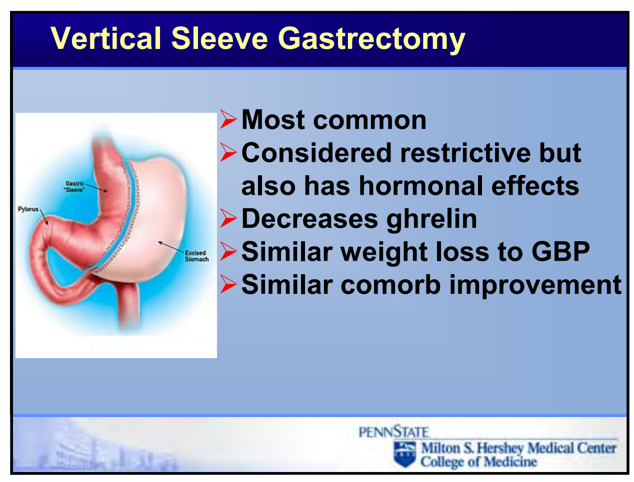
Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
Decreases ghrelin
Similar weight loss to GBP
Similar comorb improvement
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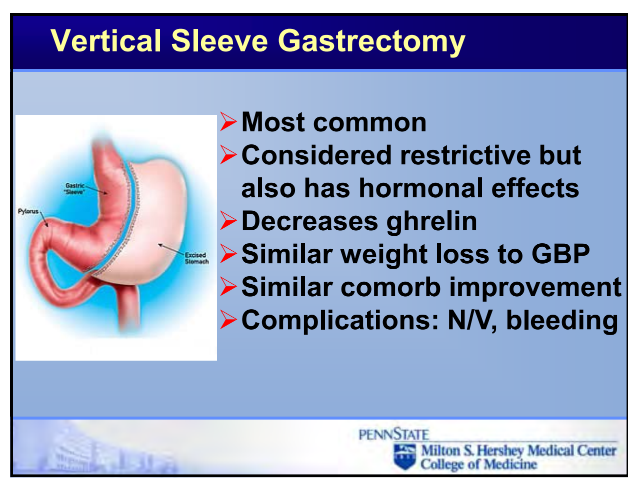
Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
Decreases ghrelin
Similar weight loss to GBP
Similar comorb improvement
Complications: N/V, bleeding
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Vertical Sleeve Gastrectomy
Most common
Considered restrictive but also has hormonal effects
Decreases ghrelin
Similar weight loss to GBP
Similar comorb improvement
Complications: N/V, bleeding
Fewer nutrient deficiencies
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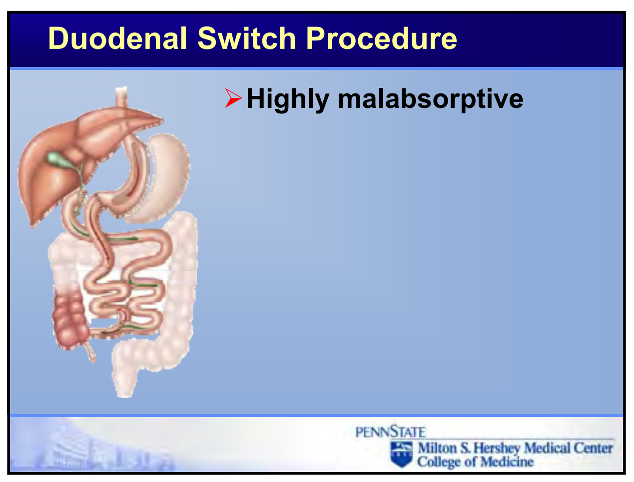
Duodenal Switch Procedure
Highly malabsorptive
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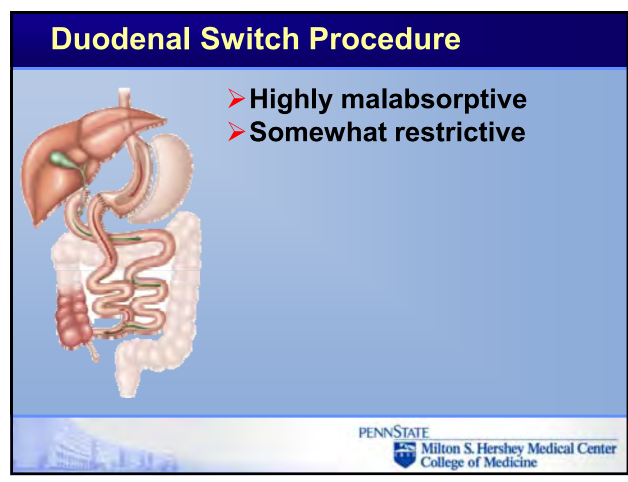
Duodenal Switch Procedure
Highly malabsorptive
Somewhat restrictive
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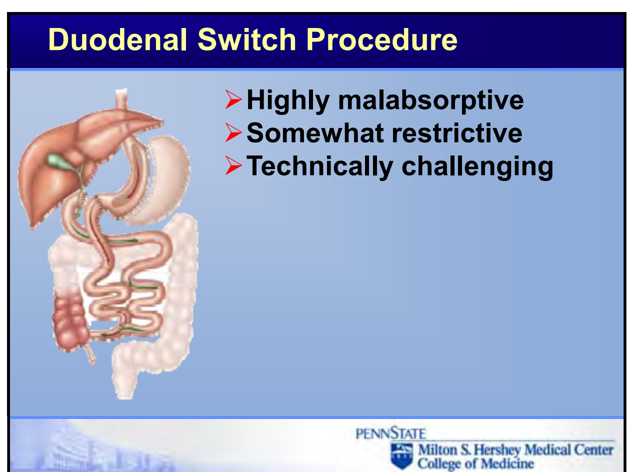
Duodenal Switch Procedure
Highly malabsorptive
Somewhat restrictive
Technically challenging
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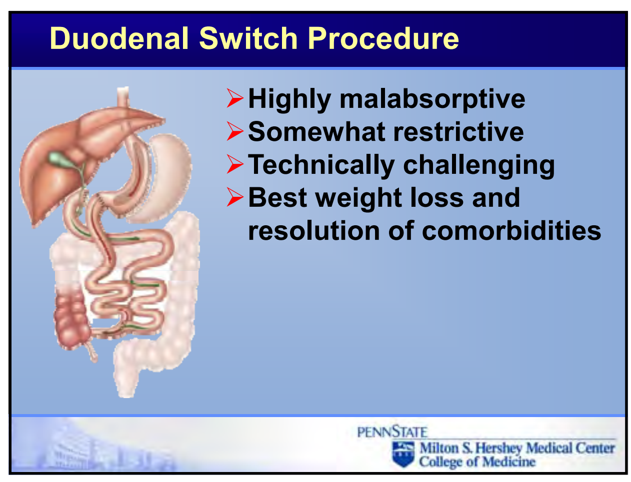
Duodenal Switch Procedure
Highly malabsorptive
Somewhat restrictive
Technically challenging
Best weight loss and resolution of comorbidities
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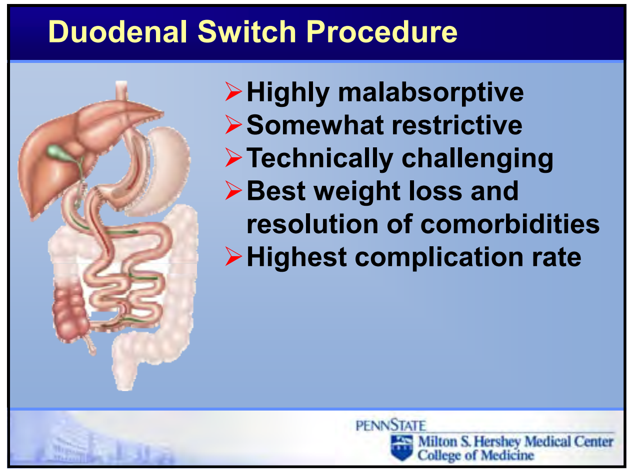
Duodenal Switch Procedure
➢Highly malabsorptive
➢Somewhat restrictive
➢Technically challenging
➢Best weight loss and resolution of comorbidities
➢Highest complication rate
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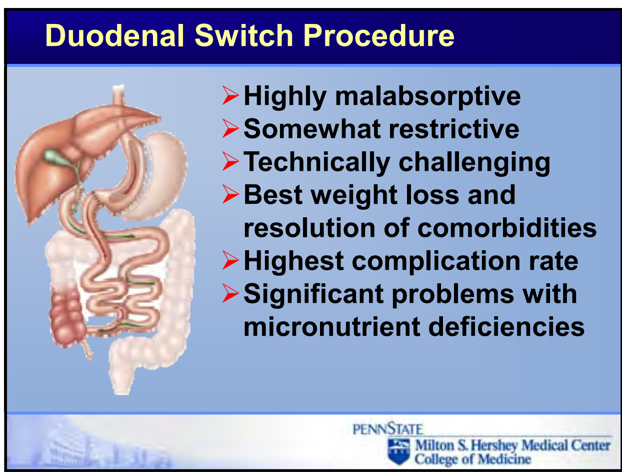
Duodenal Switch Procedure
➢Highly malabsorptive
➢Somewhat restrictive
➢Technically challenging
➢Best weight loss and resolution of comorbidities
➢Highest complication rate
➢Significant problems with micronutrient deficiencies
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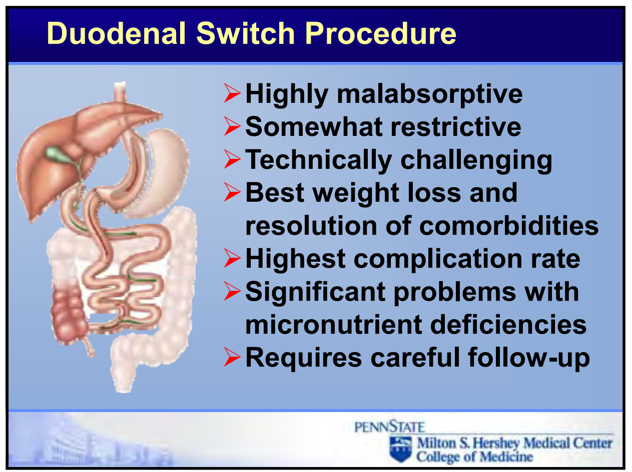
Duodenal Switch Procedure
➢Highly malabsorptive
➢Somewhat restrictive
➢Technically challenging
➢Best weight loss and resolution of comorbidities
➢Highest complication rate
➢Significant problems with micronutrient deficiencies
➢Requires careful follow-up
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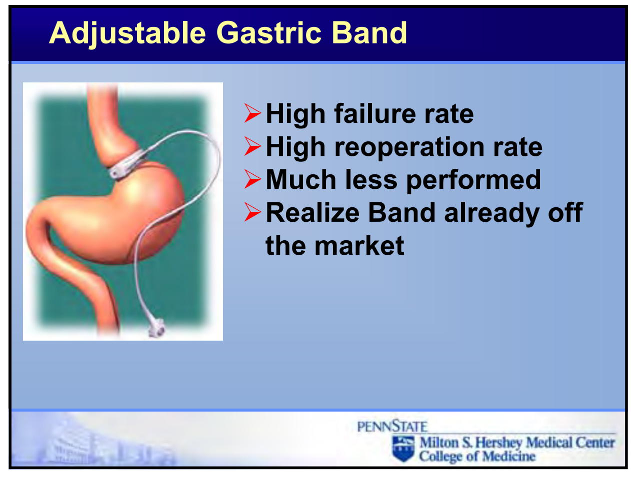

Longterm Care of Bariatric Patients

- Must take vitamins and minerals

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible

- Nutritional touch-ups as needed

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible
- Nutritional touch-ups as needed

- JOURNALING

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible
- Nutritional touch-ups as needed
- JOURNALING
- EXERCISE

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible
- Nutritional touch-ups as needed
- JOURNALING
- EXERCISE
- Support groups helpful

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Longterm Care of Bariatric Patients

- Must take vitamins and minerals
- Periodic surveillance blood tests
- GBP: X *nicotine/NSAIDS/steroids* if possible
- Nutritional touch-ups as needed
- JOURNALING
- EXERCISE
- Support groups helpful
- Because patients are generally healthier their medical care should be cheaper, easier, less complicated

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Longterm Care of Bariatric Patients

Labs should be drawn quarterly for the 1st year after surgery and every 6-12 months thereafter if stable

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Longterm Care of Bariatric Patients

Suggested Labs by Surgery type	Sleeve	Bypass	Duodenal Switch
SMA-21, CBC/plt with each visit	✓	✓	✓
Lipid eval every 6-12 mos based on risk	✓	✓	✓
DEXA at 2 years	✓	✓	✓
24 urine calcium excretion at 6 months then annually	✓	✓	✓
B12 regularly (MMA and HCy optional)	✓	✓	✓
Folic acid regularly (RBC folic acid optional)	----	✓	✓
Iron studies and ferritin level	✓	✓	✓
25- OH vitamin D	✓	✓	✓
iPTH	✓	✓	✓
Vitamin A (initially and every 6-12 months thereafter)	----	optional	✓
Copper, zinc and selenium with specific findings	----	✓	✓
Thiamine evaluation with specific findings	✓	✓	✓

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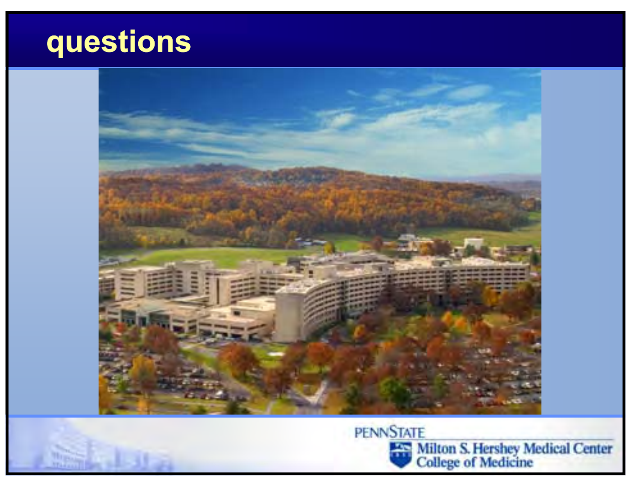
questions
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They’re Not So New Anymore…
Update on NOAC’s

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

They're Not So New Anymore…Update on NOAC's (Novel Oral Antiocoagulants)

Paul Ament, PharmD & Dan DiCola, MD

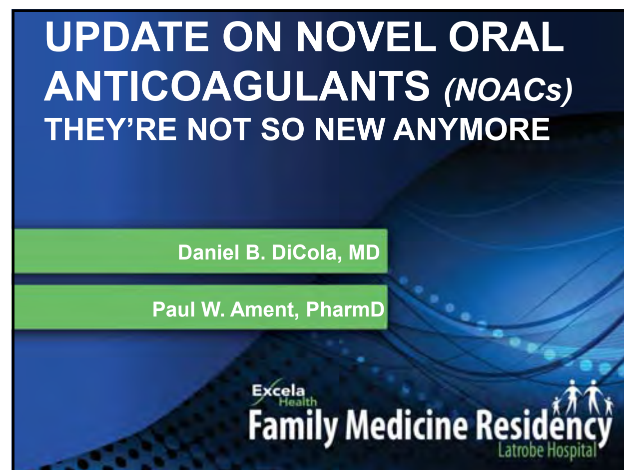
Disclosures:

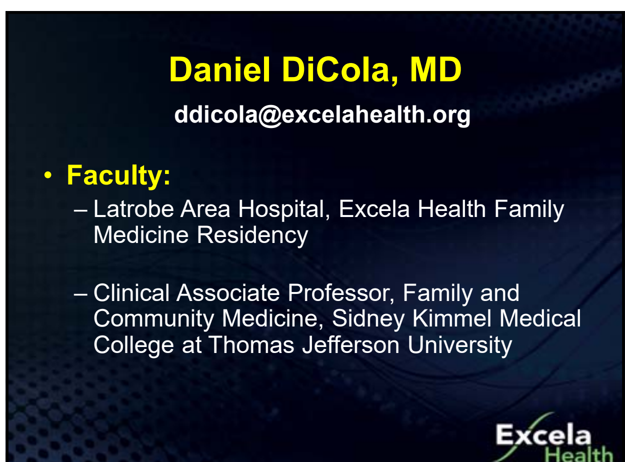
Paul Ament has sat on the speaker panel for Janssen, Merck, and Pfizer. No conflict of interests exists within this presentation.

Dr. DiCola has no disclosures and there are no conflicts of interest.

The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speakers indicated that the content of the presentation **<u>will include</u>** discussion of unapproved or investigational uses of products or devices.


UPDATE ON NOVEL ORAL ANTICOAGULANTS (NOACs)
THEY'RE NOT SO NEW ANYMORE
Daniel B. DiCola, MD
Paul W. Ament, PharmD
Excela Health
Family Medicine Residency
Latrobe Hospital


Daniel DiCola, MD
ddicola@excelahealth.org
• Faculty:
– Latrobe Area Hospital, Excela Health Family Medicine Residency
– Clinical Associate Professor, Family and Community Medicine, Sidney Kimmel Medical College at Thomas Jefferson University
Excela Health

Conflicts of Interest
• None
Excela Health

Goals

- Compare VKA (Vitamin K+ antagonist-Warfarin) and LMW (Heparin) with the direct oral anticoagulants (DOACs) (Apixaban, Dabigatran, Edoxaban, Rivaroxaban) in chronic atrial fibrillation and elective orthopedic prophylaxis and treatment of thromboembolic disease
- Review topics from the CHEST Guidelines that family doctors use daily in their practices.

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- Review Evolution of New Indications for DOACs
- Review Status of Reversal Agents for DOACs
- DOAC versus DOAC

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- Review Common Anticoagulation Conditions where DOACs may not be the Best Agent
- Case Presentations

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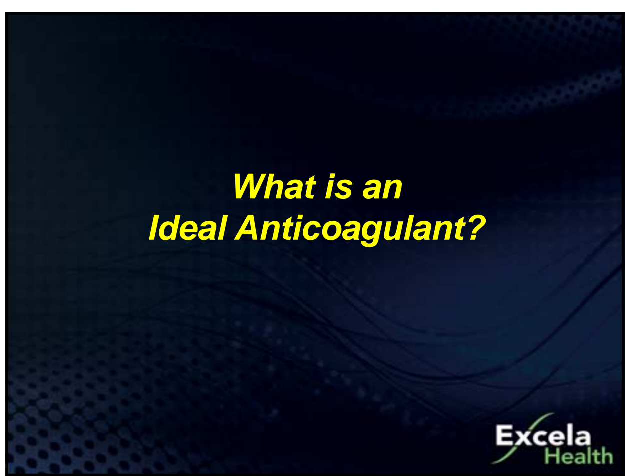

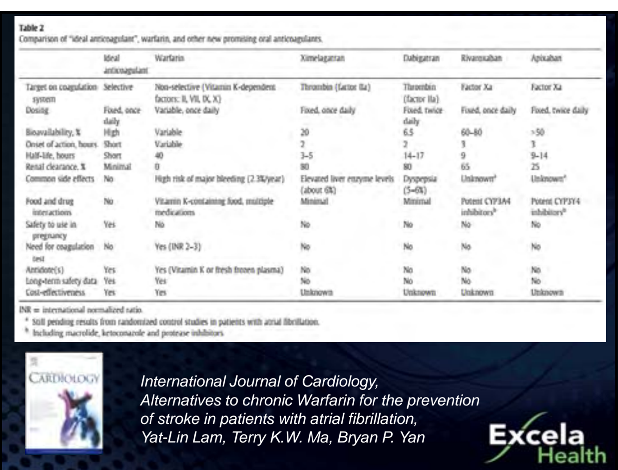

Table 2
Comparison of "ideal anticoagulant", warfarin, and other new promising oral anticoagulants.

	Ideal anticoagulant	Warfarin	Ximelagatran	Dabigatran	Rivaroxaban	Apixaban
Target on coagulation system	Selective	Non-selective (Vitamin K-dependent factors: II, VII, IX, X)	Thrombin (factor IIa)	Thrombin (factor IIa)	Factor Xa	Factor Xa
Dosing	Fixed, once daily	Variable, once daily	Fixed, once daily	Fixed, twice daily	Fixed, once daily	Fixed, twice daily
Bioavailability, %	High	Variable	20	6.5	60–80	>50
Onset of action, hours	Short	Variable	2	2	3	3
Half-life, hours	Short	40	3–5	14–17	9	9–14
Renal clearance, %	Minimal	0	80	80	65	25
Common side effects	No	High risk of major bleeding (2.3%/year)	Elevated liver enzyme levels (about 6%)	Dyspepsia (5–6%)	Unknown[a]	Unknown[a]
Food and drug interactions	No	Vitamin K-containing food, multiple medications	Minimal	Minimal	Potent CYP3A4 inhibitors[b]	Potent CYP3Y4 inhibitors[b]
Safety to use in pregnancy	Yes	No	No	No	No	No
Need for coagulation test	No	Yes (INR 2–3)	No	No	No	No
Antidote(s)	Yes	Yes (Vitamin K or fresh frozen plasma)	No	No	No	No
Long-term safety data	Yes	Yes	No	No	No	No
Cost-effectiveness	Yes	Yes	Unknown	Unknown	Unknown	Unknown

INR = international normalized ratio.
[a] Still pending results from randomized control studies in patients with atrial fibrillation.
[b] Including macrolide, ketoconazole and protease inhibitors.

An Ideal Anticoagulant

- Infrequent or No Monitoring
- One Size Fits All – Fixed Dose
- Minimal Drug Interactions
- Minimal Food Interactions
- Oral – Quick Onset

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Health

An Ideal Anticoagulant

- 100% Effective
- Reversible – Specific Antidote
- Once Daily
- Low Incidence of Heparin Induced Thrombocytopenia (HIT)

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An Ideal Anticoagulant

- Specific Antidote – Rapid
- No Evidence of Hypercoagulability
- No Need for Bridging
- Selective

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Periprocedural Anticoagulation Management of Patients with Thrombophilia

Ewa M. Wysokinska, MD, Waldemar E. Wysokinski, MD, PhD, Siva Ketha, MD, Scott Litin, MD, Paul Daniels, MD, Joshua Slusser, BS, David O. Hodge, MS, John A. Heit, MD, Robert D. McBane II, MD

An Ideal Anticoagulant

- Clearance – Multi-Organ Clearance
- Long-term Safety Data

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Coumadin, *the Devil We Know*

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- Warfarin is Under Prescribed
- Admissions for Drug Toxicity – Coumadin Always in Top 5

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Evaluation of Dose-Reduced Direct Oral Anticoagulant Therapy
Megan E. Barra, PharmD, John Fanikos, RPh, MBA, Jean M. Connors, MD, Katelyn W. Sylvester, PharmD, Gregory Piazza, MD, MS, Samuel Z. Goldhaber, MD
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Atrial Fibrillation
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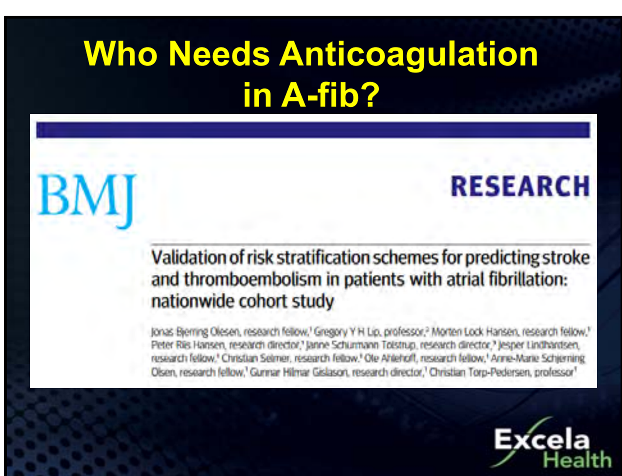

Who Needs Anticoagulation in A-fib?
BMJ
RESEARCH
Validation of risk stratification schemes for predicting stroke and thromboembolism in patients with atrial fibrillation: nationwide cohort study
Jonas Bjerring Olesen, research fellow,[1] Gregory Y H Lip, professor,[2] Morten Lock Hansen, research fellow,[1] Peter Riis Hansen, research director,[1] Janne Schurmann Tolstrup, research director,[3] Jesper Lindhardsen, research fellow,[1] Christian Selmer, research fellow,[1] Ole Ahlehoff, research fellow,[1] Anne-Marie Schjerning Olsen, research fellow,[1] Gunnar Hilmar Gislason, research director,[1] Christian Torp-Pedersen, professor[1]
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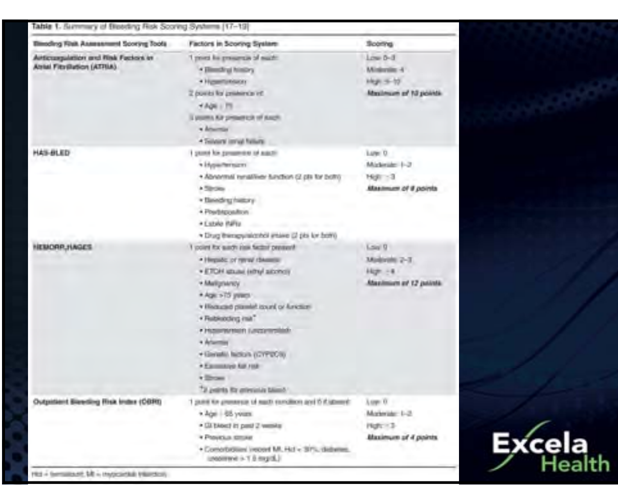
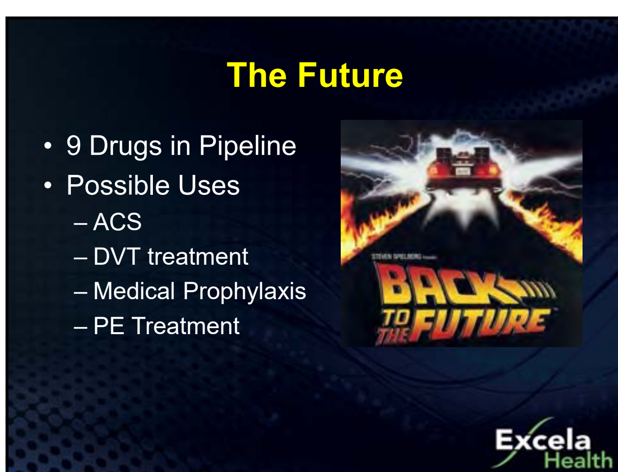


Table 1. Summary of Bleeding Risk Scoring Systems [17–19]

Bleeding Risk Assessment Scoring Tools	Factors in Scoring System	Scoring
Anticoagulation and Risk Factors in Atrial Fibrillation (ATRIA)	1 point for presence of each: • Bleeding history • Hypertension 2 points for presence of: • Age ≥ 75 3 points for presence of each: • Anemia • Severe renal failure	Low: 0–3 Moderate: 4 High: 5–10 ***Maximum of 10 points***
HAS-BLED	1 point for presence of each: • Hypertension • Abnormal renal/liver function (2 pts for both) • Stroke • Bleeding history • Predisposition • Labile INRs • Drug therapy/alcohol intake (2 pts for both)	Low: 0 Moderate: 1–2 High: ≥ 3 ***Maximum of 9 points***
HEMORR$_2$HAGES	1 point for each risk factor present: • Hepatic or renal disease • ETOH abuse (ethyl alcohol) • Malignancy • Age >75 years • Reduced platelet count or function • Rebleeding risk* • Hypertension (uncontrolled) • Anemia • Genetic factors (CYP2C9) • Excessive fall risk • Stroke *2 points for previous bleed	Low: 0 Moderate: 2–3 High: ≥ 4 ***Maximum of 12 points***
Outpatient Bleeding Risk Index (OBRI)	1 point for presence of each condition and 0 if absent: • Age ≥ 65 years • GI bleed in past 2 weeks • Previous stroke • Comorbidities (recent MI, Hct < 30%, diabetes, creatinine > 1.5 mg/dL)	Low: 0 Moderate: 1–2 High: ≥ 3 ***Maximum of 4 points***

Hct = hematocrit; MI = myocardial infarction

HAS-BLED	1 point for presence of each: • Hypertension • Abnormal renal/liver function (2 pts for both) • Stroke • Bleeding history • Predisposition • Labile INRs • Drug therapy/alcohol intake (2 pts for both)	Low: 0 Moderate: 1–2 High: ≥ 3 ***Maximum of 9 points***


The Future
• 9 Drugs in Pipeline
• Possible Uses
– ACS
– DVT treatment
– Medical Prophylaxis
– PE Treatment
BACK TO THE FUTURE
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blood
Leading the way in experimental and clinical research in hematology
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Evolving use of new oral anticoagulants for treatment of venous thromboembolism
Calvin H. Yeh, Peter L. Gross and Jeffrey I. Weitz
Excela Health

R75
Pradaxa
dabigatran etexilate
Eliquis
(apixaban) tablets
Xarelto
rivaroxaban tablets
Savaysa
(edoxaban) tablets
Excela Health

Paul W. Ament, PharmD

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- **Manager**: Clinical Pharmacy, Excela Health
- **Faculty**: Latrobe Area Hospital, Excela Health Family Medicine Residency;

  Associate Clinical Preceptor of Pharmaceutical Sciences in the School of Pharmacy, Department of Pharmacy and Therapeutics, University of Pittsburgh;

  Adjunct Clinical Instructor in the Department of Clinical Pharmacy, Mylan School of Pharmacy, Duquesne University

Disclosure

What Anticoagulant Am I Thinking Of?

- New Pharmacologic Agent
  - *Alternative for Standard of Care*
  - *Drug Pricing >> than Standard of Care*
- FDA Indications Continue to Expand
- Fixed Dosing
  - *Dose Adjustment for Compromised Renal FXN*
- No Monitoring
- No Approved Reversal Agent

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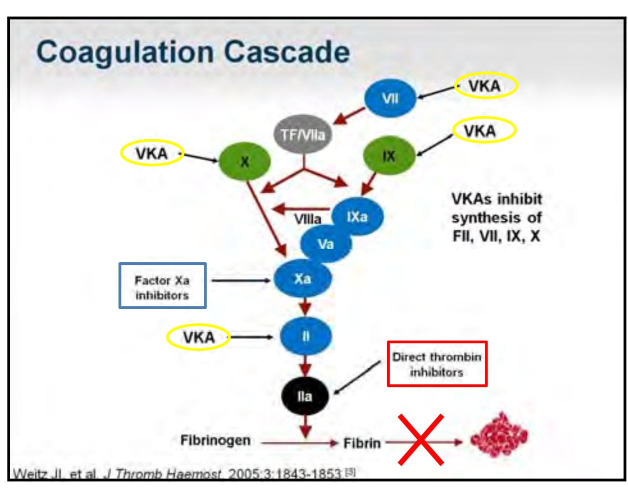


	ORTHOPEDIC PROPHYLAXIS	NON-VALVULAR A.FIB	ACUTE DVT / PE	RISK REDUCTION VTE
APIXABAN	2.5mg BID Knee x12 Days Hip x35 Days	5mg BID 2.5mg BID (2 of 3): Age >80 Creat >1.5mg/dl Wt <60Kg ESRD (same) ** No Clinical Data CrCl <30ml/min	10mg BID x7 Days =>5mg BID ** No Clinical Data CrCl <30ml/min	2.5mg BID ** No Clinical Data CrCl <30ml/min
DABIGATRAN	Hip only 110mg Day 1 => 220mg QDay x28-35 Days ** CrCl >30ml/min	CrCl >30ml/min 150mg BID CrCl 15-30ml/min 75mg BID	*AFTER* 5-10 Days parenteral anticoagulation 150mg BID ** CrCl >30ml/min	150mg BID ** CrCl >30ml/min
EDOXABAN		CrCl 50-95ml/min 60mg QDay CrCl 15-50ml/min 30mg QDay **Contraindicated with CrCl >95ml/min	*AFTER* 5-10 Days parenteral anticoagulation CrCl >50ml/min => 60mg QDay CrCl 15-50ml/min; Wt <60Kg; P-gp inhibitors => 30mg QDay	
RIVAROXABAN	10mg QDay Knee x12 Days Hip x35 Days ** CrCl >30ml/min	CrCl >50ml/min 20mg QDay with evening meal CrCl 15-50ml/min 15mg QDay with evening meal ESRD 15mg QDay with evening meal ** No Clinical Data CrCl <30ml/min	15mg BID x21 Days => 20mg QDay Take all doses with food ** No Clinical Data CrCl <30ml/min	20mg QDay with food ** No Clinical Data CrCl <30ml/min

Pharmacokinetic Comparison

	Dabigatran	Apixaban	Edoxaban	Rivaroxaban
MOA	Direct Thrombin Inhibitor	Factor Xa Inhibitor	Factor Xa Inhibitor	Factor Xa Inhibitor
Bioavailability	6-8%	50%	60%	80%
Time to Onset	2 hrs	3 hrs	1-2 hrs	2-3 hrs
Half-life	14-17 hrs	7-11hrs	9-11 hrs	5-9 hrs (11-13 hrs elderly)
Renal Excretion	80%	27%	35-50%	33%

Interactions

	Apix	Dabi	Edox	Rivarox
Induce CYP / P-gp Rifampin / Carbamaz / Phenytoin / St John's Wort	Avoid	Avoid (Rifampin)	Avoid (Rifampin)	Avoid
Inhibit CYP / P-gp Azoles (Keto/Itra); clarithromycin; "Vir" HIV Agents	⇓ Dose by 50% (avoid if on 2.5mg)	CrCl 30-50 ⇓ 75 mg BID (Dronedarone/ Keto) (avoid if CrCl <30)	VTE only 30mg Qday (verapamil, quinidine, macrolide, itra / keto)	Avoid (Conivaptan)
Anticoag / NSAID/ Antiplatelet / SSRI / SNRI	⇑ Bleeding	⇑ Bleeding	⇑ Bleeding	⇑ Bleeding
Weak Inhibitor CYP / P-gp				Risk vs Benefit CrCl <80 *and* Azithro/ Dronedarone/ Diltiazem/Verapamil

Antithrombotic Therapy for Atrial Fibrillation:
Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

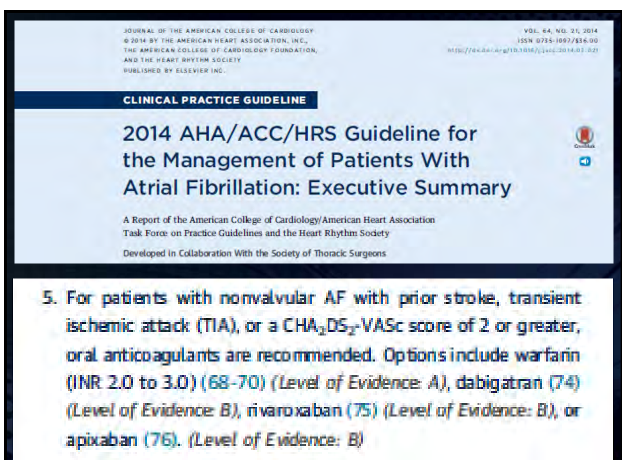
John J. You, MD; Daniel E. Singer, MD; Patricia A. Howard, PharmD; Deirdre A. Lane, PhD; Mark H. Eckman, MD; Margaret C. Fang, MD, MPH; Elaine M. Hylek, MD, MPH; Sam Schulman, MD, PhD; Alan S. Go, MD; Michael Hughes, PhD; Frederick A. Spencer, MD; Warren J. Manning, MD; Jonathan L. Halperin, MD; Gregory Y. H. Lip, MD

Author and Funding Information

Chest. 2012;141(2_suppl):e531S-e575S. doi:10.1378/chest.11-2304

Text Size: A A A

Results: For patients with nonrheumatic AF, including those with paroxysmal AF, who are (1) at low risk of stroke (eg, $CHADS_2$ [congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, prior stroke or transient ischemic attack] score of 0), we suggest no therapy rather than antithrombotic therapy, and for patients choosing antithrombotic therapy, we suggest aspirin rather than oral anticoagulation or combination therapy with aspirin and clopidogrel; (2) at intermediate risk of stroke (eg, $CHADS_2$ score of 1), we recommend oral anticoagulation rather than no therapy, and we suggest oral anticoagulation rather than aspirin or combination therapy with aspirin and clopidogrel; and (3) at high risk of stroke (eg, $CHADS_2$ score of ≥ 2), we recommend oral anticoagulation rather than no therapy, aspirin, or combination therapy with aspirin and clopidogrel. Where we recommend or suggest in favor of oral anticoagulation, we suggest dabigatran 150 mg bid rather than adjusted-dose vitamin K antagonist therapy.



JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
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PUBLISHED BY ELSEVIER INC.

VOL. 64, NO. 21, 2014

CLINICAL PRACTICE GUIDELINE

2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation: Executive Summary

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society

Developed in Collaboration With the Society of Thoracic Surgeons

5. For patients with nonvalvular AF with prior stroke, transient ischemic attack (TIA), or a CHA_2DS_2-VASc score of 2 or greater, oral anticoagulants are recommended. Options include warfarin (INR 2.0 to 3.0) (68-70) *(Level of Evidence: A)*, dabigatran (74) *(Level of Evidence: B)*, rivaroxaban (75) *(Level of Evidence: B)*, or apixaban (76). *(Level of Evidence: B)*

Antithrombotic Therapy for VTE Disease

CHEST Guideline and Expert Panel Report

Clive Kearon, MD, PhD; Elie A. Akl, MD, MPH, PhD; Joseph Ornelas, PhD; Allen Blaivas, DO, FCCP; David Jimenez, MD, PhD, FCCP; Henri Bounameaux, MD; Menno Huisman, MD, PhD; Christopher S. King, MD, FCCP; Timothy A. Morris, MD, FCCP; Namita Sood, MD, FCCP; Scott M. Stevens, MD; Janine R. E. Vintch, MD, [...] ller, MD; and COL Lisa Moores, MD, FCCP

CHEST 2016; 149(2):315-352

RESULTS: For VTE and no cancer, as long-term anticoagulant therapy, we suggest dabigatran (Grade 2B), rivaroxaban (Grade 2B), apixaban (Grade 2B), or edoxaban (Grade 2B) over vitamin K antagonist (VKA) therapy, and suggest VKA therapy over low-molecular-weight heparin (LMWH; Grade 2C). For VTE and cancer, we suggest LMWH over VKA (Grade 2B), dabigatran (Grade 2C), rivaroxaban (Grade 2C), apixaban (Grade 2C), or edoxaban (Grade

Transition to DOAC

	Warfarin	LMWH / UFH
Apixaban	**Initiate INR < 2**	**Initiate when next scheduled dose due**
Dabigatran	**Initiate INR < 2**	**Initiate when next scheduled dose due**
Edoxaban	**Initiate INR <2.5**	**DC UFH x4H; Initiate when next LMWH dose due**
Rivaroxaban	**Initiate INR <3**	**Initiate when next scheduled dose due**

Preop Interruption (Last Dose)

Agent	CrCl	Low Risk	High Risk
Dabigatran	>50	2 days	3 days
	31-50	3 days	4 days
	≤30	4 days	6 days
Apixaban	>30	2 days	3 days
	≤30	2 days	4 days
Edoxaban	>31	2 days	3 days
	≤30	3 days	4 days
Rivaroxaban	>31	2 days	3 days
	≤30	3 days	4 days

Low = Colonoscopy, Breast biopsy, minor orthopedic, cardiac cath
High = Surgery: Abdominal, Cardiac, Kidney, Neuro, Prostate, Spinal, Vascular

Am J Med 2016;129:S1-29.

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Bleeding Management

- Discontinue: Short T ½ ⇒ Eliminated 24-48 hours
- Supportive Management
  - FFP (Does Not Reverse DTI / Xa)
  - Compress Bleeding Sites
  - Gastric Lavage / Charcoal < 3 Hours of Dose
  - ? Dialysis => Dabigatran

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Bleeding Management

- Idarucizumab (Praxbind)
- Monoclonal Antibody
  - Binds to Dabigatran Neutralizing Effects
  - Higher Affinity to Dabi vs Thrombin
  - Near 100% Reversal at 4 hours
- Indications:
  - Life-threatening Bleed
  - Reversal for Urgent / Emergency Surgery
- Dose: 5gm IV Bolus or Infusion
- Cost = $3,500

Praxbind idarucizumab

Bleeding Management

- <u>P</u>rothrombin <u>C</u>omplex <u>C</u>oncentrate (Kcentra®)
  - FDA Approved for Warfarin Reversal
  - 25 – 50 units / kg
  - 5,000 units = $7,500
- Andexanet
  - Binds to Xa Molecule
  - Neutralization within Minutes
  - Phase II Studies with Xa Inhibitors / Enoxaparin
  - FDA Denied Approval August 2016

ANNEXa

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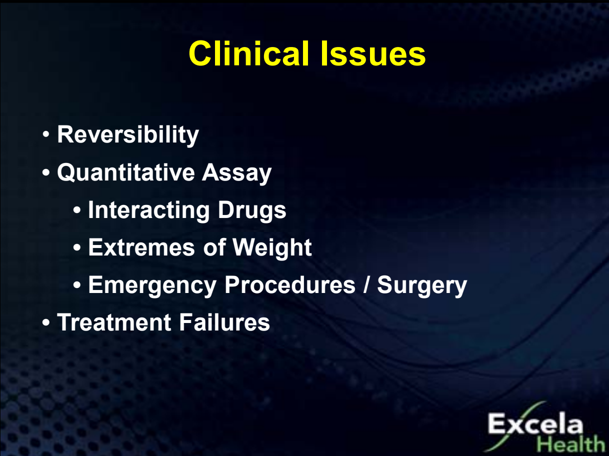

When To Use Warfarin

- Compromised Renal Function
  - Studies Excluded CrCl <25 ml/min
  - Apixaban / Rivaroxaban PI => ESRD
    - No Clinical Data
- Valvular Heart Disease
- DAPT => ??
- Satisfied with Warfarin
  - If It's Fixed Don't Break It

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Monthly Cost

• Warfarin		$4
• Copay for INR		$??
• Apixaban	5mg	$370
• Dabigatran	150mg	$350
• Edoxaban	60mg	$300
• Rivaroxaban	20mg	$370

Retail Pricing Cardinal March 2017

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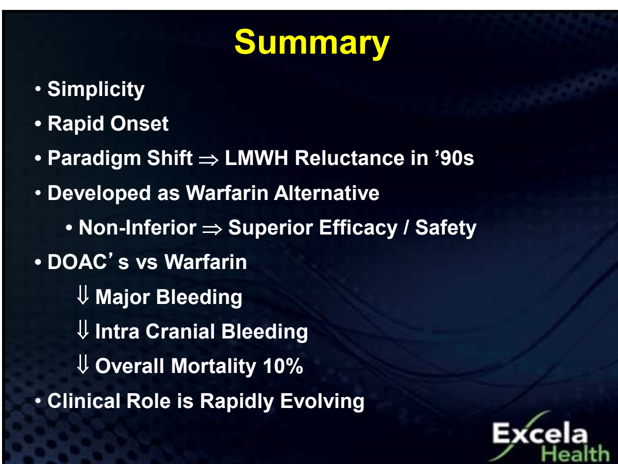

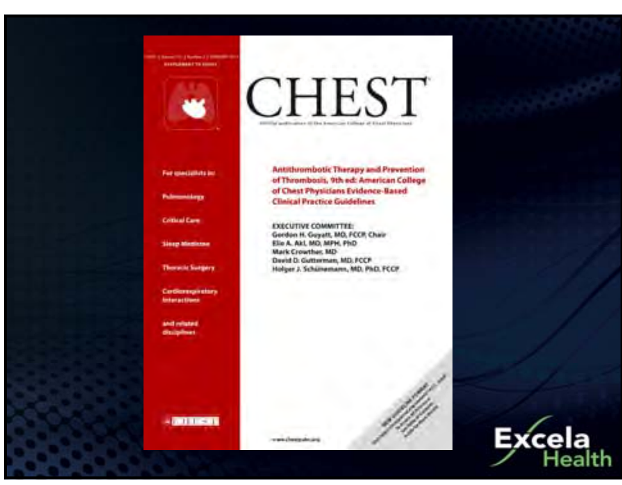

- DOAC vs DOAC—Limited Head to Head Data
- Kidney Dysfunction
- Coronary Artery Disease
- GERD
- GI Bleeding

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- Antidote
- Drug Interactions
- RV Dysfunction

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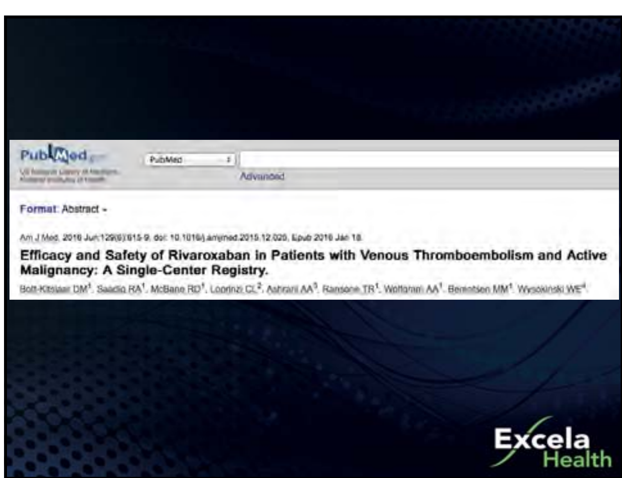
PubMed
PubMed
Advanced
Format: Abstract
Am J Med. 2016 Jun;129(6):615-9. doi: 10.1016/j.amjmed.2015.12.020. Epub 2016 Jan 18.
Efficacy and Safety of Rivaroxaban in Patients with Venous Thromboembolism and Active Malignancy: A Single-Center Registry.
Bott-Kitslaar DM[1], Saadiq RA[1], McBane RD[1], Loprinzi CL[2], Ashrani AA[3], Ransone TR[1], Wolfram AA[1], Berentsen MM[1], Wysokinski WE[4].
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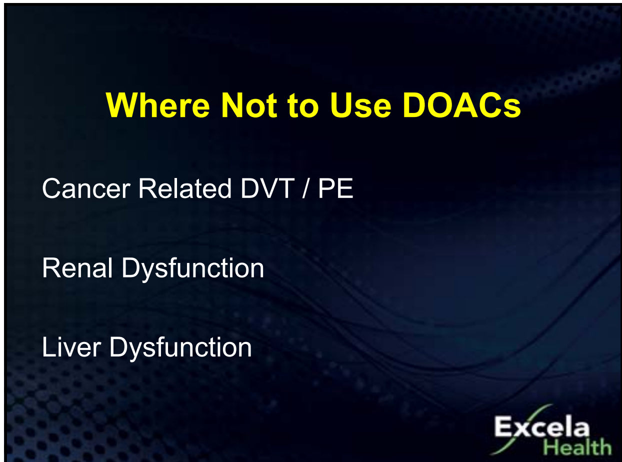
Where Not to Use DOACs
Cancer Related DVT / PE
Renal Dysfunction
Liver Dysfunction
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• Valvular Atrial Fibrillation
• Unstable Medical Patients
• Hypercoagulable State
• Extensive Clot Burden
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The NEW ENGLAND JOURNAL of MEDICINE
HOME
ARTICLES & MULTIMEDIA
ISSUES
SPECIALTIES & TOPICS
FOR AUTHORS
ORIGINAL ARTICLE
Dabigatran versus Warfarin in Patients with Mechanical Heart Valves
John W. Eikelboom, M.D., Stuart J. Connolly, M.D., Martina Brueckmann, M.D., Christopher B. Granger, M.D., Arie P. Kappetein, M.D., Ph.D., Michael J. Mack, M.D., Jon Blatchford, C.Stat., Kevin Devenny, B.Sc., Jeffrey Friedman, M.D., Kelly Guiver, M.Sc., Ruth Harper, Ph.D., Yasser Khder, M.D., Maximilian T. Lobmeyer, Ph.D., Hugo Maas, Ph.D., Jens-Uwe Voigt, M.D., Maarten L. Simoons, M.D., and Frans Van de Werf, M.D., Ph.D., for the RE-ALIGN Investigators
N Engl J Med 2013; 369:1206-1214 | September 26, 2013 | DOI: 10.1056/NEJMoa1300615
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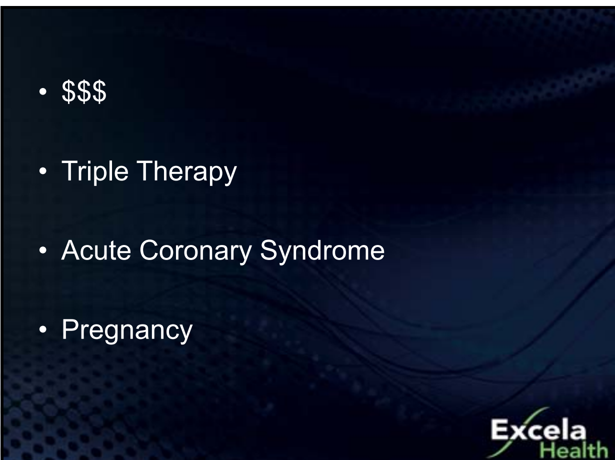
$$$
Triple Therapy
Acute Coronary Syndrome
Pregnancy
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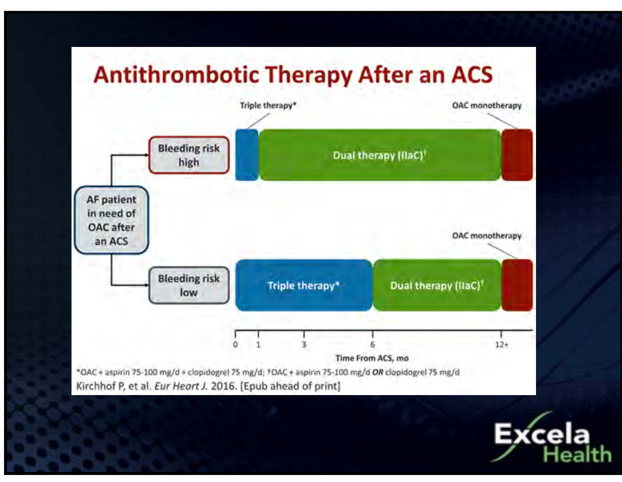
Antithrombotic Therapy After an ACS
Triple therapy*
OAC monotherapy
Bleeding risk high
Dual therapy (IIaC)†
AF patient in need of OAC after an ACS
OAC monotherapy
Bleeding risk low
Triple therapy*
Dual therapy (IIaC)†
0
1
3
6
12+
Time From ACS, mo
*OAC + aspirin 75-100 mg/d + clopidogrel 75 mg/d; †OAC + aspirin 75-100 mg/d OR clopidogrel 75 mg/d
Kirchhof P, et al. Eur Heart J. 2016. [Epub ahead of print]
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Case Study

- BB is a generally healthy 75 yo wf who suffered an unprovoked saddle PE with RV dysfunction > than 5 years ago. She has mild HTN controlled with single agent therapy. She also has GERD, EGD proven esophagitis, which is only controlled with Nexium brand necessary requiring frequent calls for pre authorization. Her husband has rheumatoid arthritis and prostate cancer. He is maintained on immunosuppressant therapy

Case Study

- and hormonal therapy. They fall into the donut hole each fall. She has never had an INR out of therapeutic range and comes to our Coumadin Clinic. She lives 2 blocks from the hospital. She asks about switching to a DOAC ???
- How often do you need to check her INR??

Case Study

- 80 yo white male with A-fib. He suffered a MCA CVA, probable embolic due to A-fib. He lives alone, with his nearest relative residing in California. She is an RN. He can no longer drive due to visual field cuts. He had a bleeding ulcer 7 years ago with no further episodes due to lifestyle changes. Patient has HTN controlled with 1 agent

- *Does he need anticoagulation?? Agent ??*

Case Study

- CK 60yr male; HX HTN, CVA, pre-diabetes, paroxysmal A. flutter, Transient SVT, ESRD on hemodialysis
- $CHADS_2VASC$ = 3
- Patient adamantly refuses warfarin TX: Father was on warfarin and experienced fatal bleed
  - "I won't take warfarin Doc…find something else"
- TX Guidelines recommend warfarin for CrCl <30ml/min
- Clinical Trials for DOACs Excluded CrCl <25ml/min
- Apixaban and Rivaroxaban PI includes ESRD
  - Apixaban 2.5mg or 5mg BID
  - Rivaroxaban 15mg QDay with food

Case Study

- 97yr male unprovoked DVT. Daughter's want to "discuss anticoagulation options". Patient has difficulty ambulating secondary to osteoarthritis. Patient resides with daughters x6 months (Greensburg and Scranton). Mother was on warfarin and encountered physician reluctance to manage warfarin when in different area of PA
  - "Coumadin will make dad's life difficult. Is there an easier option?"
  - TX with Rivaroxaban
  - Key teaching point: Listen to your patient's needs

??
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Health

Return to Top

Obesity Prevention and Management: Nutrition and Medication

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Obesity Prevention and Management: Nutrition and Medication

Jerome Lyn-Sue, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

Obesity Prevention
Nutrition and Medication

Jerome Lyn-Sue MD
Minimally Invasive and Bariatric Surgery
Penn State Hershey Medical Center
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Disclosures

None

Department of Surgery
PennState Health
Milton S. Hershey Medical Center

Outline

- Nutrition Basics
- Guidelines
- Diets: energy, macro/micronutrient
- Common ‘superfoods’
- Supplements
- Medication

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Energy Balance

- Energy Intake
- Energy Expenditure

CALORIES IN
CALORIES OUT

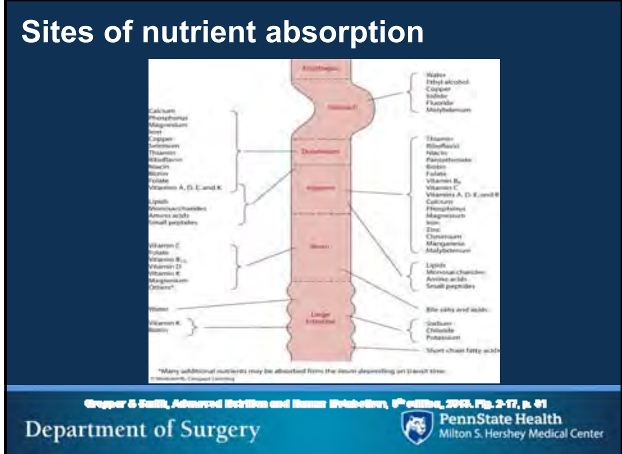
Dietary Reference Intakes (DRIs)

- Nutrient or food component
- Vary by age / gender
- Recommended Dietary Allowance (RDA)
  - nutrient requirements of nearly all (97%-98%) healthy people
- Tolerable Upper Intake Level (UL)
  - maximum daily intake unlikely to cause adverse health effects

Dietary Reference Intakes (DRIs)

- Estimated Average Requirement (EAR):
  - daily nutrient intake to meet the requirements of half of the healthy individuals
- Energy estimated requirement (EER)
  - energy intake predicted to maintain energy balance in a healthy adult

Sites of nutrient absorption



Gropper & Smith, Advanced Nutrition and Human Metabolism, 6th edition, 2013, Fig. 2-17, p. 41

Hypertension…..Obesity?

Dietary assessment

- 24-hr dietary recall
  - all items consumed in past 24-hrs
  - predefined 24-hr period
- Food records
  all intake recorded for 3 consecutive days
- Food frequency questionnaires
  - frequency of consumption of foods
  - specific time period

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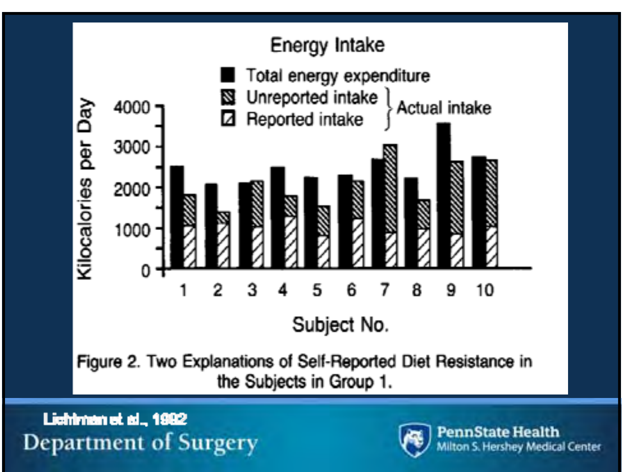

Figure 2. Two Explanations of Self-Reported Diet Resistance in the Subjects in Group 1.

Lichtman et al., 1992

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Ideal dietary intervention for obesity treatment

- Enhances weight loss/ weight loss maintenance
- Improves appetite regulation
- Increases energy expenditure
- High dietary quality
- Improves cardiometabolic health

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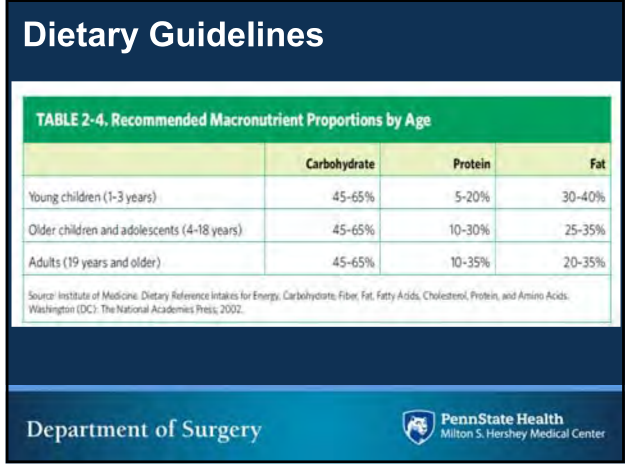
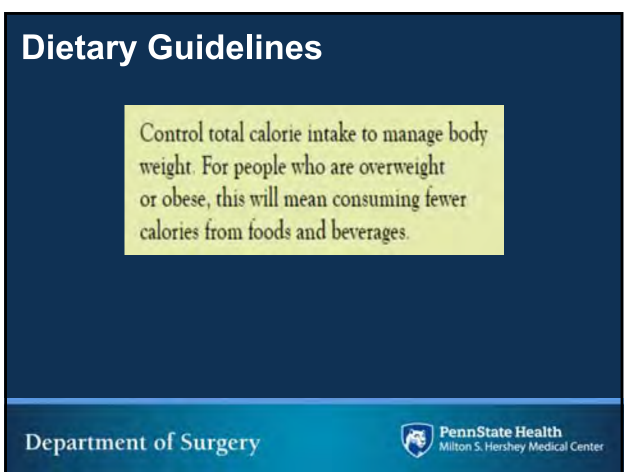


TABLE 2-4. Recommended Macronutrient Proportions by Age

	Carbohydrate	Protein	Fat
Young children (1-3 years)	45-65%	5-20%	30-40%
Older children and adolescents (4-18 years)	45-65%	10-30%	25-35%
Adults (19 years and older)	45-65%	10-35%	20-35%

Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.



Dietary Guidelines

- Increase
  - whole grains, vegetables, fruits
- Reduce
  - sugar sweetened beverages
- Monitor
  - calorie intake alcoholic beverages

**Consumption of milk / milk products no special role in weight management

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Energy-focused diets

- Low-kcal diet (LCD)
- 800 to 1,800 kcal/day

- Very-low-kcal diet (VLCD)
- < 800 kcal/day

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LCD

- Most commonly prescribed
- Energy range is 1,200 to 1,500 kcal/day
- Common for fat restriction
- Conventional foods
- Results
  - 5 to 10% weight loss at 6 months
  - Weight regain commonly seen after 12 months

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VLCD

- Produce rapid weight loss
- Preserves lean body mass
- 70 to 100 g of protein per day
  - milk, soy, egg-based powder
  - lean meat, fish, and fowl
- Supplement multivitamin and potassium
- 2 L non-caloric fluids

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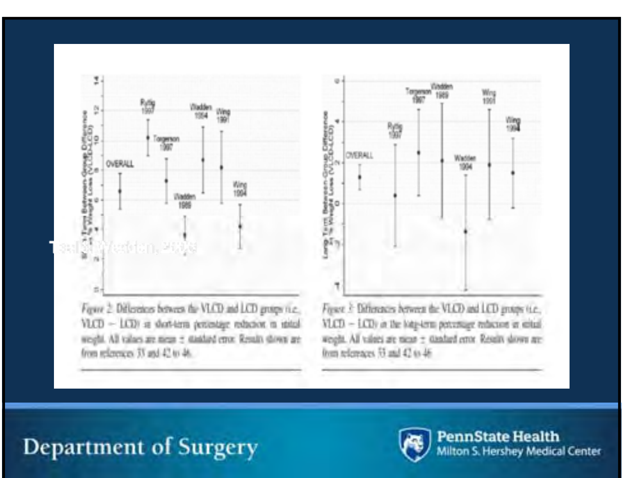
VLCD

- 12 weeks long diet
- 12 weeks of a refeeding stage
- Careful medical supervision
- Lifestyle modification
- Candidates
  - increased risk of morbidity and mortality
  - cardiovascular disease
  - health benefit from substantial weight reduction

VLCD

- Results
  - 15% to 25% of initial weight in 3 to 4 months
  - Regain 40% to 50% in1 to 2 years
    - Absence of follow-up care



Macronutrient-focused diets

- Low fat diet **
- Low-carbohydrate diet
  - 20 g/day
  - No limit on fat, protein
- High-protein diet
  - > 25% energy from protein

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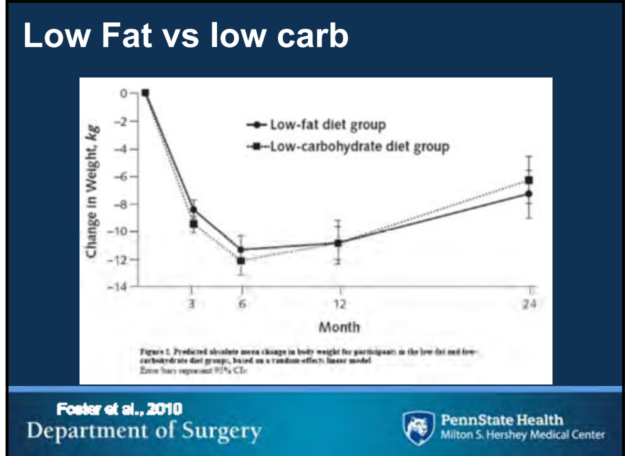
Low Fat vs low carb



Foster et al., 2010

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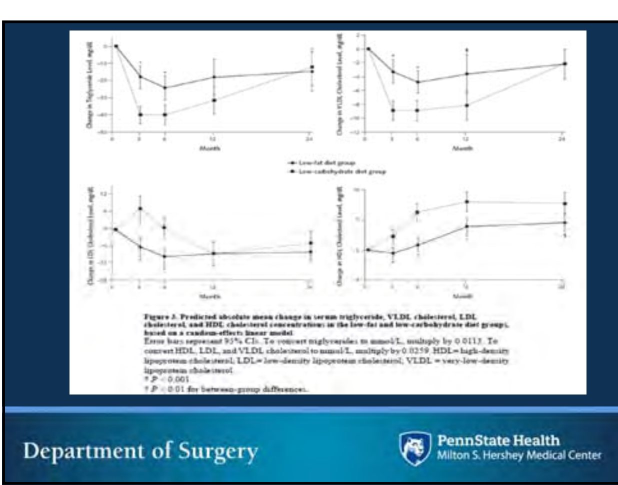

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Dietary patterns – Energy density

- Energy content / gram weight food
- Influenced by three factors:
  - Fat (low)
  - Water (high)
  - fiber (high)
- Low energy density
  - Increased consumption
  - relatively lower energy
  - increased satiety

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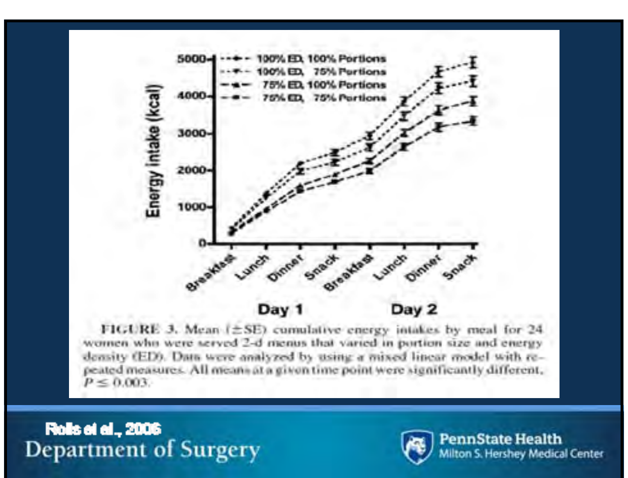

FIGURE 3. Mean (±SE) cumulative energy intakes by meal for 24 women who were served 2-d menus that varied in portion size and energy density (ED). Data were analyzed by using a mixed linear model with repeated measures. All means at a given time point were significantly different, $P \leq 0.003$.

Rolls et al., 2006

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Dietary patterns - DASH

- Limits saturated fat, cholesterol
- Increased foods with
  - protein, fiber
  - potassium, calcium, magnesium
- Increases
  - fruits, vegetables
  - low-fat milk and milk products
  - whole grains, seeds, and nuts
  - fish, poultry

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Dietary patterns - DASH

- Reduce
  - Sodium
  - red and processed meats
  - sweets, sugary drinks
- Lower in energy density than traditional U.S. diet

*Include energy restriction

*Lifestyle modification

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Dietary patterns – Mediterranean diet

- High in consumption of foods of vegetable origin
  - Fruits, vegetables
  - legumes, nuts
  - cereals, whole grains
- Olive oil main source of fat
- Fish and poultry consumed (moderate amounts)
- Red meat consumed (low amounts)
- Moderate consumption of wine with meals

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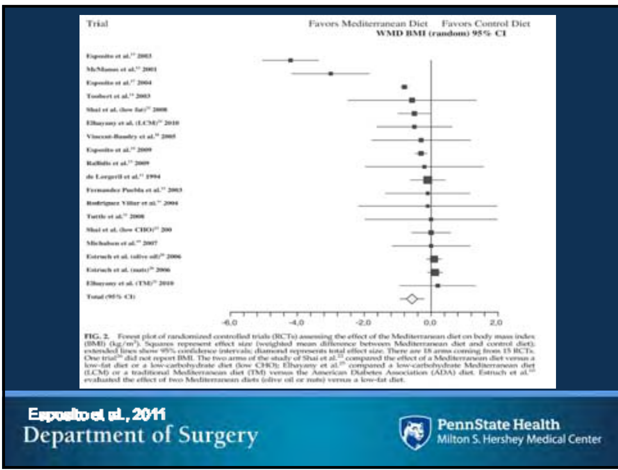

FIG. 2. Forest plot of randomized controlled trials (RCTs) assessing the effect of the Mediterranean diet on body mass index (BMI) (kg/m²). Squares represent effect size (weighted mean difference between Mediterranean diet and control diet); extended lines show 95% confidence intervals; diamond represents total effect size. There are 18 arms coming from 15 RCTs. One trial[20] did not report BMI. The two arms of the study of Shai et al.[22] compared the effect of a Mediterranean diet versus a low-fat diet or a low-carbohydrate diet (low CHO); Elhayany et al.[25] compared a low-carbohydrate Mediterranean diet (LCM) or a traditional Mediterranean diet (TM) versus the American Diabetes Association (ADA) diet. Estruch et al.[10] evaluated the effect of two Mediterranean diets (olive oil or nuts) versus a low-fat diet.

Popular diets

- Atkins:
  - < 20 g of carbohydrate , then 50g
- Zone:
  - 40-30-30 / carbohydrate, fat, and protein
- Weight Watchers:
  - Points system, 1point =50 calories, 25-30pts
- Ornish:
  - vegetarian diet, 10% fat

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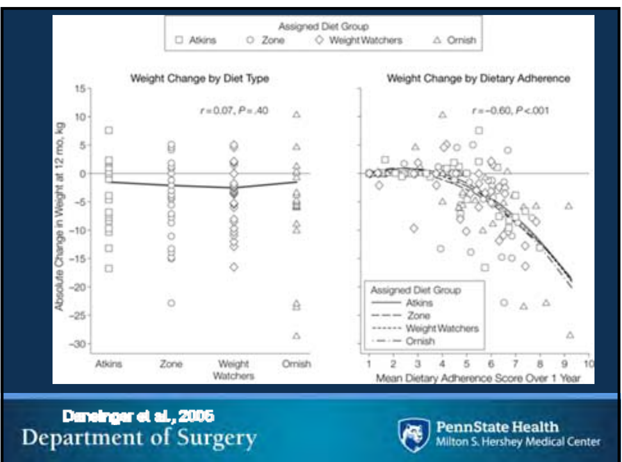

Dietary Guidelines

- Reduce energy intake
  - weight loss/ weight loss maintenance
- Diet interventions
  - differing total weight loss
  - cardiometabolic outcomes
- Challenge
  - **long-term adherence**

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Dietary Guidelines

- Behaviors with the strongest evidence related to body weight include:
  - Focus on total energy consumed
  - Prepare, serve, consume smaller portions
  - Eat a nutrient-dense breakfast
  - Limit screen time

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Flavonoids

- Berries, Kale, Red wine, Dark chocolate

- Stimulate adiponectin secretion
  - Glucose regulation
  - Fatty acid breakdown
- Reduce adipocyte development
- Increase adipocyte differentiation
- Increase insulin sensitivity

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Tannins

- Pomegranates, Persimmons
- Berries, Nuts

- Induce lipolysis of fat cells
- Improve glucose metabolism

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Phytoestrogens

- Nuts, Flaxseeds
- Soy-based products
  - tofu, cereals

- Reduce abdominal adipose tissue
- Reduce lipid levels
- Improve glucose metabolism

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Thiols

- Onions, Garlic, Leeks

- Improve lipid metabolism
- Improve glucose metabolism

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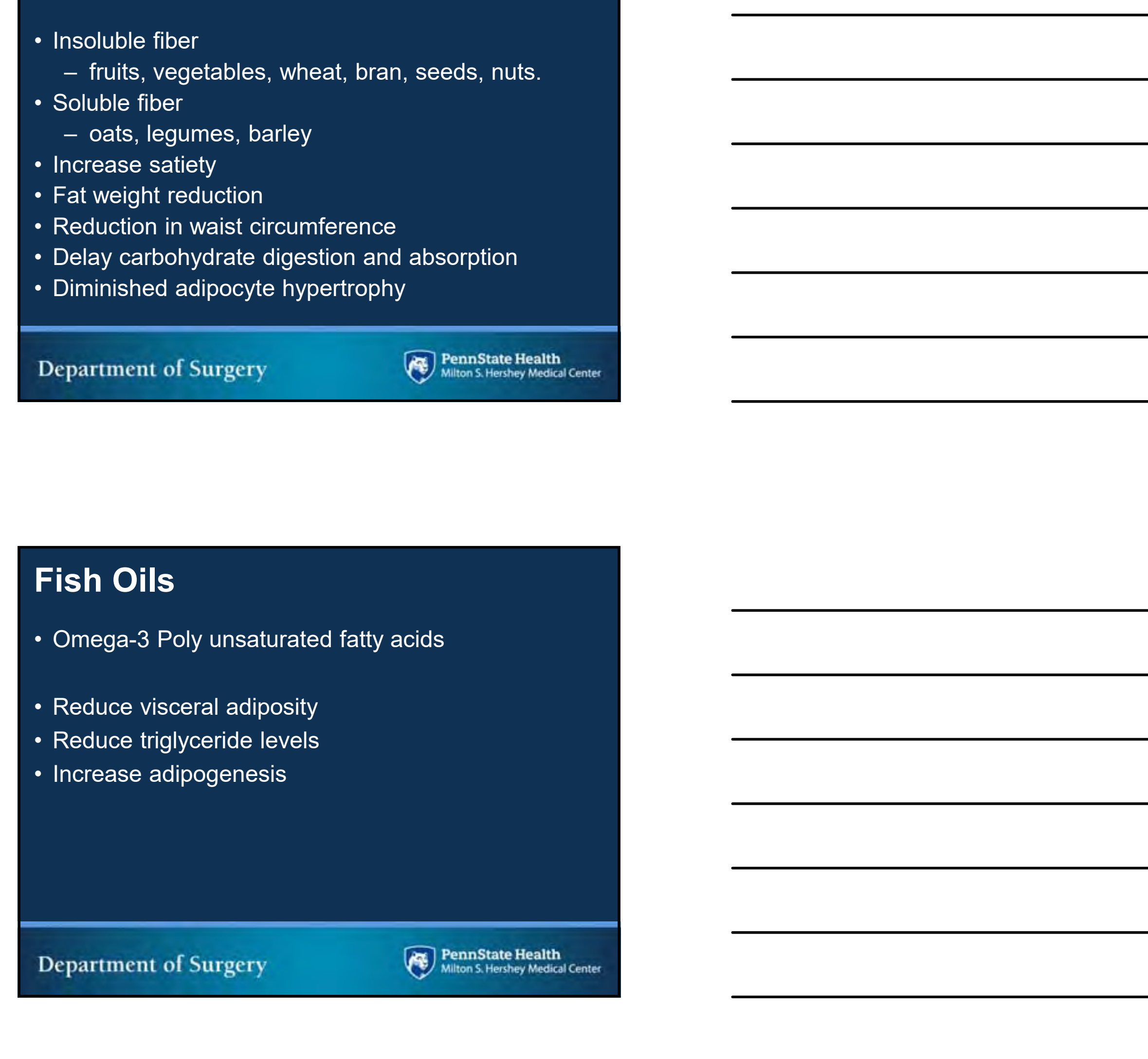

Curry

- Curcumin (curry)

- Increase fatty acid oxidation
- Reduce body fat, reduce lipogenesis
- Improve adipocyte endocrine and immune function,
- Improve metabolic disease

Probiotics (lactobacilli)

- Affect intestinal bacteria flora
- Affect adipogenesis
  - Intestinal-central nervous system signaling
- Energy harvest from the diet
- Alterations in fatty acid composition

Supplements

- Carnitine
  - Naturally from red meat
  - Muscle building supplements
- Increase adipocyte lipolysis
- Decrease adipocyte size
- Decrease adipogenic gene expression
- Allows greater energy expenditure and facilitate fat weight reduction

Chromium

- Potentiate insulin-stimulated adipogenesis and glucose uptake
- Type 2 diabetes mellitus
- Reduce body weight
- Reduce visceral adiposity
- Improve insulin sensitivity / glucose control.

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Calcium

- Augments weight loss during calorie restriction
- Reduces visceral adipose tissue
- Increase adipocyte lipolysis
- Reduce adipogenesis
- Increase thermogenesis

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Vitamin D

- Up-regulate lipid utilization
- Decrease lipogenesis
- Increase fat oxidation rates
- Increase thermogenesis
- Reduce spontaneous caloric intake

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Consequences of Drug Treatment for Obesity

Year	Drug	Consequence
1892	Thyroid	Hyperthyroidism
1932	Dinitrophenol	Cataracts/Neuropathy
1937	Amphetamine	Addiction
1968	Aminorex	Pulmonary Hypertension
1997	Phen/Fenfluramine	Valvulopathy
1998	Phenylpropanolamine	Strokes
2003	Ma Huang (ephedra)	Heart attacks/stroke
2007	Ecopipam (Dopamine)	Depression/Suicide
2008	Rimonabant (CB-1)	Depression
2010	Sibutramine	CVD Risk

Bray GA. Battle of the Bulge, Dorrance Publishing 2007 p. 69

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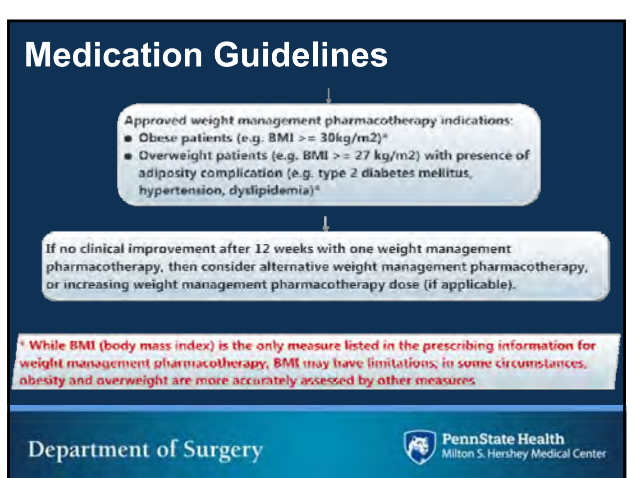

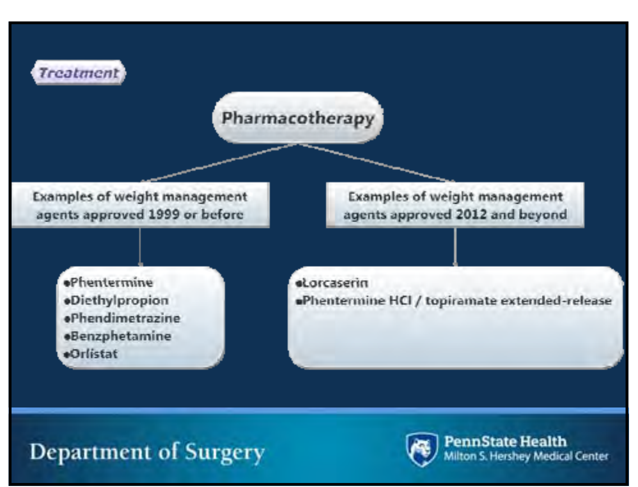

Sympathomimetic amines

- Phenteramine **
- Diethylpropion
- Benzphetamine
- Increases satiety
- Daily 8-37.5mg
- Cardiac side effects

Orlistat

- GI lipase inhibitor
- Impairs GI fat absorption
- Oily stools, fecal incontinence
- Over the counter

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Belviq

- Locaserin
  - Serotonin receptor agonist
- Anorectic
- 10mg BID
- 2010

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Qsymia

- Appetite Suppressant
- Phentermine/Topiramate
  - Sympathomimetic amine
  - Monotherapy for weight loss
  - Neurostabiliser
  - Seizure disorder/migraines
- Dose 3.75mg/ 23mg phentermine/ topiramate
- 2012

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Contrave

- Bupropion /Naltrexone
- Antidepressant
- Opioid /alcohol dependence
- Influences food intake centrally
- 8mg/90mg bd
- 2015

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Investigational Weight Management Pharmacotherapy

- Glucagon like peptide-1 agonist (GLP-1)
  - Byetta
  - Glucose homeostasis
  - Slows gastric emptying
  - Decreases food intake
- Dipeptidyl Peptidase (DPP-4)
  - Januvia
  - Inhibits breakdown of GLP-1

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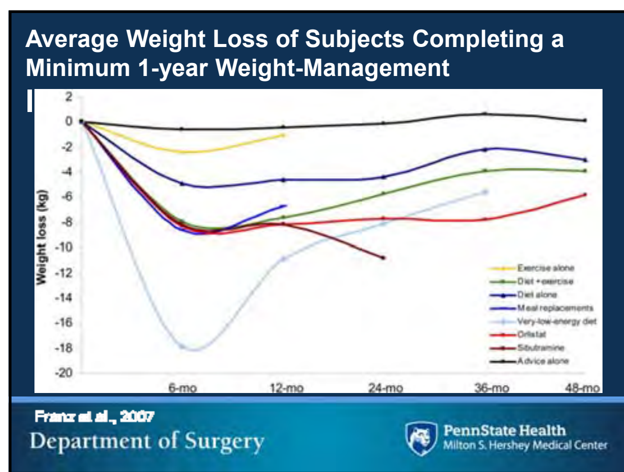
Average Weight Loss of Subjects Completing a Minimum 1-year Weight-Management
Weight loss (kg)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
6-mo
12-mo
24-mo
36-mo
48-mo
Exercise alone
Diet + exercise
Diet alone
Meal replacements
Very-low-energy diet
Orlistat
Sibutramine
Advice alone
Franz et al., 2007
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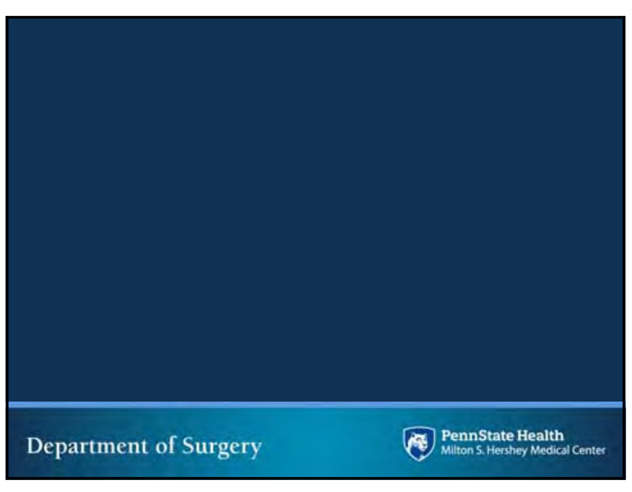
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Lyme Disease

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Lyme Disease

William Sonnenberg, MD & Dennis Gingrich, MD

Disclosures:

Dr. Sonnenberg sits on the speaker panel for Cempra Pharmaceuticals. No conflict of interests exists within this presentation.

Dr. Gingrich has no disclosures and there are no conflicts of interest.

The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speakers indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

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Please Remember to Complete Session Evaluation Online
https://www.surveymonkey.com/r/3_17_Lyme

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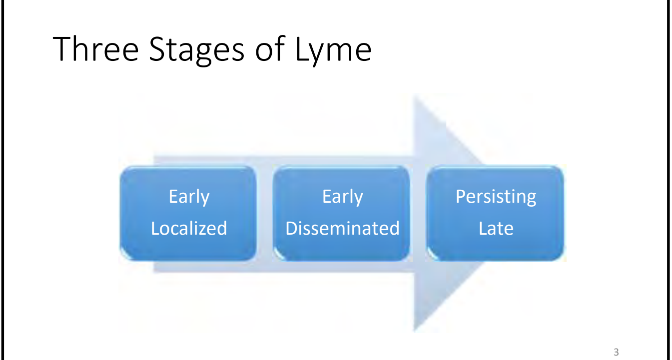
Three Stages of Lyme



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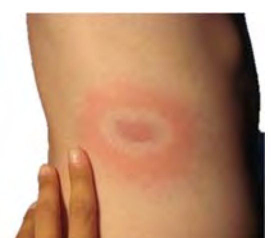
Early Localized Lyme

- Erythema migrans
- Other may have
  - Fever
  - Arthralgias, myalgias
  - Conjunctivitis
  - Meningimus



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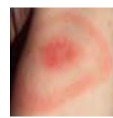
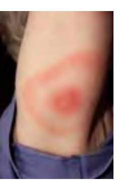
Erythema Migrans

- Pathognomonic
- 80-90% of infected
- Actual Borrelia infection
- Generally painless
- 3-30 days after bite, usually 7-10 days
- Centrifugally expanding, erythematous annular patch





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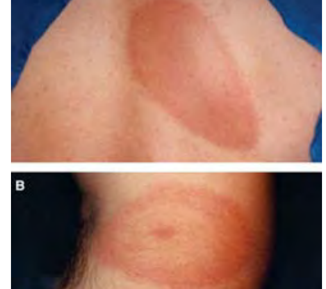
Erythema migrans



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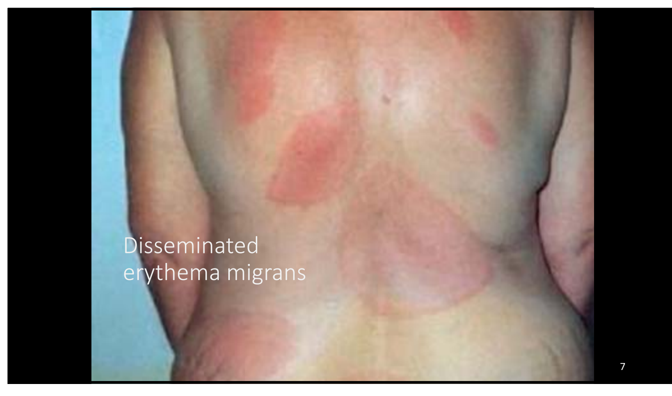
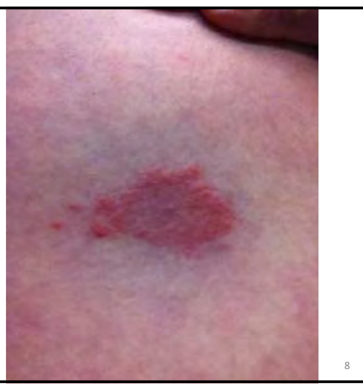


Not Always Typical

- 25% have no rash



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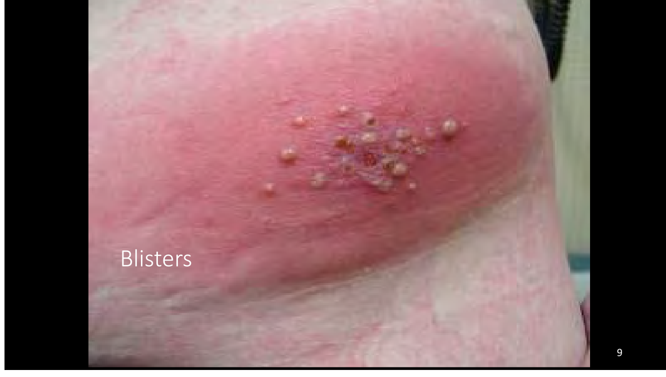
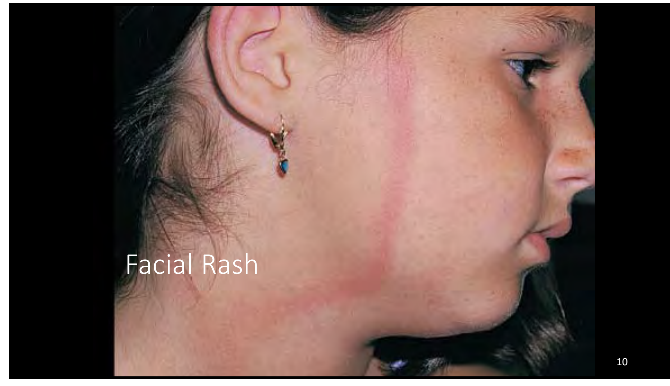
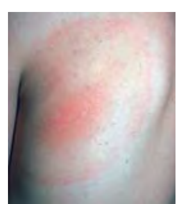




Neurologic Symptoms with EM

- 314 patients with EM
- 64% will have headache
- 48% stiff neck



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Three Stages of Lyme

Early Localized → Early Disseminated → Persisting Late

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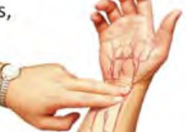
Early Disseminated Infection

- Erythema migrans at other sites
- Migrating pain in muscles, joints, tendons
- Palpitations
- Neurologic problems in 15%



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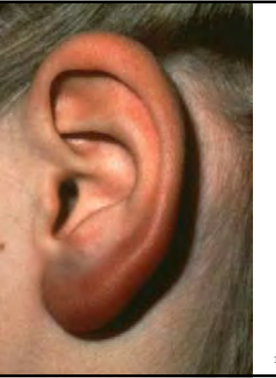
Borrelial Lymphocytoma

- Purplish lump on earlobe, nipple, or scrotum
- More in Europe



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Three Stages of Lyme

Early Localized → Early Disseminated → Persisting Late

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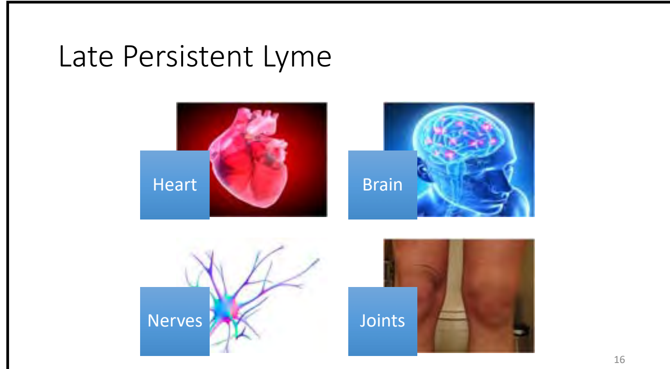
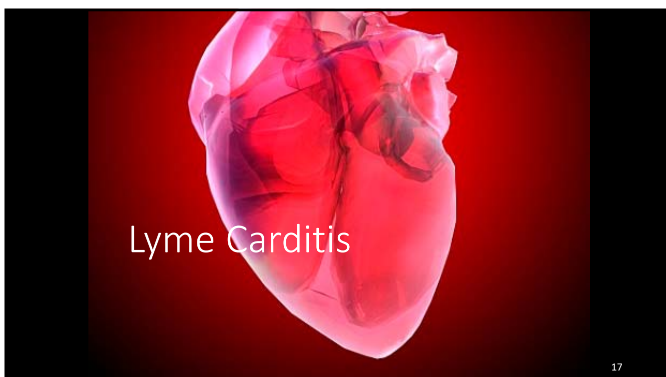
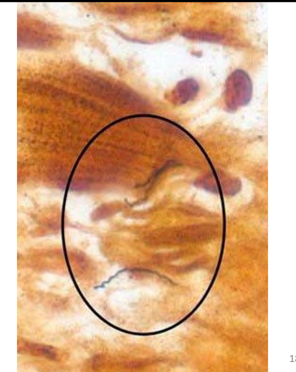




Carditis

- Affects all layers of heart
  - Tends to spare valves and great vessels
- Can occur 4 days to 7 months after infection
- More males
- Ages 15-45
- Summer or early autumn
- 40% had rash compared to 70%-80% of overall patients



Joseph D. Forrester, MD, MSc, CDC

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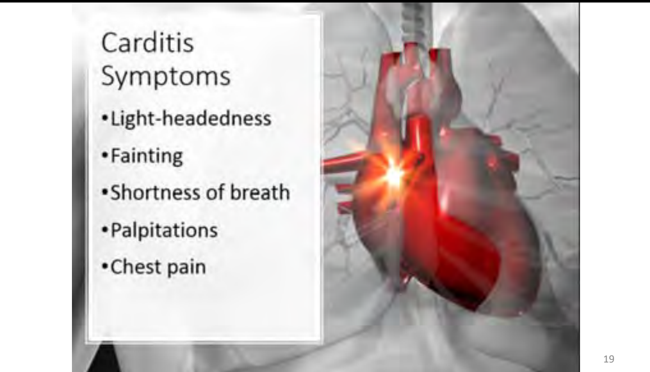

Carditis; AV Block

- Most common feature of Lyme carditis
- Fluctuate between 1st, 2nd, and 3rd degree block
- Palpitations, syncope, chest pain, and dyspnea
- Excellent prognosis with ABX treatment
- May require temporary pacemaker

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Second Degree AV Block

- 18 year old had 3rd degree block before iv ceftriaxone
- Wenckebach 2º
- 4 days later 1º

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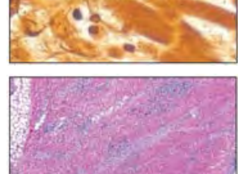
Three Reported Deaths

- Ages 26 to 38, one woman, two men
- Northeast
- Sudden collapse
- No history of rash



MMWR, Dec 13, 2013

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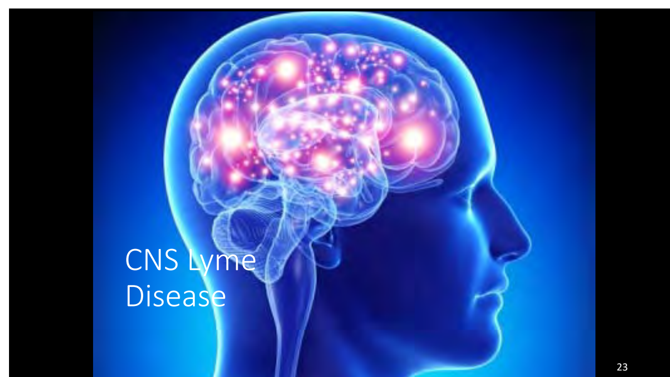

CNS Lyme Disease

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Chronic Encephalomyelitis

- Cognitive impairment
- Leg weakness, awkward gait
- Facial palsy
- Bladder problems
- Vertigo
- Back pain

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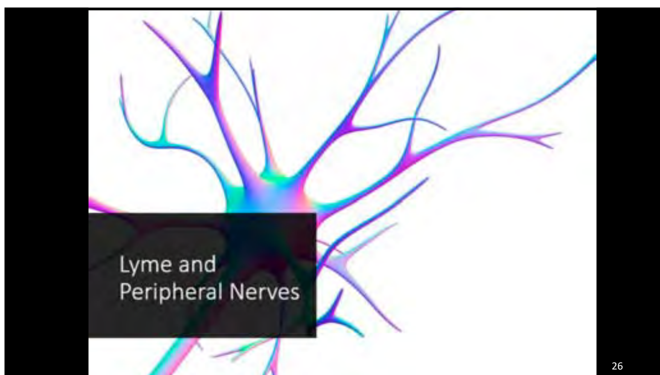

Radiculoneuritis

- Painful, may interfere with sleep
- Numbness, tingling, burning
- Affects limbs or trunk
- 50% associated cranial nerve palsies

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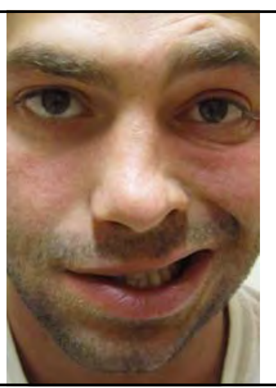
Bell's Palsy

- Up to 10% of patients
- Cause of 25% of cases in endemic areas
- May predate positive serology
- Peripheral, no antibody in CSF



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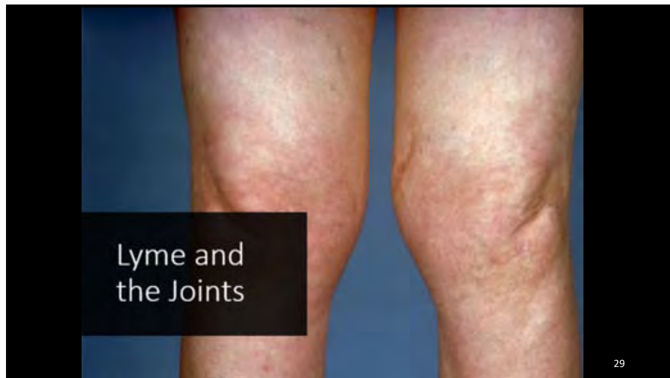

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Musculoskeletal Features

- 60% of untreated patients
- Weeks to years after infection
- Usually have higher antibody levels
- Large joints, occasionally TMJ joint

Allen C. Steere, M.D.,NEJM 2001; 345:115-12

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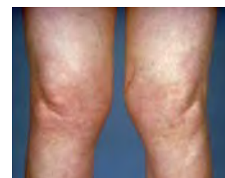
Arthritis of Knee

- Mild to moderate pain
- Baker's cysts may form
- May develop erosions
- Has been reported once in a prosthetic knee!



ofid.oxfordjournals.org/content/early/2016/05/11/ofid.ofw096.full.pdf

31

Persistent Joint Disease

- 10% of adults and <5% of children persist more than one year after treatment
- Usually HLA-DRB1*0401
- Synovial PCR tests negative
- Mimicry with outer surface protein of B. burgdorferi

Allen C. Steere, M.D.,NEJM 2001; 345:115-12

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Acrodermatitis Chronica Atrophicans

- Elderly in Europe, mainly women
- First recorded 1883
- Reddish brown patches back of feet or hands
- Skin becomes thin, wrinkled; then dry and hairless
- Active infection with Borrelia afzelii
- Histology and serology

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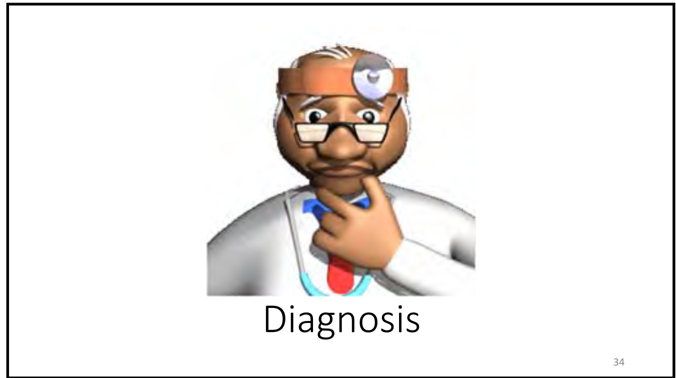

Diagnosis

34

Diagnosis

- Clinical picture
- History of exposure
- Epidemiology
- Serology

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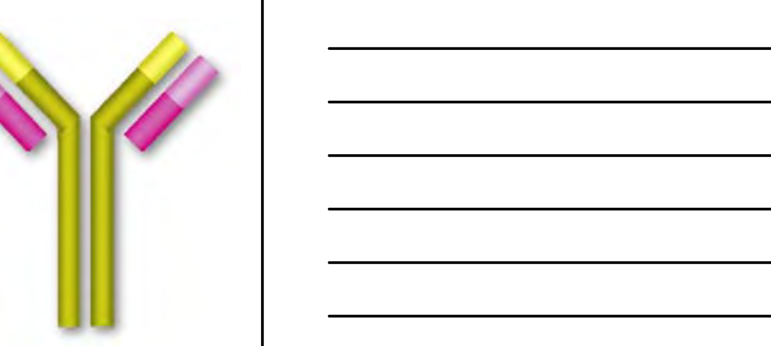
Antibody Testing

- Antibody response slow
  - IgM 2-4 weeks after EM
  - IgG 4-6 weeks after EM
- IgM declines at 4-6 months
- IgG tends to persist at low level



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Two-Step Serology Testing

- ELISA test first
  - Very sensitive
  - False positives
- Western Blot
  - Specific
  - IgM and IgG

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Testing and Treating

High	Erythema Migrans	Don't test Just treat
Intermediate	Oligoarticular Arthritis	Test Treat if positive
Low	Nonspecific symptoms (myalgias, arthralgias, fatigue)	Don't test Don't treat

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False Positive Serology

- Syphilis
- Spirochete periodontal infection
- Relapsing fever
- Rheumatoid arthritis
- Infectious mononucleosis

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PCR Testing

- Dependent on lab technique
- High false positive
- Expensive
- May have role in synovial fluid

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PCR on Synovial Fluid

- 96% positive detection in untreated or partially treated Lyme arthritis
- 7% positive in properly treated

41

Treatment

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Early Lyme Disease

- Amoxicillin 500 mg tid for 21 days
- Doxycycline 100 mg bid for 21 days
  - Effective for human granulocytic ehrlichiosis
- Cefuroxime 500 mg bid for 21 days
- Azithromycin 500 mg daily for 7 days
  - Less effective than other regimens

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Jarisch-Herxheimer Reaction

- First 24 hours after antibiotics
- Rapid release of inflammatory cytokines
- Higher fever
- Redder rash
- More pain
- Treat with anti-inflammatories

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Lyme Carditis

- Ceftriaxone 2 g daily for 14 days
- Penicillin G, 20 million units daily for 14 days

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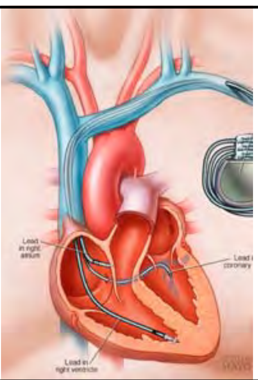
Carditis, cont.

- Hospitalization and monitoring for 2nd and 3rd degree block, also 1st degree with PR ≥ 30 milliseconds
- Temporary pacemaker maybe required



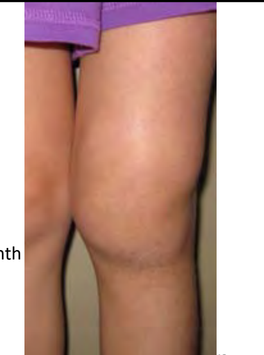
Neurologic Manifestations

- Bell's – oral regimens for early disease, maybe 30 days
- Meningitis – 14-28 days of treatment

Ceftriaxone	2 g daily
Penicillin G	20 million units daily

Late Lyme Arthritis

• Amoxicillin	500 mg tid ≥ 2 months
• Doxycycline	100 mg bid ≥ 2 months
• Ceftriaxone	2 g daily for ≥ one month
• Penicillin G	20mil units daily ≥ one month
• Cefuroxime	500 mg bid PO ≥ 2 months



Questions?

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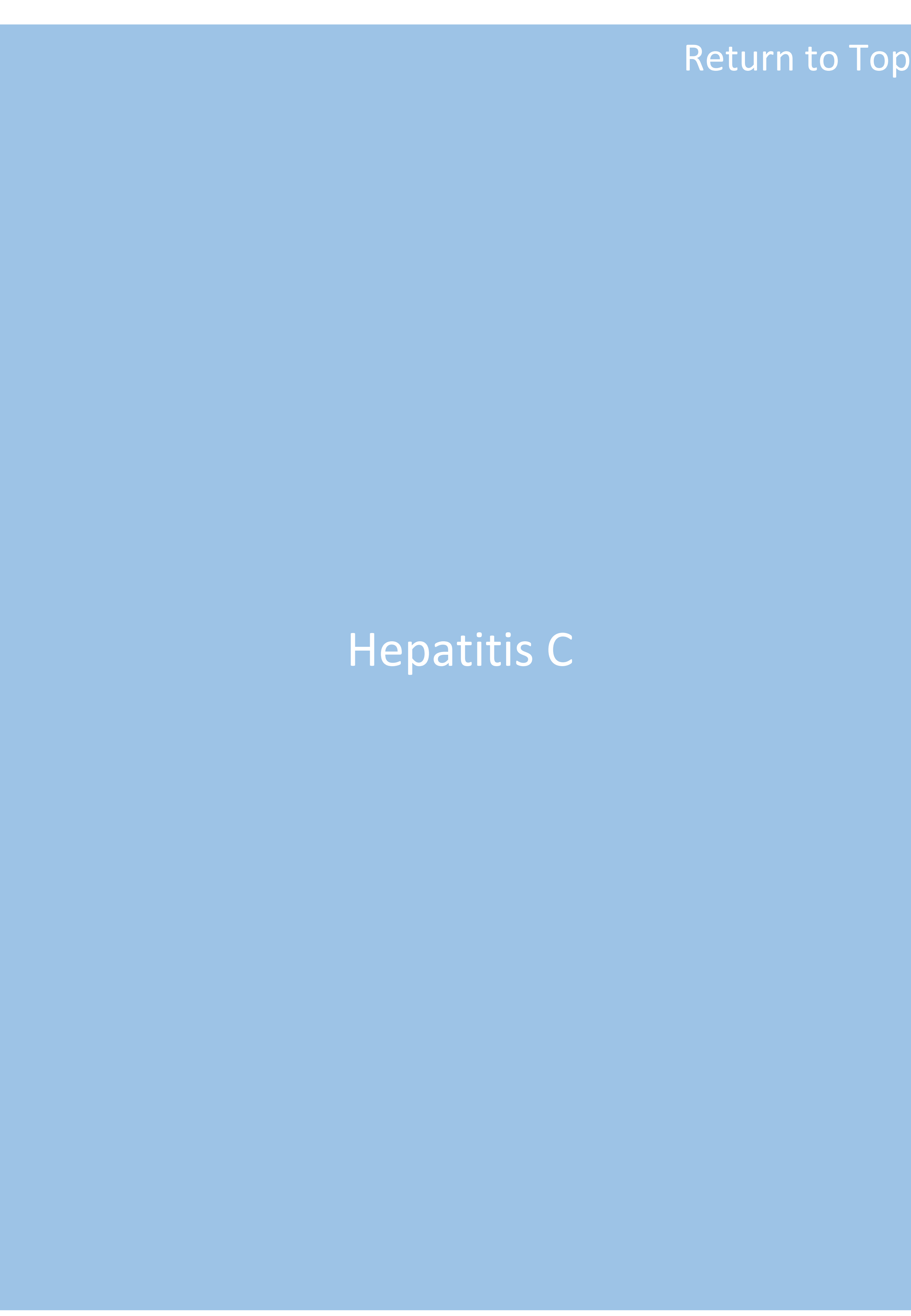
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Hepatitis C

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Hepatitis C

William Sonnenberg, MD

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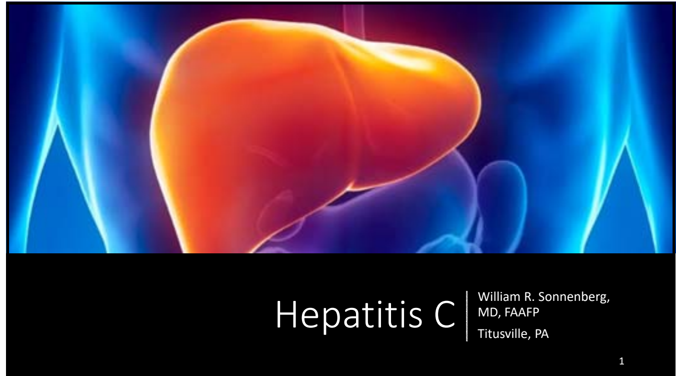


Hepatitis C

William R. Sonnenberg, MD, FAAFP
Titusville, PA

1

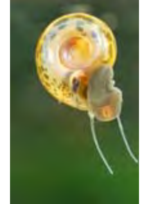
Disclosure

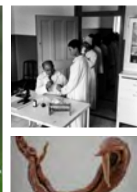
- The speaker sits on the speaker panel for Cempra Pharmaceuticals. No conflict of interests exist within this presentation.
- **Please Remember to Complete Session Evaluation Online** https://www.surveymonkey.com/r/3_17_HepC

2

Egypt, Hepatitis C, and Schistosomiasis

- 14% of Egyptians had hepatitis C
- 1/3 of health budget
- Monthly injections against schistosomiasis with poorly sterilized syringes in 50's
- Sofosbuvir sold to government for $10/pill – 99% discount
- Now 10% with new meds





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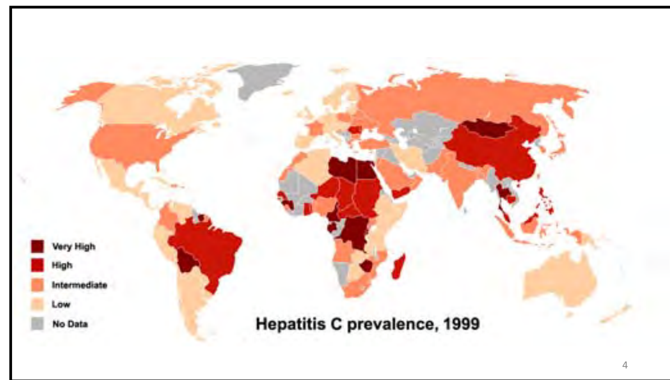

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Hepatitis C in USA

- 2.7 million in general population
- 800,000 incarcerated, institutionalized, or homeless
- 29% of incarcerated men are positive
- Half of infected unaware
- Cause more deaths now than HIV

NHANES

5

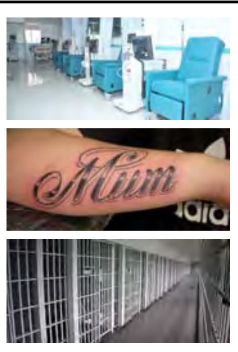
Most Common Risk Factors

- Blood transfusion before July 1992
  - 10% of cases
- Illicit injection drug abuse
  - 60% of cases
- Intranasal drug abuse

7

Less Common Risk Factors

- Birth to HCV infected mother
- Chronic hemodialysis
- Needle stick
- Incarceration
- Men with HIV having sex with men
- Organ transplant before July 1992
- Sex with partner with HCV
- Tattoo from unregulated establishment



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Risk Factors

Other (hemodialysis, healthcare, preinatal), 5%
Unknown, 10%
Transfusion (before screening), 10%
Sexual, 15%
IV Drugs, 60%

9

Maternal Transmission

- 4.3% transmission
  - 19% with HCV + HIV
- European guidelines state C-section not necessary
- Breast-feeding no worse transmission risk than bottle
- Anti-HCV antibodies persist for up to 18 months

MMWR Recomm Rep. 2009;58(RR-11):1-166

10

Prevention

- Needle exchange, modest 33% reduction
- Opioid substitution
- Blood testing
- Vaccines?
  - High mutation rate
  - Difficult to culture
  - Impaired T-cell function

Page K, Hahn JA, Evans J, et al. *J Infect Dis.* 2009;200(8):1216-1226.

11

Health Care Worker Risk

- Seropositive equal to general population
- 1.8% risk after needle exposure
- Greater with hollow needle

U.S. Preventive Services Task Force. Screening for hepatitis C virus infection in adults. U.S. Preventive Services Task Force Recommendation Statement. AHRQ Publication No. 12-05174-EF-2. June 25, 2013

12

Sexual Intercourse

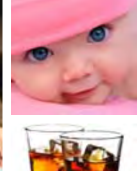
- Heterosexual transmission "inefficient"
- High frequency, multiple partners, mucosal injury
- High risk with HIV+ men having sex with men

van de Laar T, Pybus O, Bruisten S, et al. Evidence of a large, international network of HCV transmission in HIV-positive men who have sex with men. Gastroenterology 2009;136:1609-17.

13

Favoring Spontaneous Resolution

- Youth, 25-40% of infants resolve by age one
- Female: Male resolution 3:1
- Genetics, polymorphism near IL28B gene
- Asians > Caucasians and Hispanics > African-Americans
- Alcohol abstinence, even one drink
- No insulin resistance
- Severe symptoms at onset



Page K, Hahn JA, Evans J, et al. Acute hepatitis C virus infection in young adult injection drug users: a prospective study of incident infection, resolution, and reinfection. *J Infect Dis.* 2009;200(8):1216-1226.

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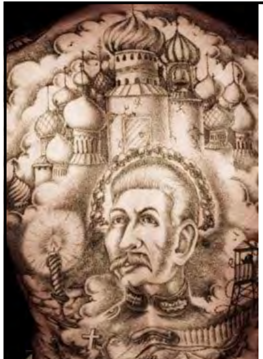

Prison and Tattoos

- One or more tattoos → 5 fold risk
- 30-40% in prison inmates
- Prisons may hold 30% of HCV-infected adults

15

No Risk, Safe

- Casual contact
  - Hugging
  - Kissing
  - Sharing eating or cooking utensils
- Food, water

"Hepatitis C FAQs for Health Professionals". Centers for Disease Control and Prevention (CDC). Retrieved 2 January 2012

16

Birth-Cohort Testing

- On-time test for those born 1945-1965
  - Will identify 68% of HCV infected
  - 27% identified using just risk based screening

Testing

- Anti-HCV recommended (sensitivity 95%, specificity 99%)
  - If +, confirm with qualitative HCV RNA
  - If - , order HCV RNA if exposed within past 6 months, repeat every 4-8 weeks for 6 months
- Qualitative HCV RNA before therapy
  - Baseline viral load
  - HCV genotype

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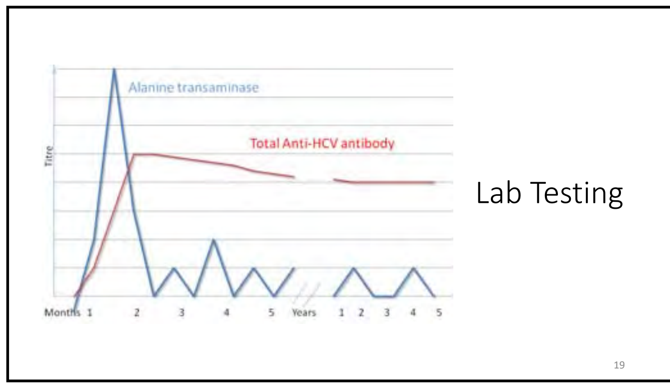

Lab Testing

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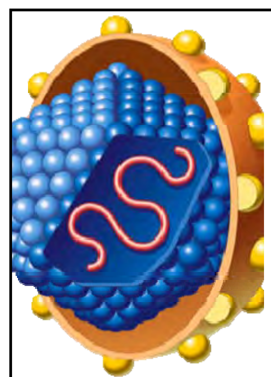

The Virus

- Small, enveloped RNA virus
- Lipid rich particle, similar to VLDL
  - May have a role in viral entry
- Encodes for a single polypeptide that cleaves into 10 proteins

20

21

Genotypes

Genotype 1a,b	DAA 80% to >90%
Genotype 2	Slightly more difficult to treat
Genotype 3	New treatment has cure rate of 100%
Genotype 4,5,6	Egyptian, rare in USA

22

Acute Hepatitis C

- 7 week incubation
- Only 25% come to medical attention
- Symptoms
  - Abdominal discomfort
  - Malaise, fatigue
  - Anorexia
  - Rash
  - Rarely, jaundice
- Fulminant hepatitis rare

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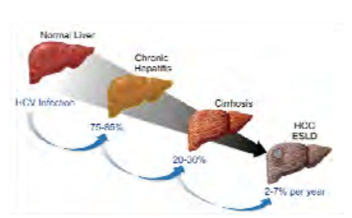
Hepatitis C

- Often asymptomatic
- 85% develop chronic infection
- 10-15% of chronic HCV progress to cirrhosis in first 20 years
- 4% of cirrhotics per year decompensate
  - 50% mortality in 5 years



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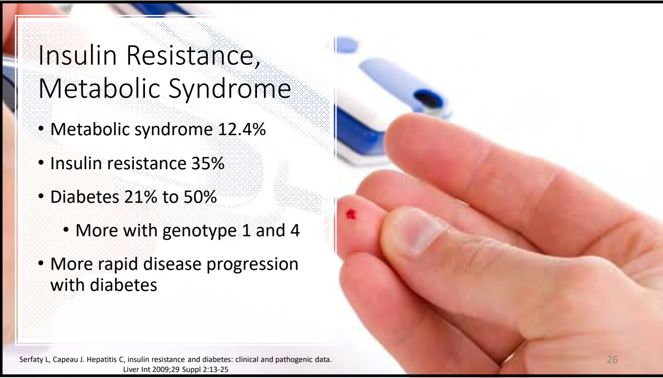
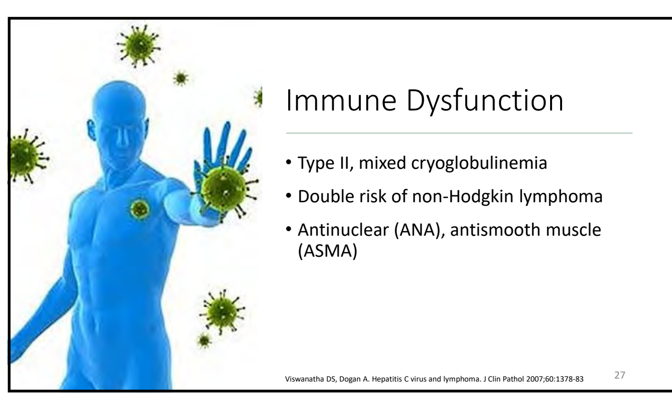
Extrahepatic Manifestations
25



Insulin Resistance, Metabolic Syndrome
• Metabolic syndrome 12.4%
• Insulin resistance 35%
• Diabetes 21% to 50%
• More with genotype 1 and 4
• More rapid disease progression with diabetes
Serfaty L, Capeau J. Hepatitis C, insulin resistance and diabetes: clinical and pathogenic data. Liver Int 2009;29 Suppl 2:13-25
26

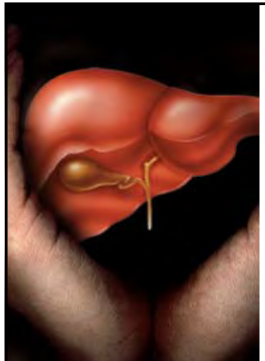


Immune Dysfunction
• Type II, mixed cryoglobulinemia
• Double risk of non-Hodgkin lymphoma
• Antinuclear (ANA), antismooth muscle (ASMA)
Viswanatha DS, Dogan A. Hepatitis C virus and lymphoma. J Clin Pathol 2007;60:1378-83
27

Staging of HCV

Genotype	Fibrosis
• Does not predict progression to fibrosis • Predicts response to treatment regimen • Genotype 1 accounts for 70% followed by 2,3	• Liver BX gold standard • Elastography – more accurate in low and high level fibrosis • MRI – costly • Ultrasound – normal till stage 4 • Biomarkers – Fibrosure, stage 4 or greater

29



Start Treatment??

- Stage of fibrosis
- Comorbidities
- Patients commitment to treatment
- Better future medications?

30

Risk Reduction Strategies

- Alcohol
- Diet
- Diabetes
- Avoidance of HIV or HBV

31

Ribavirin

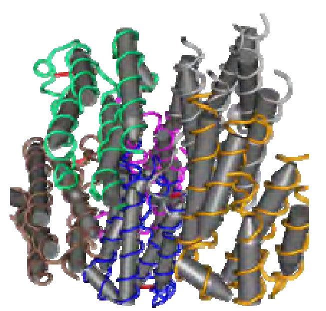
- Inhibits viral RNA polymerase, thus inhibiting protein synthesis
- Improves SVR combined with interferon (RR = 0.72) compared to interferon alone
- Adverse effects
  - Worsens cardiac disease
  - Teratogenic – two methods of birth control

Brok J, Gluud LL, Gluud C. Ribavirin plus interferon versus interferon for chronic hepatitis C. *Cochrane Database Syst Rev.* 2010;(1):CD005445

32

Pegylated Interferon

- Polyethylene glycol attached to interferon to last longer
- Inhibits viral replication
- Neutropenia, depression, flu-like symptoms, muscle pain



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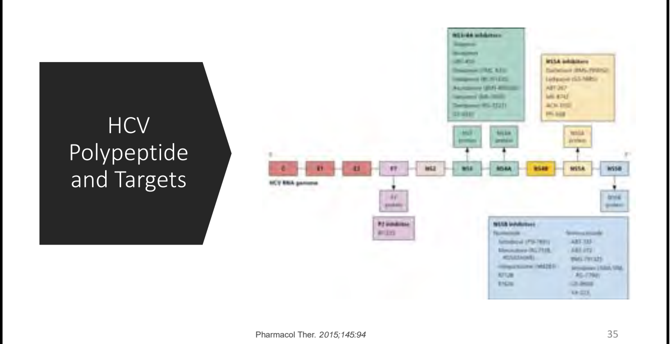
Interferon-Ribavirin Combination

Sustained Viral Response (SVR)		Adverse effects
• HCV genotype 1 • 48 weeks	40-50%	• Fatigue, irritability, anorexia, pruritus, malaise
• HCV genotype 2,3 • 24 weeks	80%	• Depression • Anemia, neutropenia, thrombocytopenia
• HCV genotype 4 • 48 weeks	50-70%	• Ribavirin – teratogenic at low dose

34



Discontinued First Generation NS3/4A Protease Inhibitors

- Both discontinued in USA, less effective, more side effects, loss of market
  - Telaprevir (Incivek)
  - Boceprevir (Victrelis)
- Genotype 1

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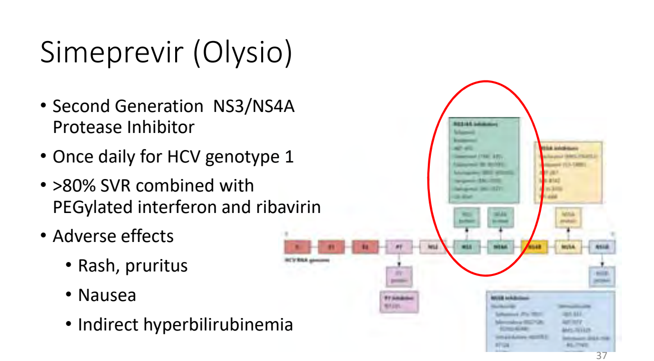
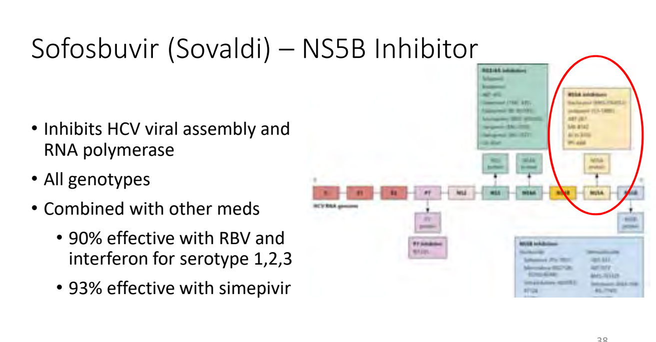
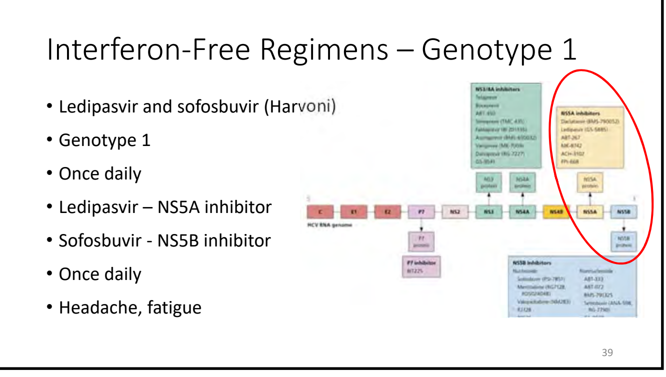
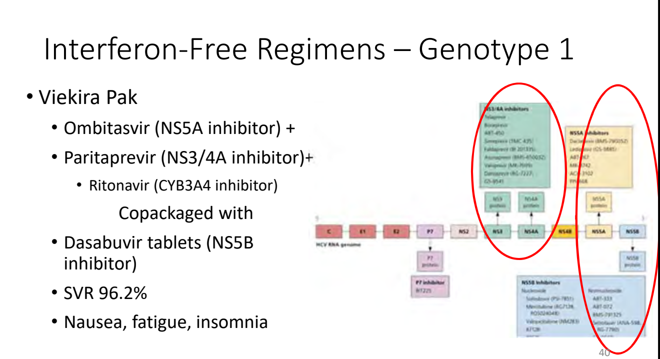
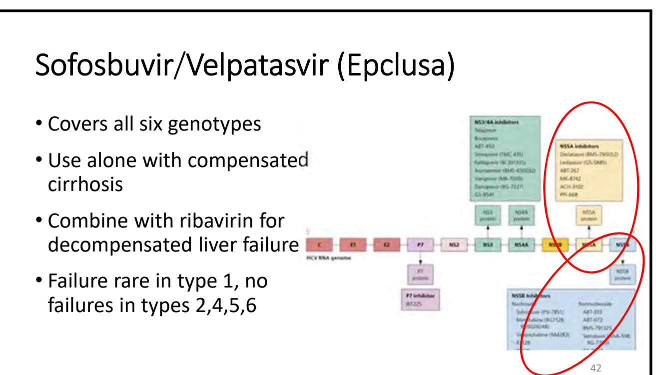

Simeprevir (Olysio)
• Second Generation NS3/NS4A Protease Inhibitor
• Once daily for HCV genotype 1
• >80% SVR combined with PEGylated interferon and ribavirin
• Adverse effects
• Rash, pruritus
• Nausea
• Indirect hyperbilirubinemia
37


Sofosbuvir (Sovaldi) – NS5B Inhibitor
• Inhibits HCV viral assembly and RNA polymerase
• All genotypes
• Combined with other meds
• 90% effective with RBV and interferon for serotype 1,2,3
• 93% effective with simepivir
38


Interferon-Free Regimens – Genotype 1
• Ledipasvir and sofosbuvir (Harvoni)
• Genotype 1
• Once daily
• Ledipasvir – NS5A inhibitor
• Sofosbuvir - NS5B inhibitor
• Once daily
• Headache, fatigue
39


Interferon-Free Regimens – Genotype 1
• Viekira Pak
• Ombitasvir (NS5A inhibitor) +
• Paritaprevir (NS3/4A inhibitor)+
• Ritonavir (CYB3A4 inhibitor)
Copackaged with
• Dasabuvir tablets (NS5B inhibitor)
• SVR 96.2%
• Nausea, fatigue, insomnia
40

Viekira Pak
viekira pak
DAILY TREATMENT INSTRUCTIONS
Take with food
Push down on tablets breaking through back side
41


Sofosbuvir/Velpatasvir (Epclusa)
• Covers all six genotypes
• Use alone with compensated cirrhosis
• Combine with ribavirin for decompensated liver failure
• Failure rare in type 1, no failures in types 2,4,5,6
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Questions?
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Best Practices – Communicating With Your Patients

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Best Practices – Communicating With Your Patients

Dennis Gingrich, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

*****HANDOUTS ARE NOT AVAILABLE ONLINE FOR THIS SESSION*****

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Inflammatory Bowel Disease

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Inflammatory Bowel Disease

William Sonnenberg, MD

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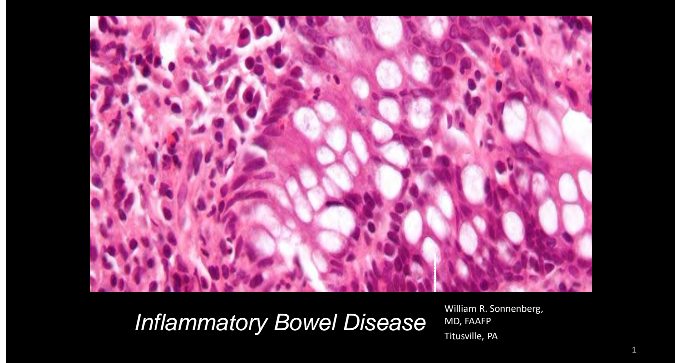

Inflammatory Bowel Disease

William R. Sonnenberg, MD, FAAFP
Titusville, PA

1

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- **Please Remember to Complete Session Evaluation Online**
  https://www.surveymonkey.com/r/3_18_IBD

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Inflammatory Bowel Disease (IBD): Prevalence

- **Crohn's disease** – Increasing
  - Incidence: 5/100,000
- **Ulcerative colitis** (UC) – Stable
  - Incidence: 10/100,000
- Bimodal age at presentation
  - Young children: ~2%
  - 10-19 years: ~30%
  - 50-60 years: 2nd peak

3

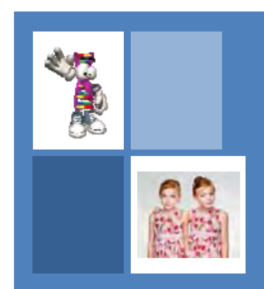
Epidemiology of IBD

- Stabilized in North America and Northern Europe
- Increasing in Southern Europe, Asia, and much of developing world
- Higher in whites, but differences narrowing
- Variable factors with cigarette smoking and appendectomy

4

Genetics

- 5-20 fold increase in 1° relatives
- Children of IBD parent - 5% risk
- Twins
  - 70% concordance identical twins – more for Crohn's disease
  - 5-10% concordance fraternal twins



5

Lifestyle and IBD

- Most urbanized
- Fewer children
- Higher birth order

Am J Gastroenterol. 2008 Jul;103(7):1775-82. doi: 10.1111/j.1572-0241.2008

6

Smoking and IBD

Ulcerative Colitis	Crohn's disease
• Protective effects with smoking • Ex-smokers more likely to develop UC	• Doubled risk in current smokers • Smokers respond less to treatment • More recurrence after surgery

7

Inflammatory Bowel Disease

Ulcerative Coliitis[1]	Crohn's Disease[2]
• Colon only • Rectal involvement • Continuous • Mucosal disease • Diffuse ulceration, granularity, friability, bleeding, exudate • No fistula • No granulomas • Nonsmokers • No appendectomy	• Any segment • Rectal sparing • Skip lesions • Transmural • Aphthous ulcers, serpiginous ulcers, cobblestoning • Fistulae • Granulomas • Smokers

8

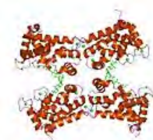
Inflammatory Bowel Disease v. Irritable Bowel Syndrome?

- Surrogate markers for bowel inflammation
  - Fecal lactoferrin
  - Fecal calprotectin
- Pain relief with defecation
- Few nocturnal symptoms
- Absence of occult fecal blood and leukocytes

9

Fecal Calprotectin

- Protein found in granulocytes
- Proportional to severity of endoscopic findings
- Useful as screen, or response to therapy
- Sensitivity of 93% and specificity of 94%



Waugh N et al. *Health Technol Assess*. 2013 Nov;17(55):xv-xix, 1-211

10

CROHN'S DISEASE: PRESENTATION AND DIAGNOSIS

11

Dwight Eisenhower

- Appendectomy 1923, adhesions
- 4 ppd smoker
- Partial SBO 1947, resolved spontaneously
- June 1956
  - Vague lower abdominal discomfort
  - Shocky, clammy
  - 30-40 cm ileum resected

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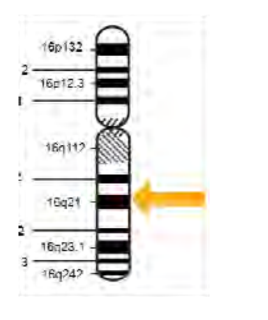
Cause

- Unknown
- Mutation on *NOD2* gene
  - 40x ↑ risk
  - 3% absolute risk
- 50%-60% concordance in identical twins
- Smoking 2X risk
- NSAIDs



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Crohn's Disease: Presentation

- Mild to moderate pain (RLQ)
- Intermittent diarrhea
- Weight loss with more extensive cases
- Anemia
- Fever

14

Crohn's Disease: Studies

- **Laboratory tests**
  - Negative stool cultures
  - Anemia, CRP, LFT
- **Endoscopy**: skip lesions, aphthous ulcers, cobblestoning, serpiginous ulcers, rectal sparing, perianal disease
- **Histology**: granulomas, transmural inflammation
- **Radiology**: rule out strictures and fistulas

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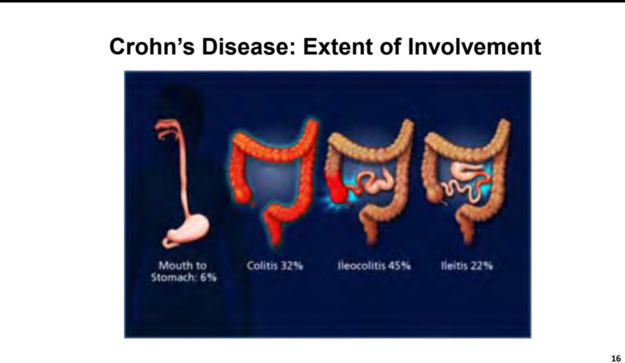
Crohn's Disease: Extent of Involvement



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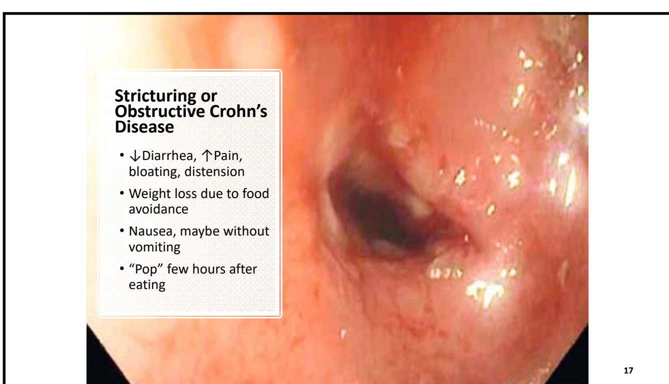

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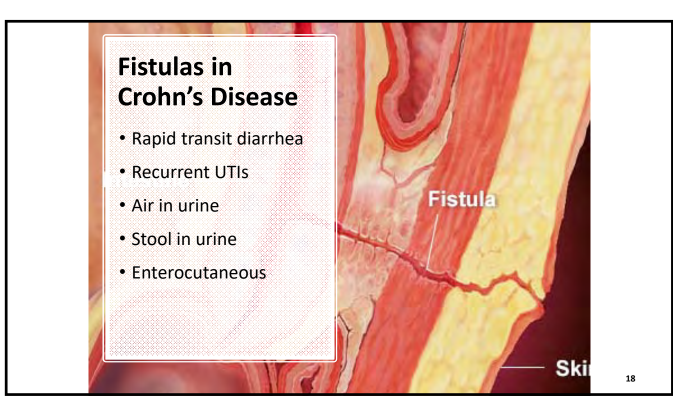

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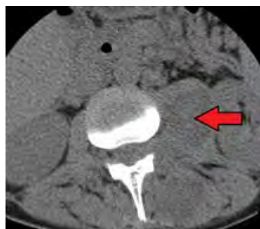
Psoas Abscess



- Right-sided
- Walks with limp
- Cross-sectional imaging needed

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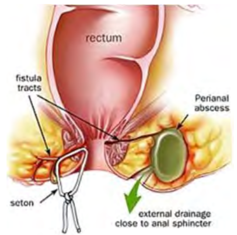
Perianal Crohn's Disease

- Painful defecation
- Bleeding
- Ulceration
- Fever
- Perianal fullness
- Tenderness with sitting
- Urgency or obstipation
- Drainage



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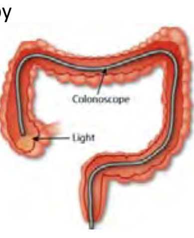
Endoscopy: Crohn's Disease

- Colonoscopy with ileoscopy at junction of colon and ileum with biopsy
  - Skip lesions
  - Cobblestoning
  - Ulcerations
  - Noncaseating granulomas



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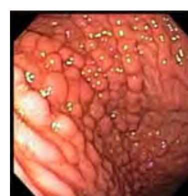
Cobblestoning



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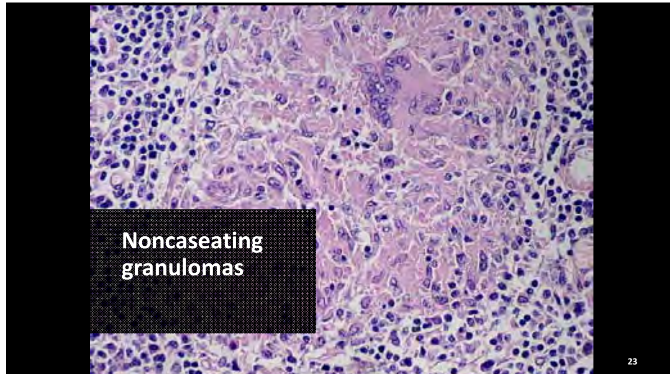

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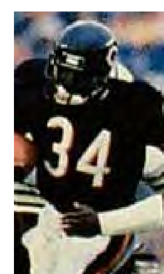
Ulcerative Colitis: Presentation and Diagnosis



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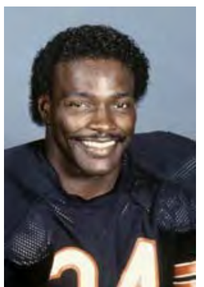
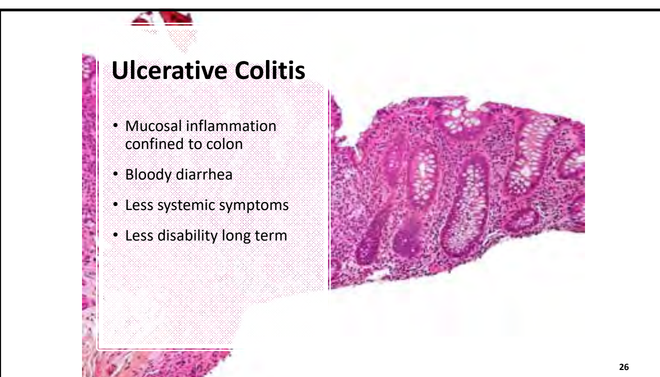


Walter Payton

- Chicago Bears, “Sweetness”
- Ulcerative colitis
- Primary Sclerosing cholangitis
- Cholangiocarcinoma
- Died awaiting liver transplant

25



Ulcerative Colitis

- Mucosal inflammation confined to colon
- Bloody diarrhea
- Less systemic symptoms
- Less disability long term

26

Not Ulcerative Colitis if

- No blood
- Small bowel involvement
- Rectal sparing
- Perianal disease

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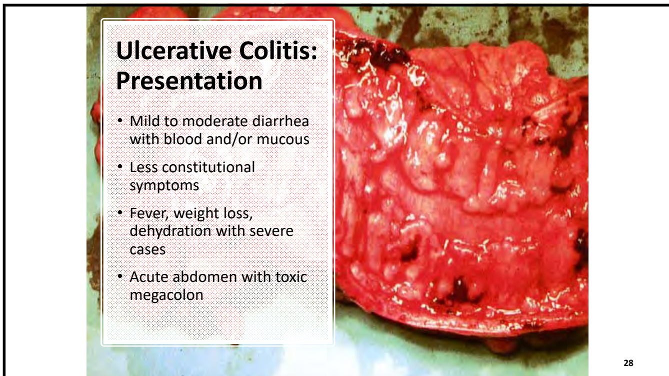
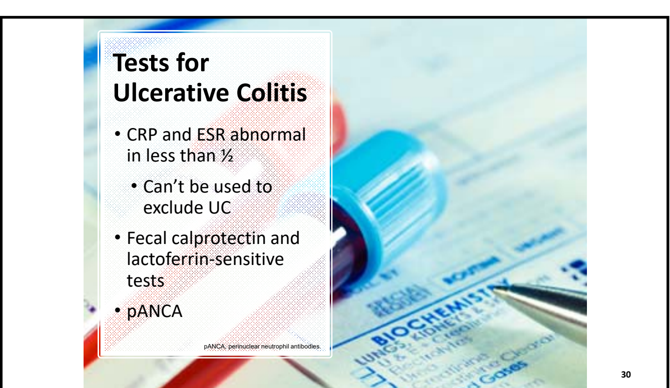
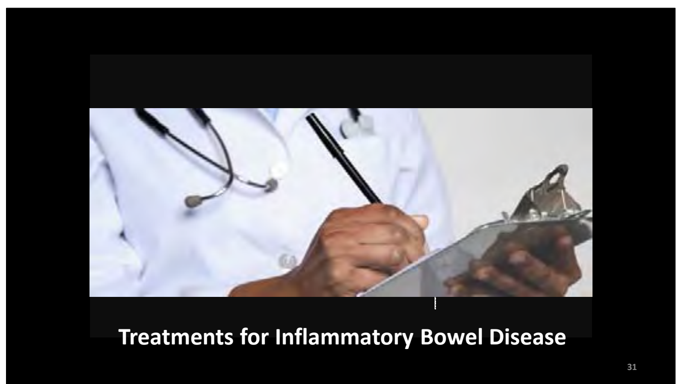


Ulcerative Colitis: Diagnosis

- **Laboratory** tests
  - Negative stool cultures
  - Anemia, CRP, LFT
- **Endoscopy**: continuous from rectum, superficial ulcers, granularity, friability
- **Histology**: crypt abscesses, mucosal inflammation
- **Radiology**: KUB to rule out toxic megacolon

29





IBD Medications

	Induction		Maintenance	
	UC	CD	UC	CD
5-ASA[1]	+++	+	+++	+
Antibiotics[1]	-	+	-	+
Corticosteroids[1]	+++	+++	-	-
Infliximab[1]	+++	+++	++	+++
Adalimumab[1]	+++	+++	++	+++
Certolizumab[1]	?	+++	?	+++
Vedolizumab[2]	+++	++	+++	++
6-mercaptopurine/ azathioprine[1]	-	+	++	++
Methotrexate[1]	-	++	?	++
Cyclosporine[1]	++	+	-	-

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5-ASA

UC-Ind	+++ (1B)
UC-Main	+++ (1A)
CD-Ind	+ (2C)
CD-Main	+ (2C)

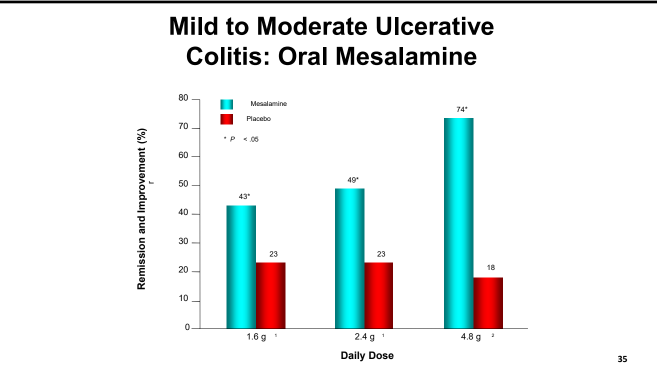
- Strong evidence in UC – 1st line
  - Active flares
  - Maintain remission
- Anti-inflammatory properties
- Oral or enemas in distal disease
- Rare side effects
  - Pancreatitis, interstitial nephritis, hepatitis

33

5-ASA Therapies

- Sulfasalazine and mesalamine for mild to moderate disease
- Sulfasalazine side effects
  - Nausea, headache, fever, rash, male infertility
  - Rare agranulocytosis in 1st 2 months
  - Sulfa allergy
  - Interferes with folate absorption, take 1 mg folate/day
- Mesalamine side effects
  - Headache, nausea, diarrhea, abdominal pain

Mild to Moderate Ulcerative Colitis: Oral Mesalamine

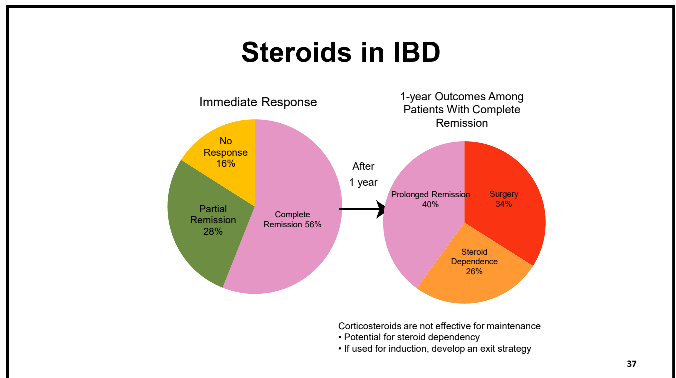


Steroids

UC-Ind	+++ (1C)
UC-Main	-
CD-Ind	+++ (1C)
CD-Main	-

- Acute flairs in UC and CD
- IV, PO, or rectal
- Not for maintenance therapy
- Risk of chronic use
  - Infections
  - Bone loss
  - Diabetes

Steroids in IBD



Corticosteroids are not effective for maintenance
- Potential for steroid dependency
- If used for induction, develop an exit strategy

37

Minimizing Steroid Toxicity

- Short-term use
- Exit strategy usually involving immunosuppressive meds
- Budesonide when applicable[a]
- Vitamin D, calcium, ± bisphosphonates

38

Azathioprine and 6-Mercaptopurine

- Purine analogs—inhibit proliferation of rapidly dividing cells (lymphocytes, T>B),
  - Increased levels with allopurinol
- Effective for maintenance in CD and UC
- Starting dose determined by thiopurine methyltransferase activity – 1/300 deficient
- Toxicities[3]:
  - Leukopenia: 2%-4%
  - Pancreatitis: 4%
  - Allergy: 1%
  - Hepatotoxicity: 1%, related to 6-methylmercaptopurine

UC-Ind	- (2D)
UC-Main	++ (2C)
CD-Ind	+ (2C)
CD-Main	++ (2C)

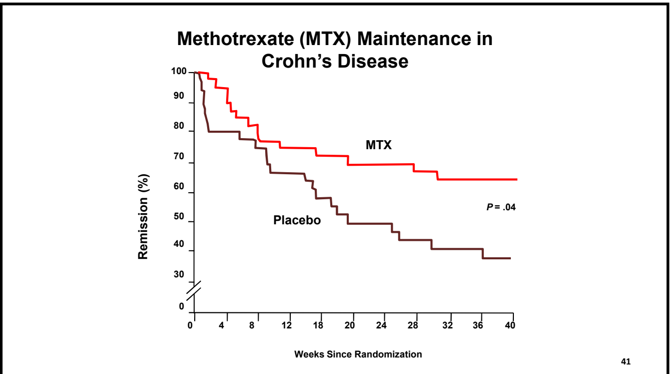
39

Methotrexate

- Induction and maintenance of remission in Crohn disease
- Ineffective orally, used IM
- Ineffective in UC
- Not in pregnancy
- Hepatotoxicity, myelosuppression, interstitial pneumonitis, oligospermia, stomatitis, and alopecia

UC-Ind	-
UC-Main	?
CD-Ind	++
CD-Main	++

40



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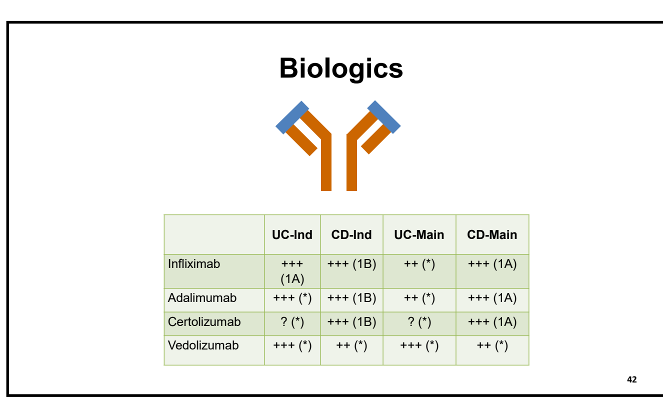
Biologics



	UC-Ind	CD-Ind	UC-Main	CD-Main
Infliximab	+++ (1A)	+++ (1B)	++ (*)	+++ (1A)
Adalimumab	+++ (*)	+++ (1B)	++ (*)	+++ (1A)
Certolizumab	? (*)	+++ (1B)	? (*)	+++ (1A)
Vedolizumab	+++ (*)	++ (*)	+++ (*)	++ (*)

42

What is a Biologic?

- From living organisms grown in bioreactors
- Large complex molecules
- Not interchangeable substitutes
  - One biosimilar (Neulasta)
- 8 of 10 top selling drugs by revenue

43

Biologics in IBD

- Six approved agents
- Two antiadhesion agents
  - Natalizumab (CD)
  - Vedolizumab
- Four anti-TNF agents
  - Infliximab,
  - Adalimumab,
  - Certolizumab (CD)
  - Golimumab (UC)

44

Clinical Response and Remission in Infliximab-treated Patients

Placebo (n = 25)
Infliximab 5 mg/kg (n = 27)

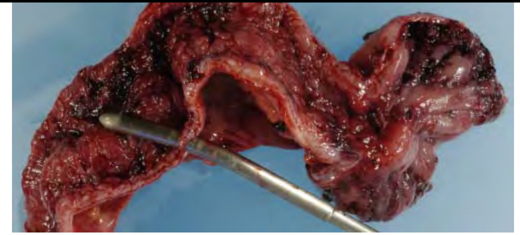
Percent of Patients
100
75
50
25
0

4-Week Clinical Response: *P* = .001; Placebo 17%; Infliximab 81%
4-Week Clinical Remission: *P* = .001; Placebo 4%; Infliximab 33%

CDAI, Crohn's Disease Activity Index.

Clinical response defined as a ≥70-point decrease in CDAI score from baseline. Clinical remission defined as CDAI score <150.

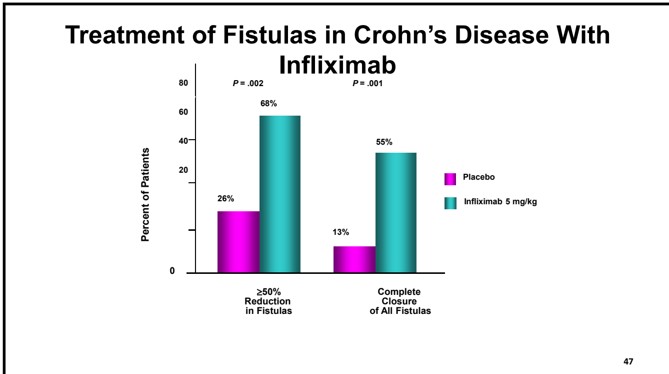
45



Fistula in Crohns

46

Treatment of Fistulas in Crohn’s Disease With Infliximab



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Warnings and Precautions

- Immunosuppressives – neoplasia[a]
- Anti-TNF agents
  - Infections – ***TB***, invasive fungal organisms (aspergillosis, blastomycosis, candidiasis, coccidiodomycosis, histoplasmosis, pneumocystosis), listeria, legionella, and bacterial, viral, or other opportunistic infections[a]
  - Reactivation of ***Hepatitis B***
  - Lymphoma, including HSTCL and other malignancies[a]
- Natalizumab[b] – ***Progressive Multifocal Leukoencephalopathy***[a]
- Vedolizumab – No PML nor Hepatitis B

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Minimizing Toxicity From Biologic Agents

- Anti-TNF agents
  - TB
    - Black box warning
    - Treat PPD+ for 9 months with isoniazid before anti-TNF
  - HBV
    - Warnings and precautions
      - Vaccinate seronegative patients, treat HBsAg+ patients
    - Know relative contraindications
  - PCP prophylaxis
  - Discontinue when risk/benefit ratio increases

49

Cyclosporine in Severely Active Ulcerative Colitis

- RCT: 20 patients
- Severe UC unresponsive to ≥7 days IV steroids
- Treatment response was hospital discharge on PO meds
- 82% response vs none in placebo

UC-Ind	++ (2D)
UC-Main	- (2D)
CD-Ind	+ (2D)
CD-Main	- (2C)

50

Infliximab as Rescue Therapy in Severely Active Ulcerative Colitis[a]

51

Surgery in IBD

Ulcerative Colitis[1]	Crohn's Disease[2]
• Surgery (colectomy) is curative • Colectomy and ileostomy • Colectomy and ileo-anal anastomosis (J-pouch)	• Surgery not curative • Disease recurs • Less after ostomy • Resect inflamed segments to treat complications or "refractory" disease

52

Treatment Summary

Ulcerative Colitis[1]	Crohn's Disease[2]
• Mildly active – 5-ASA • Moderately active – 5-ASA, steroids, biologics • Severely active – steroids, cyclosporine, biologics • Maintenance – 5-ASA, immunosuppressives, biologics	• Mildly active – budesonide; (5-ASA for colitis) • Moderately active – steroids, biologics • Severely active – biologics • Maintenance – biologics, immunosuppressives

53

Health Maintenance in IBD Patients

- Monitor/treat IBD related compilations
  - Osteoporosis
  - Iron, zinc, B_{12}, folic acid deficiency
  - Cancer
- Preventative medicine
  - Vaccinations (no live vaccines when immunosuppressed)
  - Pap smears
  - Quit smoking
  - Skin checks (for thiopurine and biologic use)
  - Annual TB and hepatitis B testing
- Medication adherence
- Prompt recognition of IBD relapse and/or acute severe colitis

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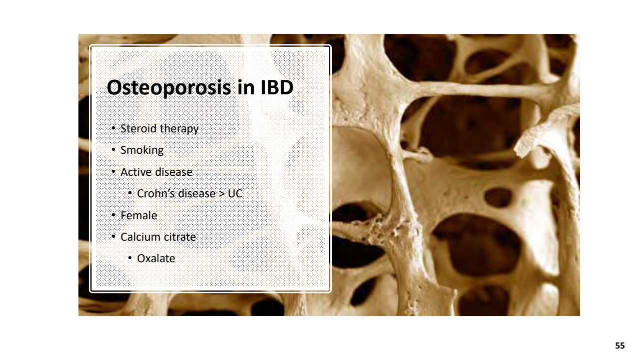
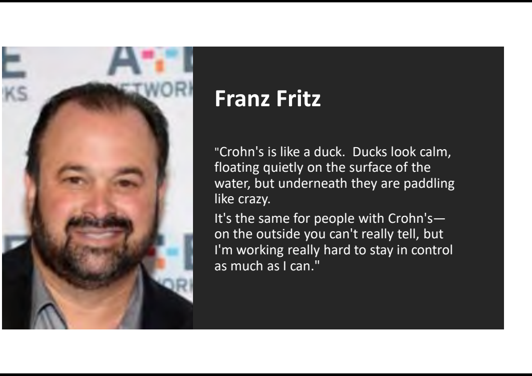
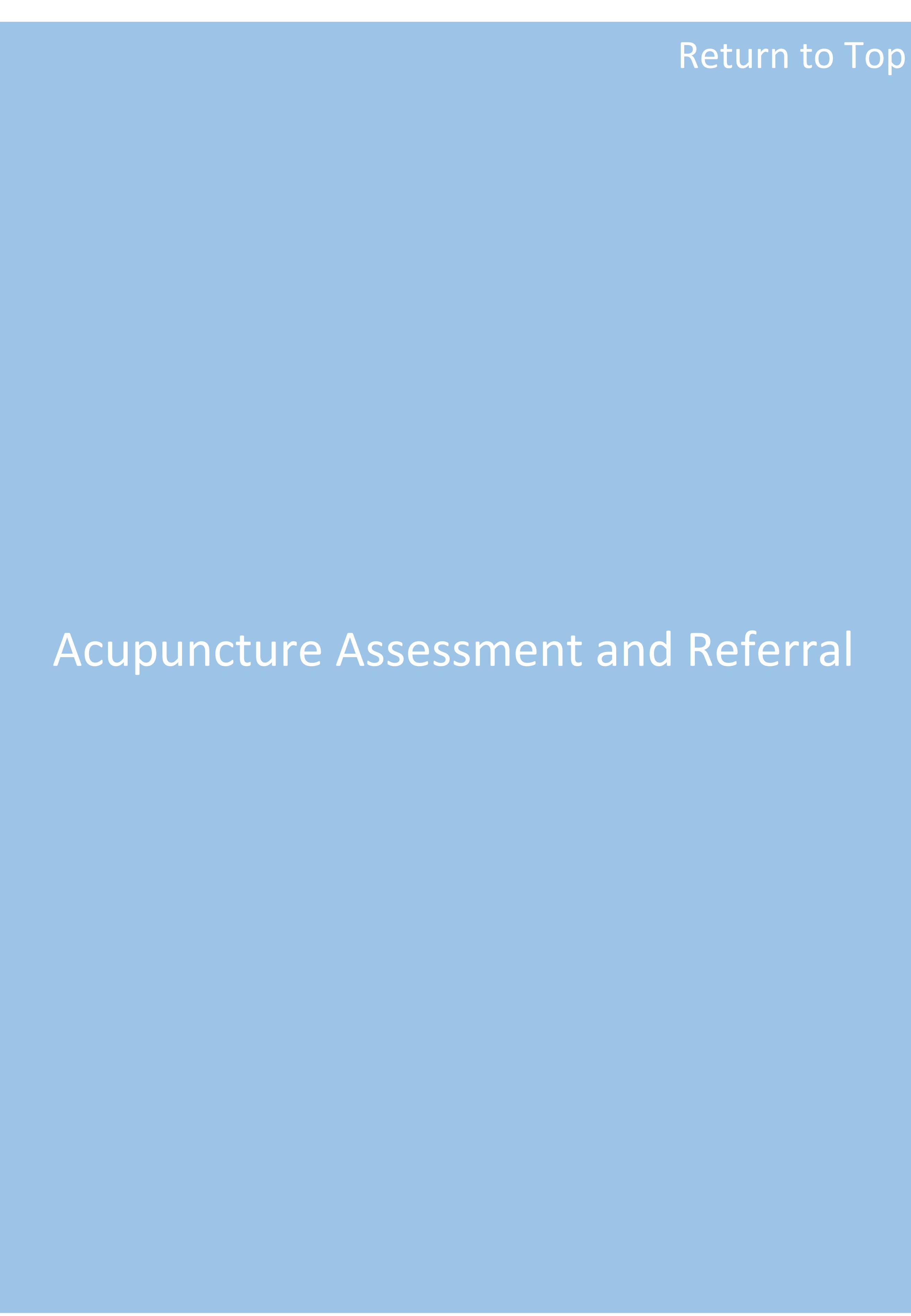

Osteoporosis in IBD
• Steroid therapy
• Smoking
• Active disease
• Crohn's disease > UC
• Female
• Calcium citrate
• Oxalate
55


Franz Fritz
"Crohn's is like a duck. Ducks look calm, floating quietly on the surface of the water, but underneath they are paddling like crazy.
It's the same for people with Crohn's—on the outside you can't really tell, but I'm working really hard to stay in control as much as I can."
56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Acupuncture Assessment and Referral

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Acupuncture Assessment and Referral

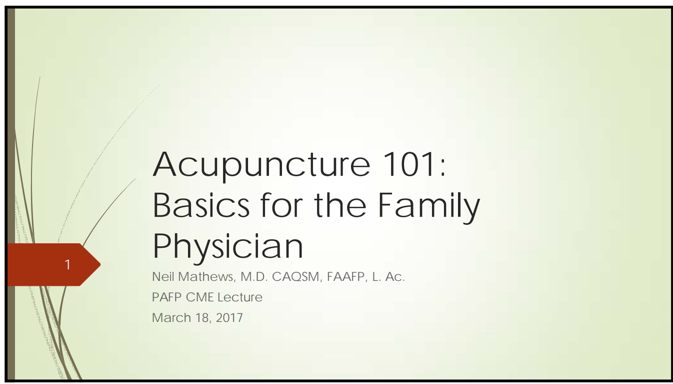
Neil Mathews, MD

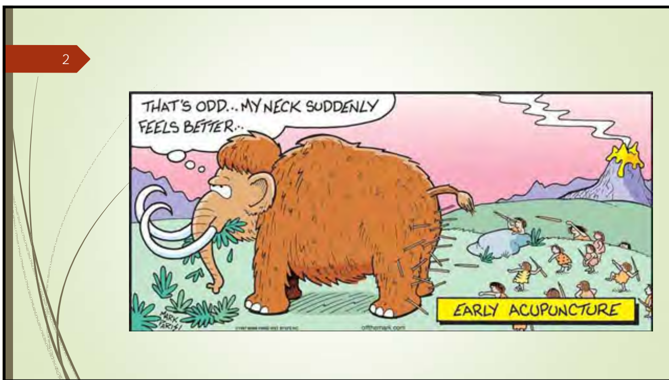
Disclosures:

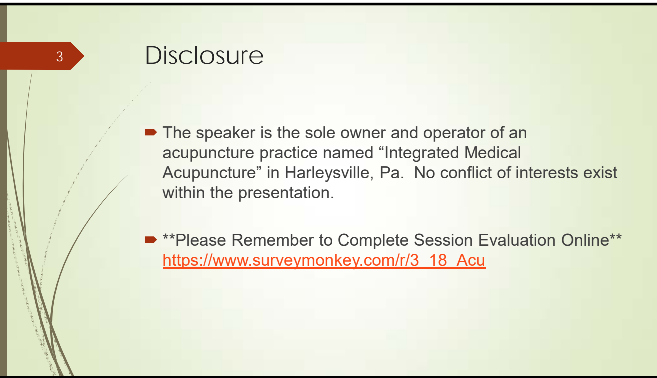
Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.


1
Acupuncture 101:
Basics for the Family
Physician
Neil Mathews, M.D. CAQSM, FAAFP, L. Ac.
PAFP CME Lecture
March 18, 2017

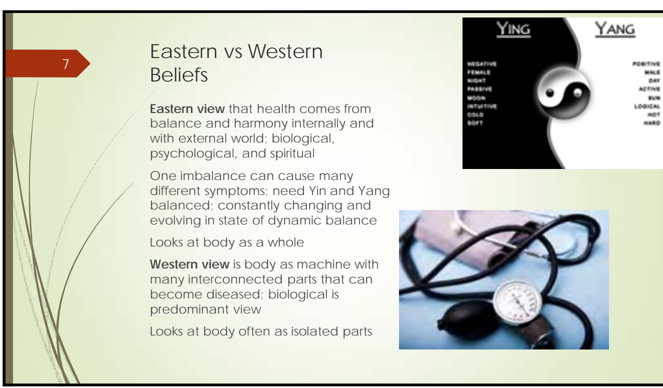

2
THAT'S ODD...MY NECK SUDDENLY
FEELS BETTER...
EARLY ACUPUNCTURE

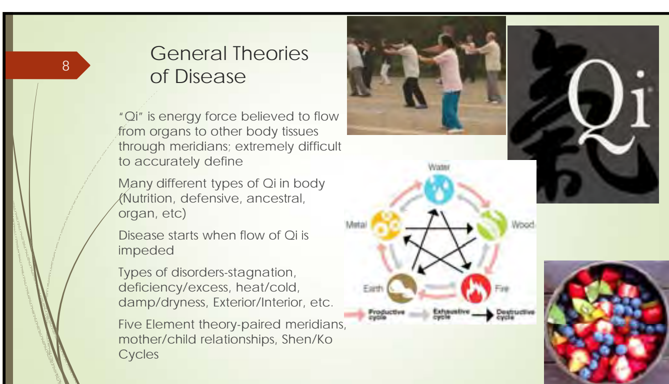

3
Disclosure
The speaker is the sole owner and operator of an acupuncture practice named "Integrated Medical Acupuncture" in Harleysville, Pa. No conflict of interests exist within the presentation.
Please Remember to Complete Session Evaluation Online
https://www.surveymonkey.com/r/3_18_Acu

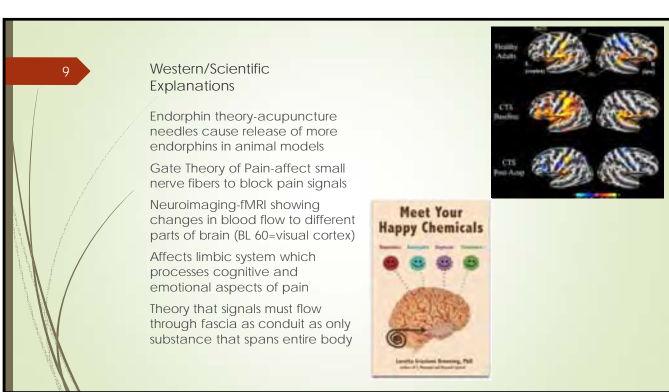
4

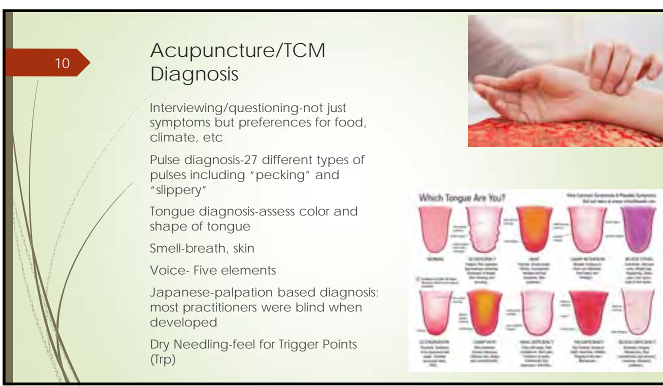
Objectives

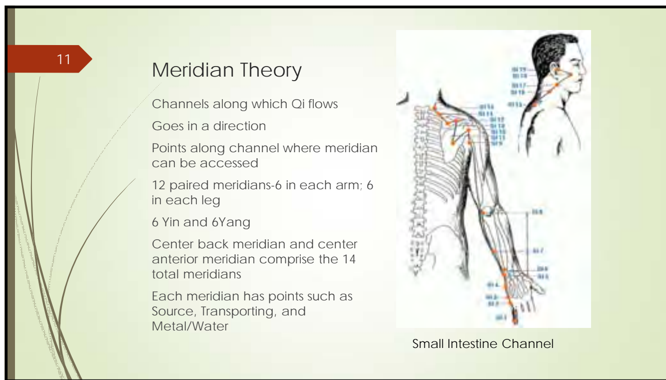
- Understand the theories and basis of treatment for acupuncture
- List the contraindications for receiving acupuncture
- List appropriate conditions to be referred to acupuncture clinics
- List the possible major and minor side effects from acupuncture treatments

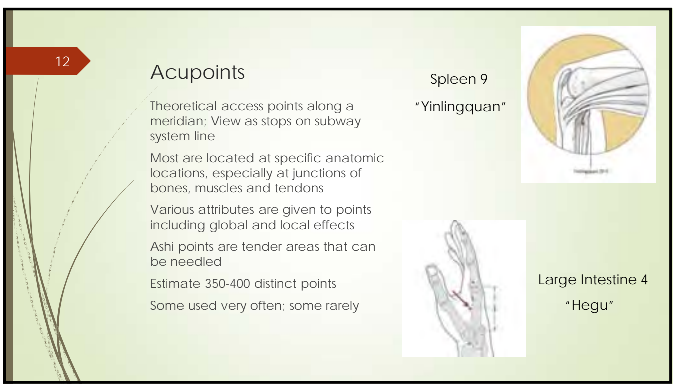

7
Eastern vs Western Beliefs
Eastern view that health comes from balance and harmony internally and with external world; biological, psychological, and spiritual
One imbalance can cause many different symptoms; need Yin and Yang balanced; constantly changing and evolving in state of dynamic balance
Looks at body as a whole
Western view is body as machine with many interconnected parts that can become diseased; biological is predominant view
Looks at body often as isolated parts
YING
YANG
NEGATIVE
FEMALE
NIGHT
PASSIVE
MOON
INTUITIVE
COLD
SOFT
POSITIVE
MALE
DAY
ACTIVE
SUN
LOGICAL
HOT
HARD

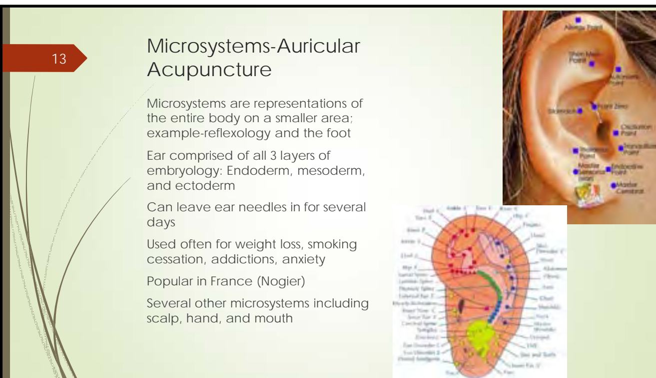

8
General Theories of Disease
"Qi" is energy force believed to flow from organs to other body tissues through meridians; extremely difficult to accurately define
Many different types of Qi in body (Nutrition, defensive, ancestral, organ, etc)
Disease starts when flow of Qi is impeded
Types of disorders-stagnation, deficiency/excess, heat/cold, damp/dryness, Exterior/Interior, etc.
Five Element theory-paired meridians, mother/child relationships, Shen/Ko Cycles
Qi
Water
Wood
Fire
Earth
Metal
Productive cycle
Exhaustive cycle
Destructive cycle


9
Western/Scientific Explanations
Endorphin theory-acupuncture needles cause release of more endorphins in animal models
Gate Theory of Pain-affect small nerve fibers to block pain signals
Neuroimaging-fMRI showing changes in blood flow to different parts of brain (BL 60=visual cortex)
Affects limbic system which processes cognitive and emotional aspects of pain
Theory that signals must flow through fascia as conduit as only substance that spans entire body
Meet Your Happy Chemicals


10
Acupuncture/TCM Diagnosis
Interviewing/questioning-not just symptoms but preferences for food, climate, etc
Pulse diagnosis-27 different types of pulses including "pecking" and "slippery"
Tongue diagnosis-assess color and shape of tongue
Smell-breath, skin
Voice- Five elements
Japanese-palpation based diagnosis; most practitioners were blind when developed
Dry Needling-feel for Trigger Points (Trp)
Which Tongue Are You?

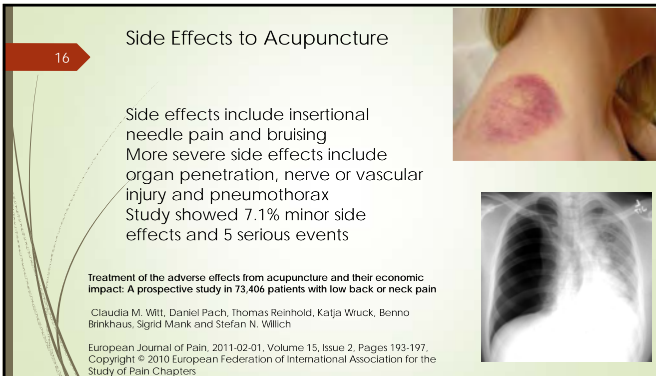

11
Meridian Theory
Channels along which Qi flows
Goes in a direction
Points along channel where meridian can be accessed
12 paired meridians-6 in each arm; 6 in each leg
6 Yin and 6Yang
Center back meridian and center anterior meridian comprise the 14 total meridians
Each meridian has points such as Source, Transporting, and Metal/Water
Small Intestine Channel


12
Acupoints
Theoretical access points along a meridian; View as stops on subway system line
Most are located at specific anatomic locations, especially at junctions of bones, muscles and tendons
Various attributes are given to points including global and local effects
Ashi points are tender areas that can be needled
Estimate 350-400 distinct points
Some used very often; some rarely
Spleen 9
"Yinlingquan"
Large Intestine 4
"Hegu"


13
Microsystems-Auricular Acupuncture
Microsystems are representations of the entire body on a smaller area: example-reflexology and the foot
Ear comprised of all 3 layers of embryology: Endoderm, mesoderm, and ectoderm
Can leave ear needles in for several days
Used often for weight loss, smoking cessation, addictions, anxiety
Popular in France (Nogier)
Several other microsystems including scalp, hand, and mouth

14
Needles
Made of stainless steel, gold, copper, or other metals
Pointed tips: not hollow therefore no pain
Size 13-130 mm long
0.16-0.46 mm diameter
Disposable v reusable
Chinese v Japanese
Use of Guide tubes
Inserted at different angles and depths
Can be stimulated (disperse or nourish)
De Qi sensation

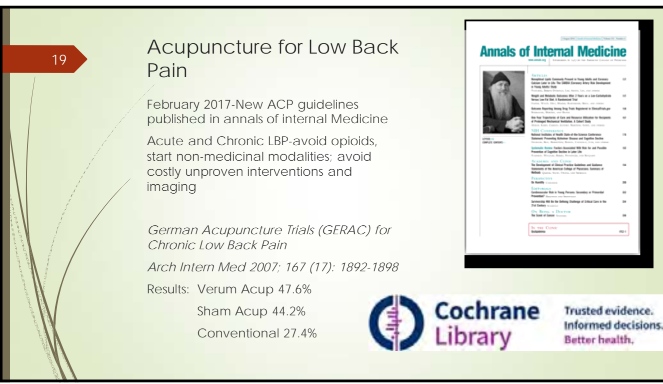
15
Acupuncture Adjuvant Procedures
Electro-acupuncture- cover larger areas and increase endorphin release
Moxibustion-burning herb (Mugwort) either on top of needles or on skin
Laser Acupuncture-same energy frequency as Moxa, used on points that cannot needle: patient may use at home
Cupping-wet or dry: used over tight muscles: increasing in popularity

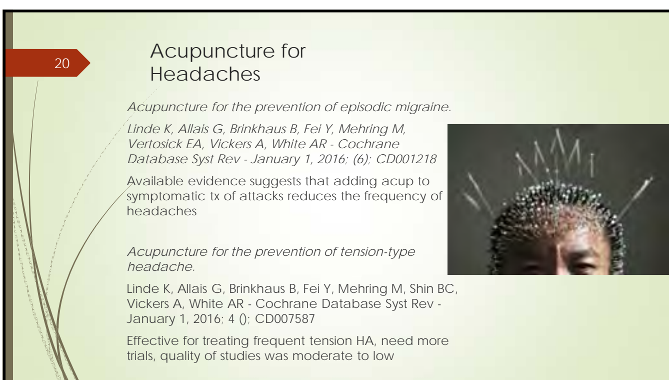


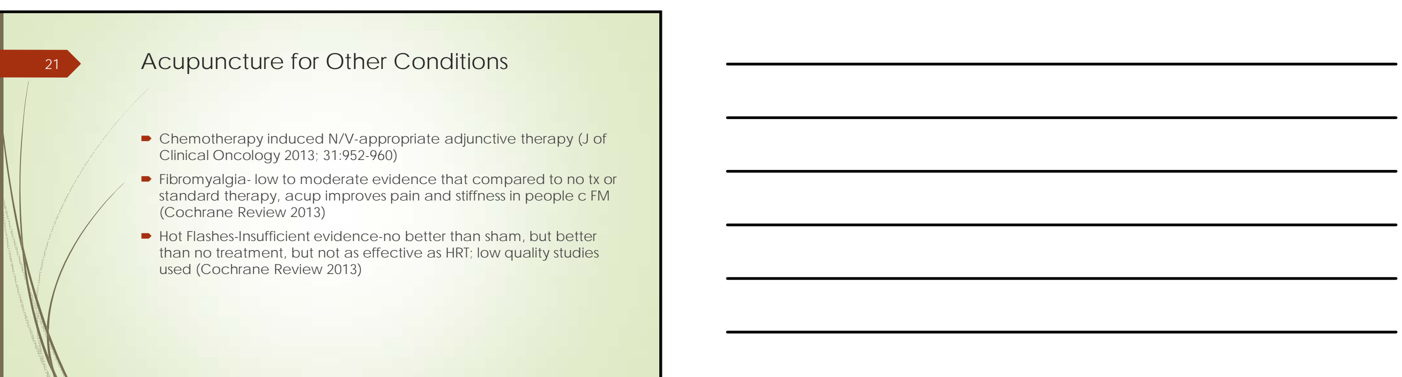
17

Research Issues with Studying Acupuncture

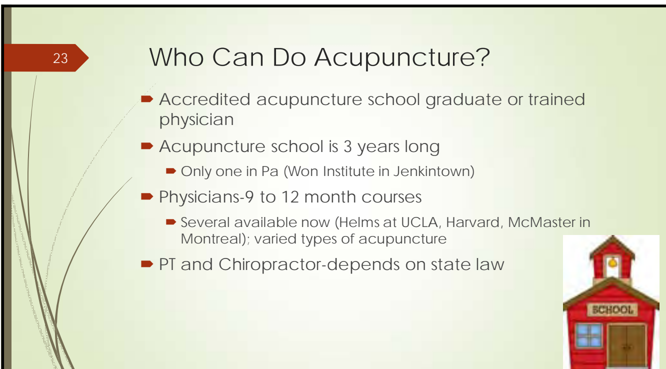
- Blinding of Subjects (Sham acupuncture)
  - Effects of Sham Protocols
- Study Design
  - Different Treatment Protocols based on teaching/training
- Publication Bias
  - Universally Positive studies from Far East and Russia
- Poor Funding for large trials with good design
- Lack of Understanding by Western Medicine


19
Acupuncture for Low Back Pain
February 2017-New ACP guidelines published in annals of internal Medicine
Acute and Chronic LBP-avoid opioids, start non-medicinal modalities; avoid costly unproven interventions and imaging
German Acupuncture Trials (GERAC) for Chronic Low Back Pain
Arch Intern Med 2007; 167 (17): 1892-1898
Results: Verum Acup 47.6%
Sham Acup 44.2%
Conventional 27.4%
Annals of Internal Medicine
Cochrane Library
Trusted evidence.
Informed decisions.
Better health.


20
Acupuncture for Headaches
Acupuncture for the prevention of episodic migraine.
Linde K, Allais G, Brinkhaus B, Fei Y, Mehring M, Vertosick EA, Vickers A, White AR - Cochrane Database Syst Rev - January 1, 2016; (6); CD001218
Available evidence suggests that adding acup to symptomatic tx of attacks reduces the frequency of headaches
Acupuncture for the prevention of tension-type headache.
Linde K, Allais G, Brinkhaus B, Fei Y, Mehring M, Shin BC, Vickers A, White AR - Cochrane Database Syst Rev - January 1, 2016; 4 (); CD007587
Effective for treating frequent tension HA, need more trials, quality of studies was moderate to low


21
Acupuncture for Other Conditions
Chemotherapy induced N/V-appropriate adjunctive therapy (J of Clinical Oncology 2013; 31:952-960)
Fibromyalgia- low to moderate evidence that compared to no tx or standard therapy, acup improves pain and stiffness in people c FM (Cochrane Review 2013)
Hot Flashes-Insufficient evidence-no better than sham, but better than no treatment, but not as effective as HRT; low quality studies used (Cochrane Review 2013)

22
Who Should NOT Get Acupuncture?
Coagulopathy-severe liver disease, hemophiliacs
Severe psychiatric disorders (psychosis)
Anticoagulants (relative)-avoid deep meedling
Skin issues-infection or trauma
Electroacupuncture contraindicated with implantable devices like defibrillator or pacemaker
Warfarin Sodium
5 mg


23
Who Can Do Acupuncture?
Accredited acupuncture school graduate or trained physician
Acupuncture school is 3 years long
Only one in Pa (Won Institute in Jenkintown)
Physicians-9 to 12 month courses
Several available now (Helms at UCLA, Harvard, McMaster in Montreal): varied types of acupuncture
PT and Chiropractor-depends on state law
SCHOOL

24
Dry Needling vs Acupuncture
Dry Needling is insertion into muscle trigger point to obtain twitch response
Does not include needling as part of broader treatment plan (TCM)
90+% of Trp correspond with known acupoints (Travell)
Ongoing battle between acupuncture community, who consider dry needling as a form of acupuncture, and other health care providers who see it as non-related adjunctive therapy
TURF WARS

25

Should I Incorporate into My Practice?

- Know state laws and requirements for training and licensure
- Malpractice cover for dry needling/acupuncture
- Does it fit into my schedule? Is it cost-effective? Do I have room in my space to do it well? Is the setting appropriate?
- Have a plan for continuing education/get a mentor if available
- Marketing the practice to physicians and other referral sources
- Long term plan for incorporating into medical practice or separating into distinct practices

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“Quick Hits” Panel Part I

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Quick Hit Panel

Jeffrey Zlotnick, MD, Todd Felix, MD, Cayce Onks, DO, MS, ATC, Ayesha Abid, MD, Drew Keister, MD, & Michael Flanagan, MD

Disclosures:

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The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

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COPD Classification

Jeffrey A Zlotnick MD FAAFP

Family / Sports Medicine
Asst Clinical Professor of Family/Sports Medicine:
UMDNJ-NJ Medical School
UMDNJ-Robert Wood Johnson Medical School
Philadelphia College of Osteopathic Medicine

Disclosure–I have no financial disclosures that would be a potential conflict of interest with this presentation.

1

These guidelines are REALLY confusing!!

2

Emphysema vs Chronic Bronchitis

- In emphysema, the walls between many of the air sacs are damaged. As a result, the air sacs lose their shape and become floppy. This damage also can destroy the walls of the air sacs, leading to fewer and larger air sacs instead of many tiny ones. If this happens, the amount of gas exchange in the lungs is reduced. (Reduced surface area)
- In chronic bronchitis, the lining of the airways is constantly irritated and inflamed. This causes the lining to thicken. Lots of thick mucus forms in the airways, making it hard to breathe.
- Most people who have COPD have both emphysema and chronic bronchitis. Thus, the general term "COPD" is more accurate.

3

Diagnosis

- Routine screening using spirometry is **NOT** recommended by USPSTF
- Based on clinical suspicion with sx:
  - Cough 85%
  - Dyspnea 70%
  - Increased sputum 45%
- Dyspnea better indicator of mortality

4

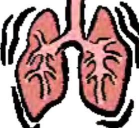
Levels of Dyspnea

1. Not bothered by dyspnea, except during strenuous activity
2. Shortness of breath when walking up a short hill
3. Walks more slowly than others because of breathlessness; stops to catch breath when walking at own pace
4. Stops to catch breath after walking 100 m (328 ft) on level ground
5. Too short of breath to leave the house; breathless with activities of daily living, such as dressing and undressing

5

How to Classify COPD

GOLD
ATS
BODE



6

FEV_1/FVC Ratio

- GOLD Criteria
  - $FEV_1/FVC < 70\%$
  - For 5-18 y/o, use <85%
- ATS Criteria (American Thoracic Society)
  - FEV_1/FVC less than the LLN
  - LLN = Lower Limit of Normal
    - Measurement < 5th percentile of spirometry data obtained from the Third National Health and Nutrition Examination Survey (NHANES III).

Respir Res. 2012;13(1):13.

7

FEV_1/FVC Ratio

- GOLD misses
  - Up to 50% of diagnosis in younger patients
  - Over-diagnosis in healthy non-smokers
- ATS may be better in
  - Patients <65 regardless on smoking hx
  - Non-smokers >65

Chest. 2007;131(2):349–355.
Thorax. 2008;63(12):1046–1051.

8

BODE Index

Variable	Points			
	0	1	2	3
FEV_1 (percent of the predicted value)	≥ 65	50 to 64	36 to 49	≤ 35
Distance walked in six minutes (meters)	≥ 350	250 to 349	150 to 249	≤ 149
Grade on the MRC dyspnea scale	0 or 1	2	3	4 or 5
BMI (kg per m^2)	> 21	≤ 21	—	—

BODE = BMI, airflow Obstruction, Dyspnea, Exercise capacity;
0 to 10 points; higher scores indicate a greater risk of death

9

GOLD Classifications

- GOLD = Global Initiative for Chronic Obstructive Lung Disease
- From a collaboration between the National Institutes of Health and the World Health Organization
- Based on the FEV1/FVC
  - Divided into 4 stages

GOLD Classifications

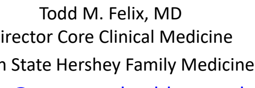
Stage I	Mild COPD	FEV1/FVC<0.70	$FEV_1 \geq$ 80% normal
Stage II	Moderate COPD	FEV1/FVC<0.70	FEV_1 50-79% normal
Stage III	Severe COPD	FEV1/FVC<0.70	FEV_1 30-49% normal
Stage IV	Very Severe COPD	FEV1/FVC<0.70	FEV_1 <30% normal, or <50% normal with chronic respiratory failure present*

PAFP Conference

Quick Hits

Food Allergy Updates

March 2017



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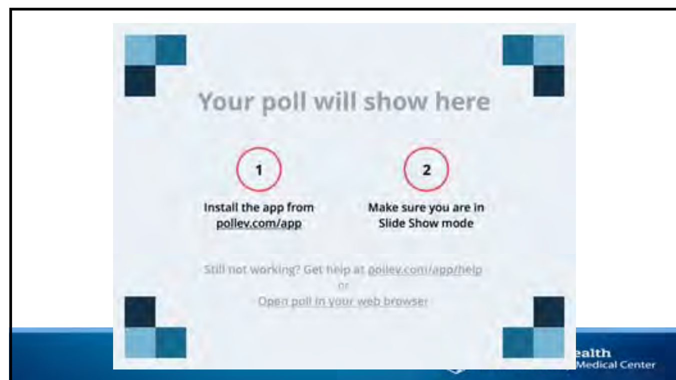
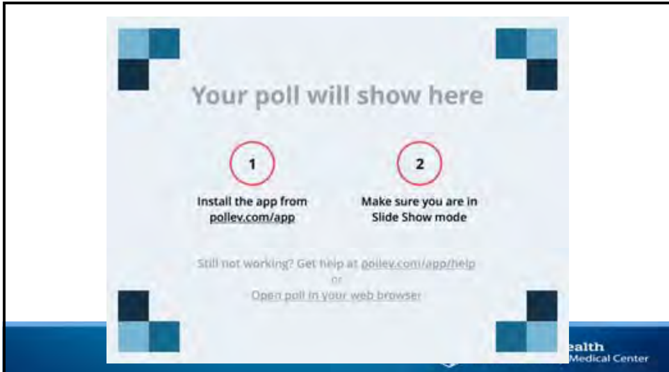
Disclosure--I have no financial disclosures that would be a potential conflict of interest with this presentation.





Incidence

- The prevalence of food allergy in children (aged 0 to 17 years) has slowly increased in the United States:

3.4% in 1997 >> 5.1% in 2011

- Peanuts allergy increased from

0.4% in 1997 >> 1.4% in 2008 >> over 2% in 2010

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Guidelines AAP 2000

- Mothers should **eliminate peanuts and tree nuts** (e.g., almonds, walnuts, etc.) and consider eliminating allergenic foods like eggs, cow's milk, fish, from their diets while nursing.

- Solid foods **should not** be introduced into the diet of high-risk infants until **6 months** of age

- Dairy products delayed until 1 year of age
- Eggs delayed until 2 years of age
- Peanuts, tree nuts, and fish delayed until 3 years of age.

Guidelines AAP 2008

- *Lack of evidence that maternal dietary restrictions during pregnancy play a significant role in the prevention of atopic disease in infants*
- Solid foods **should not** be introduced **before 4 to 6 months of age** (there is **no current convincing evidence that delaying their introduction beyond this period has a significant protective effect on the development of atopic disease**)
- Foods considered highly allergenic are fish, eggs, and peanut protein.

Breastfeeding Guidelines

2012→ AAP (and USPSTF, WHO and ACOG) recommend **exclusive breastfeeding for 6 months**, followed by continued breastfeeding as complementary foods are introduced, with continuation of breastfeeding for 1 year or longer as mutually desired by mother and infant.

New evidence?

LEAP trial (Learning Early About Peanut Allergy)

- 640 infants **4-11 months old (mean age 8 months)** with severe eczema, egg allergy, or both to **consume vs. avoid peanuts** until 60 months of age
- Prevalence of peanut allergy at 60 months of age was **13.7% in the avoidance group and 1.9% in the consumption group (NNT=9)**

10.6% vs. 35.2% (p = 0.004, NNT 4) in children with positive baseline skin prick test

LEAP-ON

550 children (90%) of original study were instructed to avoid peanuts for 12 months after original trial (60 months→72months)

"12-month period of peanut avoidance was not associated with an increase in the prevalence of peanut allergy"

No peanut allergy continued 18.6% vs. 4.8% (NNT=8) overall (3 new cases in each group)

EAT Study (Enquiring About Tolerance)

- 730 breastfed children randomized to 3 months (early) vs. 6 months (delayed introduction) of allergenic foods:
  - cow's milk (in the form of yogurt), peanuts, cooked eggs, sesame, white fish, and wheat
- Outcome was evidence of allergy age 1-3
- **2.4% vs 7.3% for any allergy, 0% vs 2.5% for peanuts, and 1.4% vs 5.5% for eggs in per protocol analysis (~1/3 adherence)**
- *No significant effects with respect to milk, sesame, white fish, or wheat*

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Starting Time of Egg Protein (STEP) Trial

- 820 infants aged 4-6 months +Fhx without allergy symptoms or eczema were randomized
- Egg powder vs. placebo (added egg @ 10m)
- IgE-mediated egg allergy in 7% vs. 10.3% (adjusted relative risk 0.75, 95% CI 0.48-1.17), not significant

---

- Differs from STAR trial, where children had mod/severe eczema (33% vs. 51%)

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Timing of Allergenic Food Introduction….

- Systematic review of 146 studies (29 interventional trials, 62 cohort studies, and 55 case-control studies)
- **Early egg introduction (age 4-6 months) associated with decreased risk of egg allergy** (1,915 infants)
  - risk ratio (RR) 0.56 (95% CI 0.36-0.87)
  - NNT 18-86
- **Early peanut introduction (age 4-11 months) associated with decreased risk of peanut allergy** compared to later introduction (1,550 infants)
  - RR 0.29 (95% CI 0.11-0.74)
  - NNT 14-48

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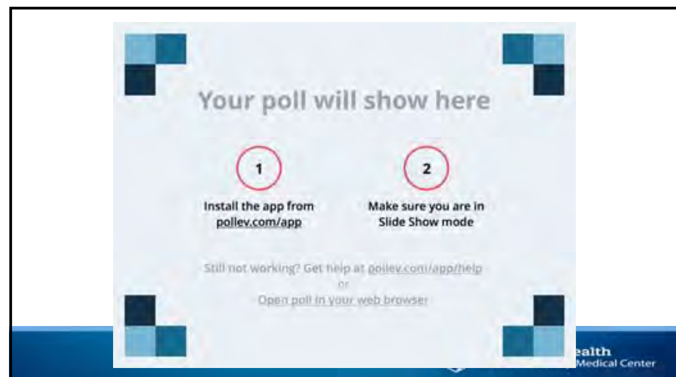

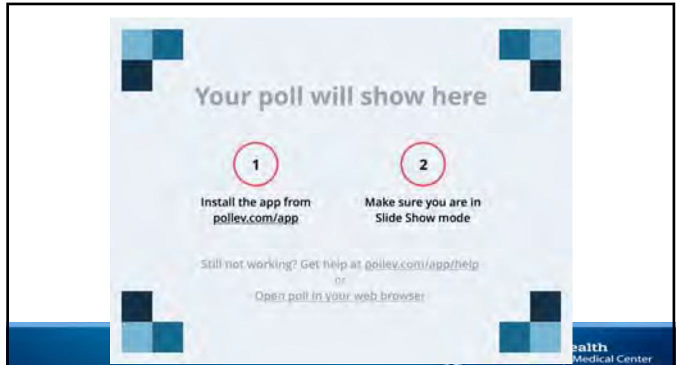

And the data keeps coming….

- **Two-step egg introduction for prevention of egg allergy in high-risk infants with eczema (PETIT): a randomised, double-blind, placebo-controlled trial, Lancet 2017**

Japanese study infants 4-5 months with eczema, RCT 6months started daily egg protein

At 1 year 9% intervention and 38% placebo group had egg allergy during food challenge

27

References

1. Perkin MR, Logan K, Tseng A, et al, for the EAT study team. Randomized trial of introduction of allergenic foods in breast-fed infants. N Engl J Med 2016;374(18):1733-1743.
2. Peanut and tree nut consumption during pregnancy and allergic disease in children- Should mothers decrease their intake? Longitudinal evidence from the Danish National Birth Cohort. *J Allergy Clin Immunol 2012;130(3):724-732.*
3. Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy *N Engl J Med 2015; 372:803-813.*
4. Ierodiakonou D, Garcia-Larsen V, Logan A, et al. Timing of allergenic food introduction to the infant diet and risk of allergic or autoimmune disease. A systematic review and meta-analysis. *JAMA 2016;316(11):1181-1192.*
5. Effect of avoidance on peanut allergy after early peanut consumption. *N Engl J Med 2016;374(15):1435-1443.*
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9. http://www.cdc.gov/nchs/data/databriefs/db121.pdf
10. Palmer et al. Randomized controlled trial of early regular egg intake to prevent egg allergy, J Allergy Clinical Immunol 2016

Exercise Prescription for the Physically Inactive

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March 18, 2017

PAFP Primary Care Across the Lifespan

Disclosure--I have no financial disclosures that would be a potential conflict of interest with this presentation.

The Problem

- Leading causes of Mortality
  - 1. HTN 2. Tobacco 3. Diabetes **4. Physical Inactivity** (WHO)
- 65% Americans do not meet minimal physical inactivity guidelines (J Phys Act Health 2009)
- Results of physical inactivity worldwide (Lancet July 2012)
  - 6% coronary heart disease
  - 7% type 2 diabetes
  - 9% Premature mortality
  - 10% Breast Cancer
  - 10% Colon Cancer

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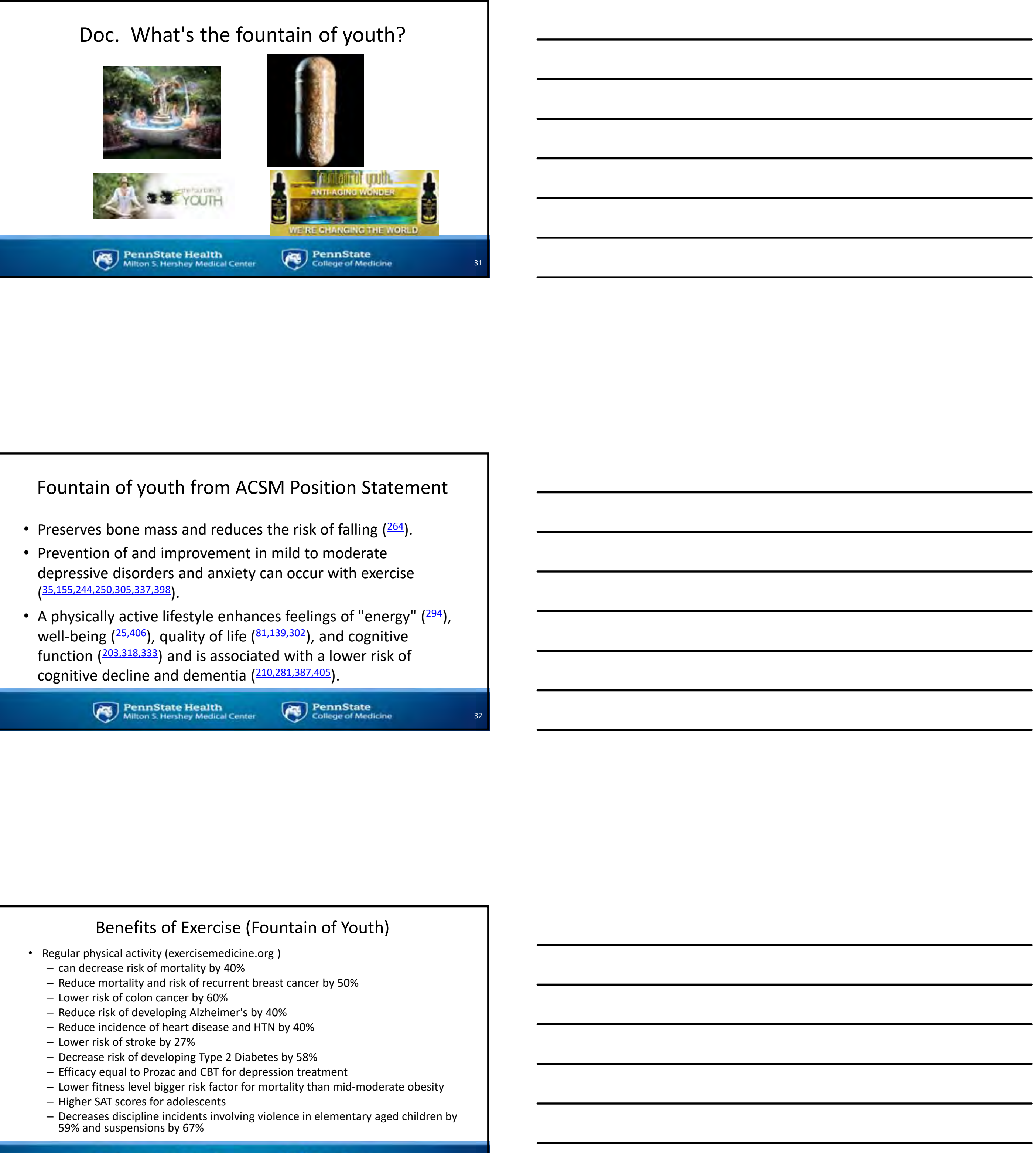
Doc. What's the fountain of youth?
YOUTH
fountain of youth
ANTI-AGING WONDER
WE'RE CHANGING THE WORLD
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Milton S. Hershey Medical Center
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Fountain of youth from ACSM Position Statement
• Preserves bone mass and reduces the risk of falling (264).
• Prevention of and improvement in mild to moderate depressive disorders and anxiety can occur with exercise (35,155,244,250,305,337,398).
• A physically active lifestyle enhances feelings of "energy" (294), well-being (25,406), quality of life (81,139,302), and cognitive function (203,318,333) and is associated with a lower risk of cognitive decline and dementia (210,281,387,405).
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Benefits of Exercise (Fountain of Youth)
• Regular physical activity (exercisemedicine.org)
– can decrease risk of mortality by 40%
– Reduce mortality and risk of recurrent breast cancer by 50%
– Lower risk of colon cancer by 60%
– Reduce risk of developing Alzheimer's by 40%
– Reduce incidence of heart disease and HTN by 40%
– Lower risk of stroke by 27%
– Decrease risk of developing Type 2 Diabetes by 58%
– Efficacy equal to Prozac and CBT for depression treatment
– Lower fitness level bigger risk factor for mortality than mid-moderate obesity
– Higher SAT scores for adolescents
– Decreases discipline incidents involving violence in elementary aged children by 59% and suspensions by 67%
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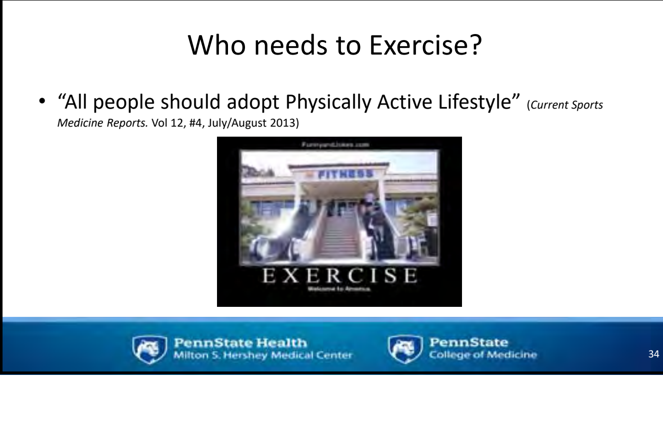

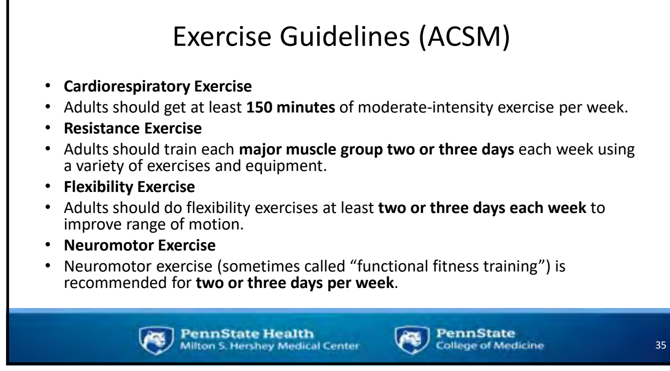

Pre-Exercise Health Screening

- Goal
  - Reduce barriers to exercise and do not discourage exercise in healthy, asymptomatic individuals
  - Classify to Low, Moderate, and High Risk based on number of risk fractors
  - Emphasis on **KNOWN** disease
  - Counsel that Cardiovascular benefits far outweigh risks of exercise

Current Sports Medicine Reports. Vol 12, #4, July/August 2013

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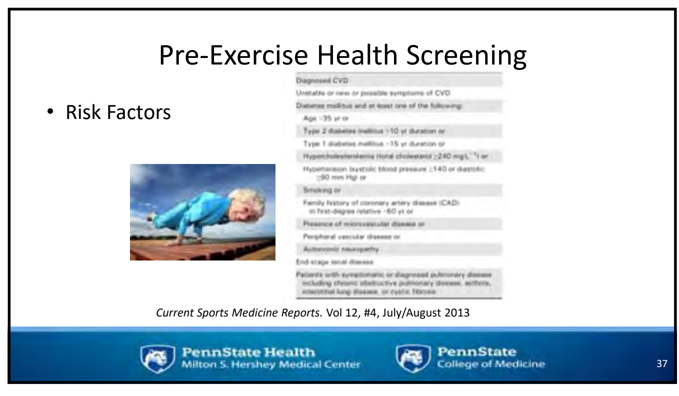

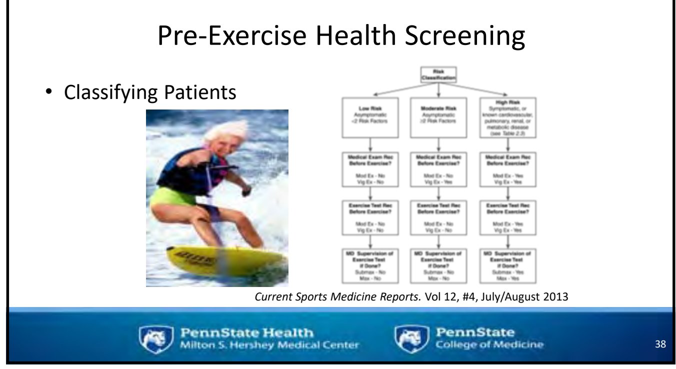

Conclusion

- The problem is well defined
- The benefits are clear
- Exercise guidelines are available to counsel your patients
- Pre-Exercise Health Screening should minimize barriers to exercise
- *Exercise should be considered a part of treatment planning for the majority of patient encounters*

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Primary Care Updates in Cardiovascular Medicine:
With a Focus on Management of Hypertension

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Disclosure--I have no financial disclosures that would be a potential conflict of interest with this presentation.

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Guideline	Target Population	Target Blood Pressure
JNC-8, 2014	General, ≥ 60	<150/90
	General, <60	<140/90
	Diabetes, without CKD	<140/90
	CKD, w/ or w/out Diabetes	<140/90
USPSTF, 2015	General, ≥ 60	<150/90
	General, <60	<140/90* SBP based on expert opinion
KDIGO, 2012	CKD, no proteinuria	≤140/90
	CKD, w/ proteinuria	≤130/80
	Diabetes, no proteinuria	≤140/90
	Diabetes, w/ proteinuria	≤130/80
NICE, 2011	General, <80	<140/90
	General, ≥ 80	<150/90
ADA, 2013	Diabetes	<140/80 and <130/80 in younger healthier populations
AHA, ACC, 2015	CAD, >80	<150/90
	CAD, ACS, HF	<140/90, in some circumstances- <130/80 (post MI, stroke, TIA, PAD, AAA)

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SPRINT Trial

- *A Randomized Trial of Intensive vs. Standard BP control: NEJM Nov 2015*
- *compared intensive therapy with **SBP target of < 120 vs. < 140***
- **Intensive therapy group showed Decreased CV mortality and CHF rate** (1.65% vs. 2.19%, NNT 185 per year)
- Intensive therapy was also associated with a significant **reduction in all-cause mortality** (1.03% vs. 1.4%, NNT 270 per year)
- Stopped 3.3 years of 5 year trial
  - A SBP target of < 120 mm Hg was also associated with increased risk of adverse events (including hypotension, syncope, electrolyte abnormalities, and acute kidney disease or acute renal failure)
  - Meds reduced in standard group in SBP <135* not c/w practice

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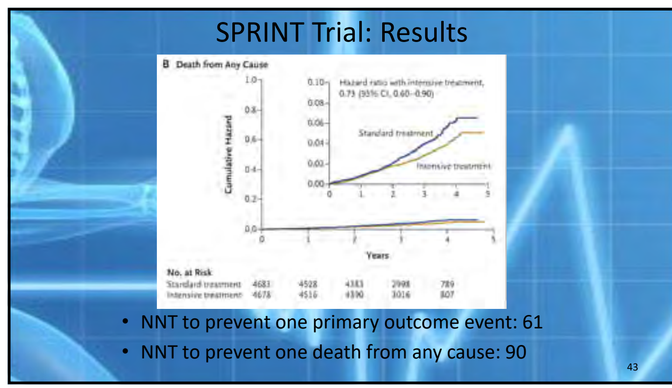

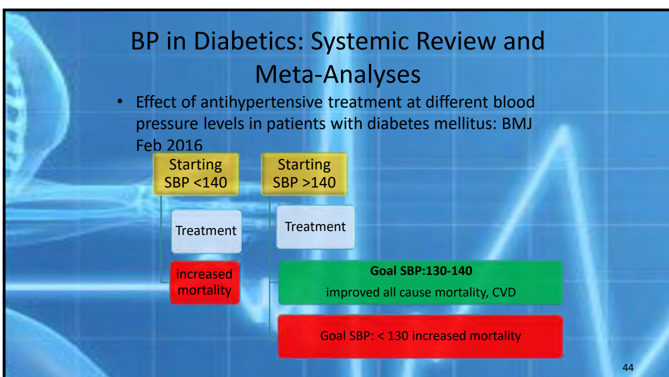

Thiazide Diuretics Reduce Fracture Risk

- Association of 3 Different Antihypertensive Medications With Hip and Pelvic Fracture Risk in Older Adults: JAMA Jan 2017
- Effect of antihypertensive drug class (thiazides, CCB or ACE) on fracture rates
- 22, 180 participants entered trial for 8 yrs → 16, 622 were followed up for up to an additional 5 years (mean follow up of 7.8 yrs)
- Chlorthalidone vs amlodipine or lisinopril had a lower risk of fracture on adjusted analyses (hazards ratio [HR], 0.79; 95% CI, 0.63-0.98; P = .04)

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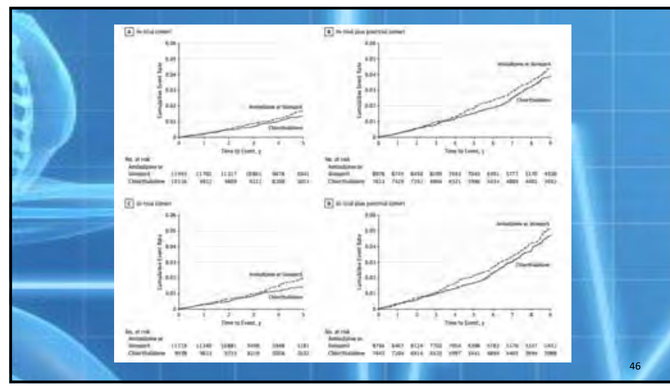

Hypertensive Emergency in the Outpatient Setting

- Outcomes in severe asymptomatic hypertension (hypertensive urgency): JAMA Nov 2016
- SBP ≥180 and/or DBP ≥110
- Objective: Referral to a hospital associated with lower MACE?
- Retrospective cohort study of 58, 535 patients with hypertensive urgency

Table 3. Outcomes of Asymptomatic Patients in Propensity-Matched Comparison

Outcome	No. (%) of Patients: Referred to Hospital (n = 426)[a]	No. (%) of Patients: Sent Home (n = 852)[a]	P Value[c]
MACE[d]			
7 d	2 (0.5)	0	.11[e]
8-30 d	2 (0.5)	0	.11[e]
1-6 mo	4 (0.9)	8 (0.9)	>.99
Uncontrolled hypertension			
1 mo[f]	349 (81.9)	735 (86.3)	.04
6 mo[g,h]	213 (66.6)	393 (64.6)	.56
All-cause hospital admission			
7 d	35 (8.2)	40 (4.7)	.01
8-30 d	48 (11.3)	59 (6.9)	.009

DANTE Study: RCT

- Effect of Discontinuation of Antihypertensive Treatment in Elderly People on Cognitive Functioning
- 385 participants 75 years or older with mild cognitive deficits (Mini-Mental State Examination score, 21-27) and treatment of HTN for goal SBP <160
- Intention to treat analysis for 16 weeks with primary outcome as overall cognition compound score and secondary outcomes depression scale, apathy scale, functional status and quality of life
- **CONCLUSION:** In older persons with mild cognitive deficits, discontinuation of antihypertensive treatment did not improve cognitive, psychological, or general daily functioning at 16 weeks

COX Inhibitors and CV Risk

- Celecoxib (209mg) vs. Naproxen (852mg) vs. Ibuprofen (2045mg)
- 24,000 with OA or RA; mean age 63yrs with increased CV risk

Primary Composite Outcome

2.3% 2.5% 2.7%

Celecoxib Naproxen Ibuprofen

Patients with Serious Gastrointestinal Events

Months

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Clinical Pearls

- SPRINT: Lowering SBP <120 may provide additional benefits in patients without diabetes but with increased risk of cardiovascular disease
- In patients with diabetes, aiming for SBP 130-140 improves all cause mortality
- For patients with asymptomatic hypertensive urgency, emphasis should be placed on improving follow up and serial BP control rather than referral to ED

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Endocrine Quick Hits

Drew Keister, MD

Lehigh Valley Health Network FM Residency

March 2017

Disclosure--I have no financial disclosures that would be a potential conflict of interest with this presentation.

51

Metformin in CKD- new labeling (Apr 2016)

- **Traditional**: Don't use above creatinine of 1.4 (or eGFR <50) - risk of lactic acidosis
- **New**: Obtain eGFR before starting
  - Contraindicated with eGFR below 30 mL/minute/1.73 m^2
  - Don't start if eGFR between 30-45 mL/minute/1.73 m^2
  - Obtain eGFR at least annually in all patients taking metformin; More often for old/sick
  - If already taking, eGFR btwn 30 - 45 mL/minute/1.73 m^2, weigh risks/benefits
- Iodinated contrast:
  - Stop metformin before contrast if eGFR between 30 and 60 mL/minute/1.73 m^2
    … or if history of liver disease, alcoholism, or heart failure
    … and before intra-arterial iodinated contrast
  - Re-eval eGFR 48 hours after contrast; restart metformin if renal function is stable

https://www.fda.gov/Drugs/DrugSafety/ucm493244.htm

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Meformin in CKD, CHF, liver disease

- Systematic review of 17 observational studies
- Metformin assoc'd with reduced all-cause mortality in patients with CKD, CHF, or CLD with hepatic impairment
- Also with fewer CHF readmissions in patients with CKD or CHF
- Data on multiple outcomes of interest sparse
- Available studies were observational and varied in follow-up duration

Crowley et al. Clinical Outcomes of Metformin Use in Populations With Chronic Kidney Disease, Congestive Heart Failure, or Chronic Liver Disease: A Systematic Review. Ann Intern Med. 2017;166(3):191.
https://www.ncbi.nlm.nih.gov/pubmed/28055049

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Drugs for diabetes and cardiac outcomes

- More studies emerging, but they are mostly small and inconsistent
- Metformin for 10 yrs may reduce CV risk, esp in obese pts (NNT= 14)
- DPP-4 inhibitors may worsen CHF admission rates
  - Alogliptin (*Nesina*), Saxagliptin (*Onglyza*) worsen CHF admissions (NNH ~ 150)
  - Sitagliptin (*Januvia*) neutral
- GLP-1 agonists- only Liraglutide (*Victoza*, *Saxenda*) has data
  - 4 yrs of liraglutide in pts w/ DM2 & CAD (or at high risk)- decrease CV death, nonfatal MI or nonfatal CVA (NNT = 53); CV death(NNT= 77)
- SGLT-2 inbitors- only Empagliflozin (*Jardiance*) has data
  - 3 yrs in pts with DM2 and CAD w/typical other rx- reduce CV death (NNT=45)
- Thiazolidinediones- Pioglitazone (*Actos*) and Rosiglitazone (*Avandia*) may worsen CHF outcomes
  - Pioglitazone may reduce CVA risk in some pts
- Other agents- no data

http://prescribersletter.therapeuticresearch.com/pl/ArticleDD.aspx?nidchk=1&cs=LVH~CEPDA&s=PRL&pt=2&fpt=31&dd=330112&pb=PRL&cat=4754&segment=10574

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U-500 Insulin

- Confusing dosing

https://www.drugs.com/pro/images/b60e8dd0-1d48-4dc9-87fd-e14675255e8c/humulin-r500-syr-ifu-v18.jpg

- New labeling: U-500 vials **must be prescribed** with new U-500 syringes
  - U-100 syringe- up to 50 units of insulin- **ORANGE CAPS**
  - U-500 syringe holds up to 250 units of insulin- **GREEN CAPS**
  - Cost: $30 for a box of 100 (usually covered)
- Cap color matches green and aqua boxes of U-500 vials.

http://prescribersletter.therapeuticresearch.com/pl/ArticleDD.aspx?nidchk=1&cs=LVH~CEPDA&s=PRL&pt=6&fpt=31&dd=321111&pb=PRL#dd Nov 2016

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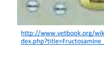
Hemoglobin A1c in sickle cell trait

- ? A1c reliability in African Americans with Sickle Cell **TRAIT**
  - Retrospective cohort trial w/ methodologic limitations



http://www.vetbook.org/wiki/dog/index.php?title=Fructosamine_assay

- For now, no change in practice
- Keep your eyes peeled
- Remember A1c reliability less in hemolytic anemia
  - Use fructosamine instead

Lacy et al. Association of Sickle Cell Trait With Hemoglobin A1c in African Americans. JAMA. March 2017
https://www.ncbi.nlm.nih.gov/pubmed/28170479

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Myths about taking levothyroxine

- Must be taken on empty stomach
  - Adherence and consistency are the keys
- Must be separated from other rx
  - Absorption less with Ca, Fe, bile acid sequestrates, phosphate binders
  - If feasible, separate by about 4 hours
  - If not possible, keep consistent interval between interacting meds
  - Oral bisphosphonates- take them first on an empty stomach...then levothyroxine at least 30 minutes afterward
- Never switch products
  - Most are bioequivalent – hang over from marketing

http://prescribersletter.therapeuticresearch.com/pl/ArticleDD.aspx?nidchk=1&cs=LVH~CEPDA&s=PRL&pt=6&fpt=31&dd=310420&pb=PRL&cat=4749 Apr 2015

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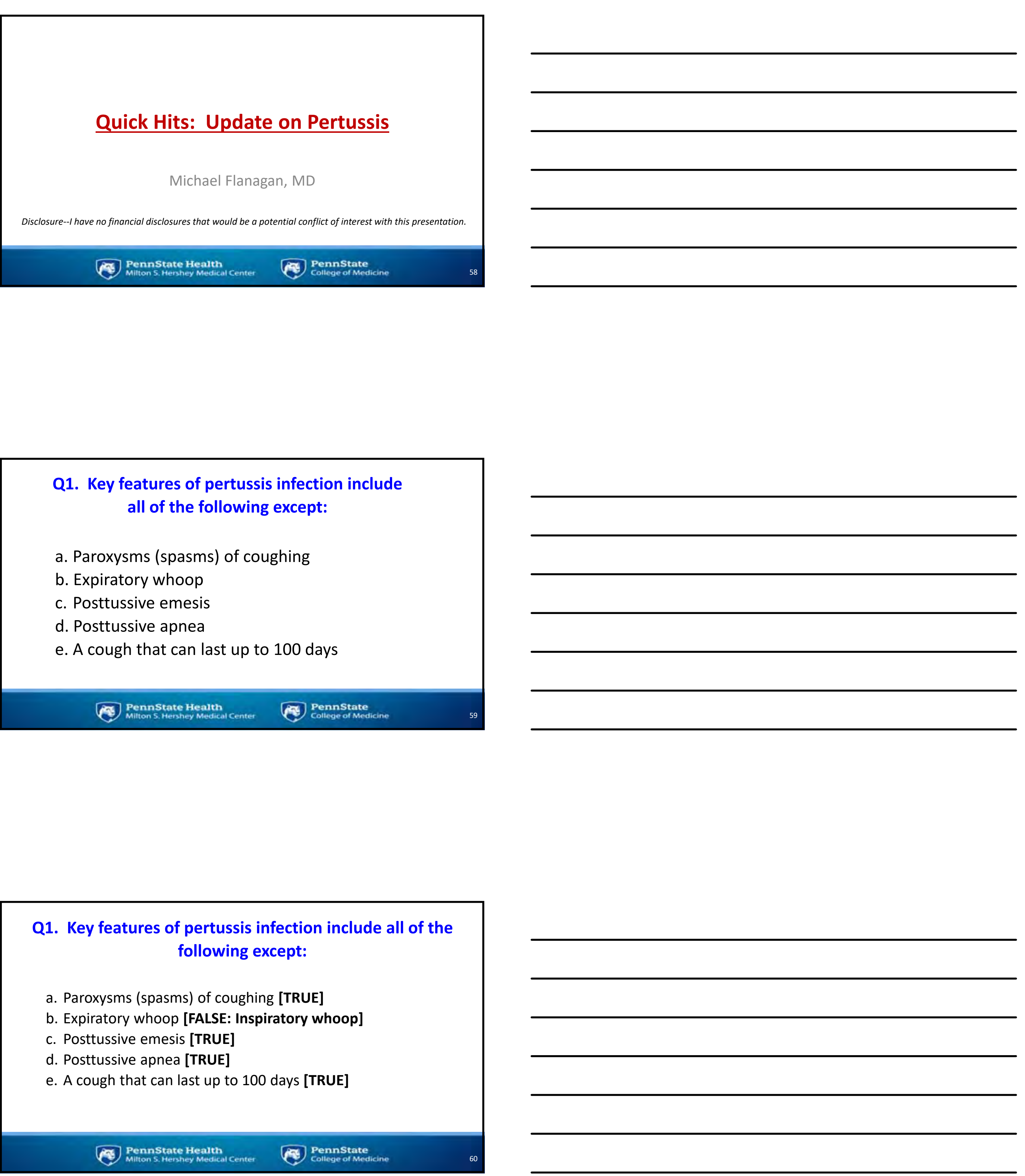
Quick Hits: Update on Pertussis
Michael Flanagan, MD
Disclosure--I have no financial disclosures that would be a potential conflict of interest with this presentation.
PennState Health Milton S. Hershey Medical Center
PennState College of Medicine
58
Q1. Key features of pertussis infection include all of the following except:
a. Paroxysms (spasms) of coughing
b. Expiratory whoop
c. Posttussive emesis
d. Posttussive apnea
e. A cough that can last up to 100 days
PennState Health Milton S. Hershey Medical Center
PennState College of Medicine
59
Q1. Key features of pertussis infection include all of the following except:
a. Paroxysms (spasms) of coughing [TRUE]
b. Expiratory whoop [FALSE: Inspiratory whoop]
c. Posttussive emesis [TRUE]
d. Posttussive apnea [TRUE]
e. A cough that can last up to 100 days [TRUE]
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Q2. TRUE or FALSE:

a. Pertussis infection confers lifelong immunity?

b. Immunity following DTaP vaccination wanes after 5-10 years?

c. Obesity and pre-exiting asthma are associated with increased risk of developing pertussis?

d. Pertussis Toxin causes a neutrophil-predominate leukocytosis?

e. Adolescents and adults with unrecognized pertussis are a reservoir of pertussis infection for infants and children?

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Q2. TRUE or FALSE:

a. Pertussis infection confers lifelong immunity? **[FALSE. Neither infection nor immunization confers lifelong immunity]**

b. Immunity following DTaP vaccination wanes after 5-10 years? **[TRUE]**

c. Obesity and pre-exiting asthma are associated with increased risk of developing pertussis? **[TRUE]**

d. Pertussis Toxin (PT) causes a neutrophil-predominate leukocytosis? **[FALSE: PT causes a leukocytosis with a marked lymphocytosis]**

e. Adolescents and adults with unrecognized pertussis infection are a reservoir of pertussis infection for infants and children? **[TRUE, and this has contributed to cyclic epidemics Q 2-5 years]**

PennState Health Milton S. Hershey Medical Center — PennState College of Medicine

Q3. All of the following are correct about pertussis infection except:

a. *B pertussis* and *B. parapertussis* can cause clinically indistinguishable pertussis-like infections.

b. The incubation period for pertussis (1-3 weeks) is longer than for most viral URI's (1-3 days).

c. Pertussis infection can be a fatal illness in infants.

d. The incidence of pertussis is increasing even though the acellular vaccine (DTaP) is more efficacious than the whole-cell vaccine (DTwP).

e. Before vaccines 90% of reported pertussis occurred in children < 10, but since DTaP was introduced in the 1990's half of all pertussis cases occur in adolescents and adults.

PennState Health Milton S. Hershey Medical Center — PennState College of Medicine

Q3. All of the following are correct about pertussis infection except:

a. *B pertussis* and *B. parapertussis* both cause clinically indistinguishable pertussis-like infections. **[TRUE. PCR can identify each. Consider treating *B. parapertussis* infection to reduce spread to children/ infants]**
b. The incubation period for pertussis (1-3 weeks) is longer than for most viral URI's (1-3 days). **[TRUE]**
c. Pertussis can be a fatal illness in infants. **[TRUE, especially ≤ 6 months old]**
d. The incidence of pertussis is increasing even though the acellular vaccine (DTaP) is more efficacious than the whole-cell vaccine (DTwP). **[FALSE: They are equally efficacious, but immunity produced by fifth (final) DTaP wanes faster than was anticipated, leaving a gap in immunity b/w last DTaP and first Tdap booster]**
e. Before vaccines 90% of reported pertussis occurred in children < 10, but since DTaP introduced in the 1990's half of pertussis cases occur in adolescents and adults. **[TRUE]**

Q4. Infants with pertussis infection:

a. …have an associated mortality rate of 10%.
b. …can appear deceptively well, then progress on to gasping, vomiting, cyanosis, bradycardia and seizures.
c. …are most commonly infected by hospital staff or at daycare.
d. …typically present with a high fever, severe cough and hypoxia.
e. …is distinguishable from Respiratory Syncytial Virus (RSV) infection in that RSV is more likely to present with a very high White Blood Cell count (WBC) and lymphocytosis.

Q4. Infants with pertussis infection:

a. …have a mortality rate of 10%. **[FALSE: Mortality is up to 1%]**
b. …can appear deceptively well, and then progress on to gasping, vomiting, cyanosis, bradycardia and seizures. **[TRUE]**
c. …are most commonly infected by hospital staff or at daycare. **[FALSE: Family members, especially siblings, most common]**
d. …typically present with a high fever, severe cough and hypoxia. **[FALSE: Minimal fever is usual. Severe cough common. Hypoxia possible]**
e. …are distinguishable from Respiratory Syncytial Virus (RSV) infections in that RSV is more likely to present with a high White Blood Cell count (WBC) and lymphocytosis. **[FALSE: High WBC is more common in pertussis (21K cells /microL) vs RSV (9.9K); Lymphocytosis is more common in pertussis.**

Q5. TRUE or FALSE?

a. Bordetella species that may cause a pertussis-like syndrome are *B.pertussis, B. parapertussis, B. bronchiseptica,* and *B. holmesii*

b. The most frequent complication of pertussis in children and infants is seizures due to hypoxia.

c. Most pertussis deaths occur in infants < 6 months old who are too young to have completed their primary series of pertussis vaccines.

d. Pertussis infection can be divided in to three stages: *Catarral Stage* (similar to a viral URI; 1-2 weeks), *Paroxysmal Stage* (coughing spasms that become worse at night; 2-8 weeks), and *Convalescent Stage* (cough subsides over several weeks).

e. Tdap booster is recommended every 10 years in adults aged 19 years and older.

Q5. TRUE or FALSE?

a. Bordetella species that may cause a pertussis-like syndrome are: *B.pertussis, B. parapertussis, B. bronchiseptica,* and *B. holmesii* **[TRUE]**

b. The most frequent complication of pertussis in children and infants is seizures due to hypoxia. **[FALSE: Pneumonia is most common]**

c. Most pertussis deaths occur in infants < 6 months and too young to have completed their primary series of pertussis vaccines. **[TRUE]**

d. Pertussis infection can be divided in to three stages: *Catarral Stage* (similar to a viral URI; 1-2 weeks), *Paroxysmal Stage* (coughing spasms that become worse at night; 2-8 weeks), and *Convalescent Stage* (cough subsides over several weeks). **[TRUE]**

e. Tdap booster is recommended every 10 years in adults aged 19 years and older. **[FALSE: A single Tdap dose across all age groups after age 19 is recommended]**

Q6. TRUE or FALSE?

a. Per CDC case definition, pertussis can be diagnosed WITHOUT laboratory testing in patients with a cough illness ≥ 2 weeks, and at least one of the following: *paroxysmal cough*, *inspiratory whoop*, *posttussive vomiting*, and *apnea* (for infants < 1 year only).

b. Microbiologic studies that confirm the diagnosis of pertussis in practice include: *bacterial culture*, *polymerase chain reaction (PCR), Direct Fluorescent Antibody (DFA) testing* and *Serology* (IgG to PT).

c. Only *PCR* and *bacterial culture* meet criteria for laboratory confirmation of pertussis for national reporting purposes.

d. Appropriate specimens for testing may be collected by nasopharyngeal swab or saline aspiration of the posterior nasopharynx.

e. The appropriate swab to use for PCR testing is a polyester (Dacron) swab or calcium alginate swab with flexible metal shaft.

Q6. TRUE or FALSE?

a. Per CDC, pertussis can be diagnosed WITHOUT laboratory testing in patients with a cough illness ≥ 2 weeks, and at least one of the following: paroxysmal cough, inspiratory whoop, posttussive vomiting, and apnea (for infants < 1). **[TRUE]**

b. Microbiologic studies that confirm the diagnosis of pertussis in practice include: *bacterial culture, polymerase chain reaction (PCR), Direct Fluorescent Antibody (DFA) testing* and *Serology* (IgG to pertussis toxin). **[FALSE: Culture and PCR can confirm pertussis infection. DFA not recommended. Serology is primarily a research tool. PCR should be completed within 3 weeks of symptom onset and culture within 2 weeks.]**

c. Only *PCR* and *bacterial culture* meet criteria for laboratory confirmation of pertussis for national reporting purposes. **[TRUE]**

d. Appropriate specimens for testing may be collected by nasopharyngeal swab or saline aspiration of the posterior nasopharynx. **[TRUE. NP aspirate more accurate]**

e. The appropriate swab to use for PCR testing is a polyester (Dacron) swab or calcium alginate swab with flexible metal shaft. **[FALSE: Only a polyester (Dacron), rayon or nylon flocculated swab can be used. Calcium alginate swabs with flexible metal shaft and cotton swabs can interfere with PCR]**

PennState Health Milton S. Hershey Medical Center | PennState College of Medicine

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Q7. When treating pertussis the following are appropriate considerations except:

a. Use macrolides (azithromycin or clarithromycin) to eradicate *B. pertussis* from the nasopharynx.

b. For patients intolerant of macrolides, amoxicillin clavulanate is an appropriate alternative to treat pertussis.

c. Patients with pertussis are considered infectious until they have completed 5 days of an appropriate antibiotic.

d. Post-exposure antibiotic prophylaxis is warranted for close contacts and is the same regimen as used for treatment.

e. The Advisory Committee on Immunization Practices (ACIP) recommends all adults age 19 and older (including those over age 65) receive a single dose of Tdap regardless of interval since last Td.

PennState Health Milton S. Hershey Medical Center | PennState College of Medicine

71

Q7. When treating pertussis the following are appropriate considerations except:

a. Use macrolides (azithromycin or clarithromycin) to eradicate *B. pertussis* from the nasopharynx. **[TRUE]**

b. For patients intolerant of macrolides, amoxicillin clavulanate is an appropriate alternative to treat pertussis. **[FALSE: TMP-SMX is an appropriate alternative]**

c. Patients with pertussis are considered infectious until they have completed 5 days of an appropriate antibiotic. **[TRUE]**

d. Post-exposure antibiotic prophylaxis is warranted for close contacts and is the same regimen as used for treatment. **[TRUE]**

e. The Advisory Committee on Immunization Practices (ACIP) recommends all adults age 19 and older (including those over age 65) receive a single dose of Tdap regardless of interval since last Td. **[TRUE, it used to be a 2-year interval, but has been changed]**

PennState Health Milton S. Hershey Medical Center | PennState College of Medicine

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Optimizing Protein in a Carbohydrate World

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Optimizing Protein in a Carbohydrate World

Donald Layman, PhD

Disclosures:

The is part of the consultant or advisory board partnership and speaker's bureaus for the National Dairy Council, National Cattlemen's Beef Association, and Davisco/Agropur. No conflict of interest exists within this presentation.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

This session is sponsored in part by the PA Beef Council.

Optimizing Protein …
… in a Carbohydrate World

Donald K. Layman, Ph.D.
Professor Emeritus
Department of Food Science & Human Nutrition
University of Illinois at Urbana-Champaign

1

Disclosure

- The is part of the consultant or advisory board partnership and speaker's bureaus for the National Dairy Council, National Cattlemen's Beef Association, and Davisco/Agropur. No conflict of interest exists within this presentation.
- **Please Remember to Complete Session Evaluation Online** https://www.surveymonkey.com/r/3_18_Protein
- This session is sponsored in part by the Pennsylvania Beef Council.

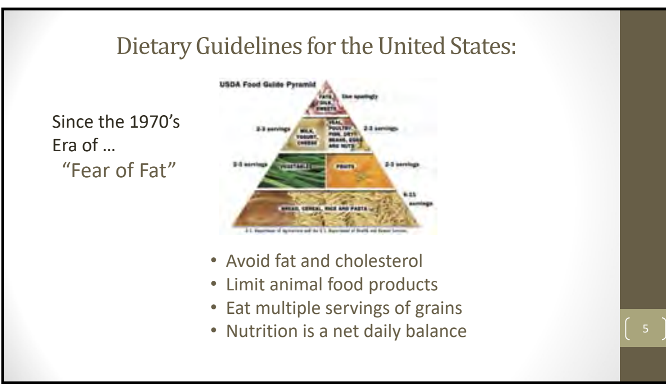
2

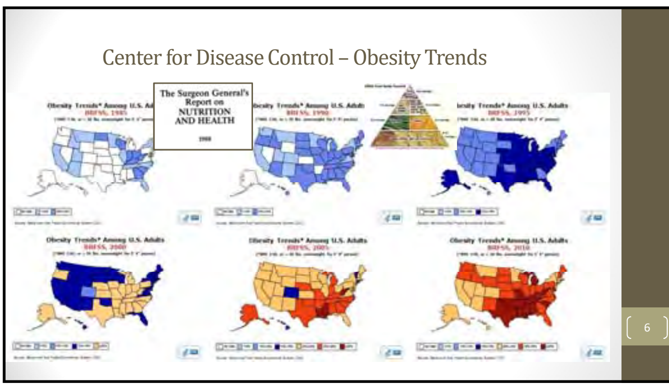
Topic Outline:

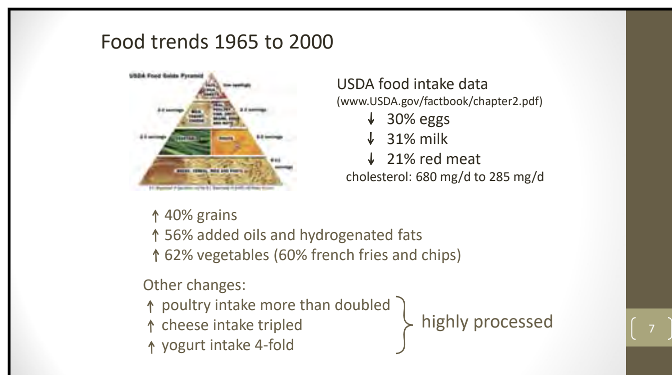
- Benefits of higher protein, reduced carbohydrate diets
  "The Metabolic Advantage"
- Media hype versus nutrition realities
  the myths of epidemiology
- What's new in protein research
  aging and optimum nutrition
- Protein needs versus carbohydrate tolerance
- Safety and sustainability of a protein-centric diet

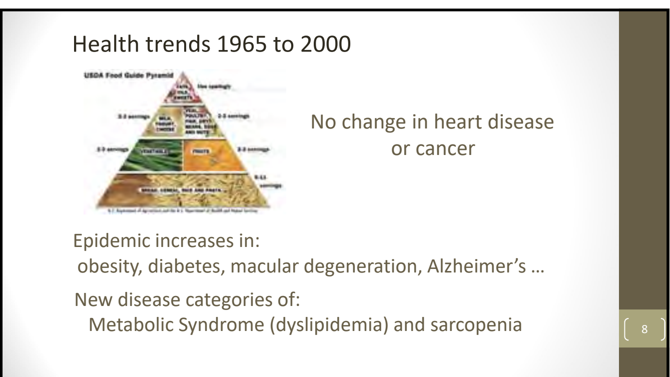
3

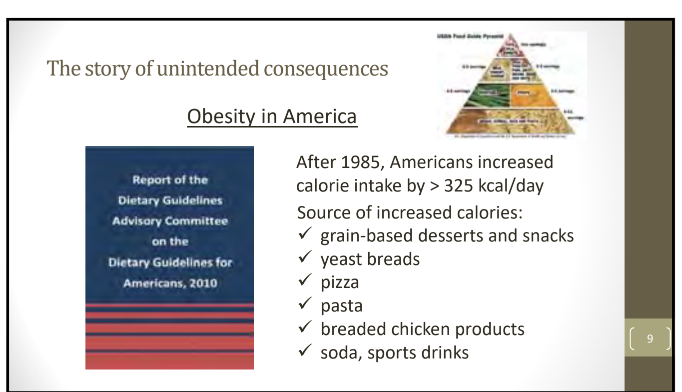
The confused consumer …
Every week the news media or talk shows have some new miracle diet or claim that something will kill you.
TIME
EATING WELL FOR OPTIMUM HEALTH
ANDREW WEIL, M.D.
A Whole-Food, Plant-Based Diet
The Paleo Diet
THE CHINA STUDY
MEAT IS THE NEW TOBACCO
4


Dietary Guidelines for the United States:
Since the 1970's
Era of …
"Fear of Fat"
USDA Food Guide Pyramid
• Avoid fat and cholesterol
• Limit animal food products
• Eat multiple servings of grains
• Nutrition is a net daily balance
5


Center for Disease Control – Obesity Trends
The Surgeon General's Report on NUTRITION AND HEALTH
6


Food trends 1965 to 2000
USDA food intake data
(www.USDA.gov/factbook/chapter2.pdf)
↓ 30% eggs
↓ 31% milk
↓ 21% red meat
cholesterol: 680 mg/d to 285 mg/d
↑ 40% grains
↑ 56% added oils and hydrogenated fats
↑ 62% vegetables (60% french fries and chips)
Other changes:
↑ poultry intake more than doubled
↑ cheese intake tripled
↑ yogurt intake 4-fold
highly processed
7


Health trends 1965 to 2000
No change in heart disease or cancer
Epidemic increases in:
obesity, diabetes, macular degeneration, Alzheimer's …
New disease categories of:
Metabolic Syndrome (dyslipidemia) and sarcopenia
8


The story of unintended consequences
Obesity in America
Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010
After 1985, Americans increased calorie intake by > 325 kcal/day
Source of increased calories:
✓ grain-based desserts and snacks
✓ yeast breads
✓ pizza
✓ pasta
✓ breaded chicken products
✓ soda, sports drinks
9

Metabolic Advantage of Protein
(compared to high carbohydrate diets)

- ✓ improves body composition
  protects skeletal muscle; targets fat loss
- ✓ energizes metabolic rate
- ✓ increases satiety
  reduces snacking
- ✓ reverses the Metabolic Syndrome
  ↓ TAG, ↑ HDL, ↑ LDL size
  ↓ FBG, ↓ post-prandial insulin, ↓ BP

10

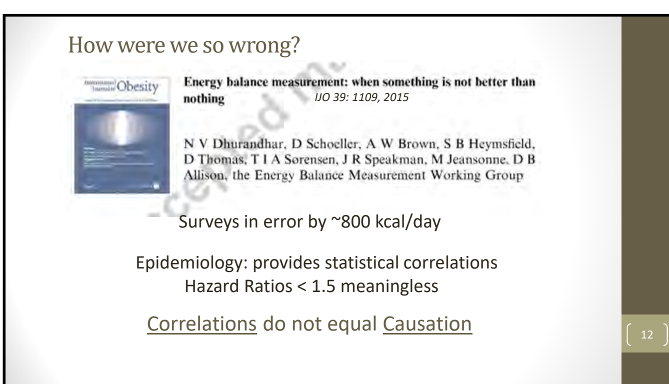
The paradigm shift
… from Pyramids to Plates

USDA Food Guide Pyramid → 2010 → ChooseMyPlate.gov

- avoid fat
- eat grains
- daily net servings

- vegetables
- protein (and dairy)
- balanced meals

11



The Journal of Nutrition
Supplement: The Controversial Role of Macronutrient Composition in Diabetes and Related Disorders

Differing Statistical Approaches Affect the Relation between Egg Consumption, Adiposity, and Cardiovascular Risk Factors in Adults[1–4]

Abstract

Objective: Two statistical approaches were used to examine the potential association between egg consumption and adiposity.

Conclusions: Care needs to be taken with data interpretation of diet and health risk factors and the choice of statistical analyses and covariates used in the analyses because these studies are typically used to generate hypotheses. Additional studies are needed to better understand these relations. J Nutr 2015;145:1705–65.

13

NHANES data: quartiles for Healthy Eating Index

Outcome	1	2	3	4
BMI	28.9	28.8	28.3	27.7
LDL	118	118	115	113
CRP	0.44	0.43	0.38	0.39
eggs (oz eq)	0.51	0.48	0.46	0.41
HEI score	33.8	45.6	55.9	70.2

Significant relationship ($p<0.05$) of egg intake to risk of obesity (BMI) and heart disease (LDL and CRP)

14

NHANES data: quartiles for Healthy Eating Index

Outcome	1	2	3	4
BMI	28.9	28.8	28.3	27.7
LDL	118	118	115	113
CRP	0.44	0.43	0.38	0.39
eggs (oz eq)	0.51	0.48	0.46	0.41
HEI score	33.8	45.6	55.9	70.2
Smoking	41%	29%	18%	10%
% fast food	17%	14%	11%	6%
fruit (cups)	0.20	0.36	0.62	1.20
green veggie	0.03	0.07	0.12	0.21

15

Random Controlled Trials (RCT)

Beef in an Optimal Lean Diet study: effects on lipids, lipoproteins, and apolipoproteins[1–3]

Michael A Roussell, Alison M Hill, Trent L Gaugler, Sheila G West, John P Vanden Heuvel, Petar Alaupovic, Peter J Gillies, and Penny M Kris-Etherton

Am J Clin Nutr 95: 9, 2012

DASH with 18% protein and 1 oz/d of beef
versus
BOLD with 27% protein and 5.5 oz/d of beef

Results:
- ✓ same effects on TC, LDL and HDL
- ✓ BOLD > DASH on lowering TG and CRP

n = 36
5 wks
1.7 oz

16

What's new in protein research:
- ✓ health of skeletal muscle critical for long-term health
- ✓ aging reduces efficiency of protein use
- ✓ meal distribution of protein

17

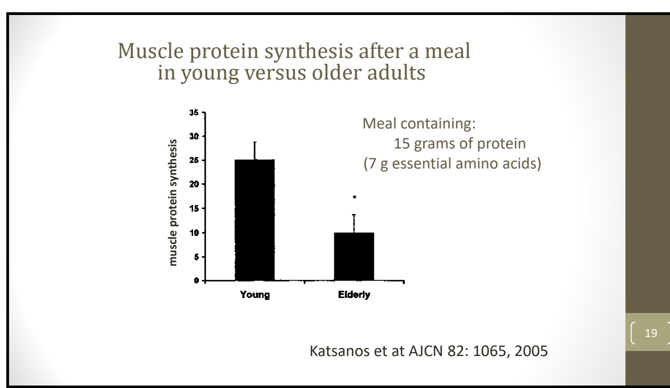
Minimum versus Optimum?

what are the critical health outcomes?

Growth versus Aging

Protein RDA = 2.2 1.5 1.0 0.8 ....?.......... g/kg

18

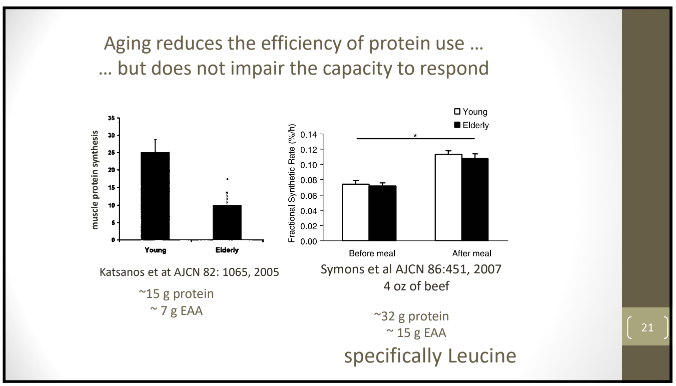


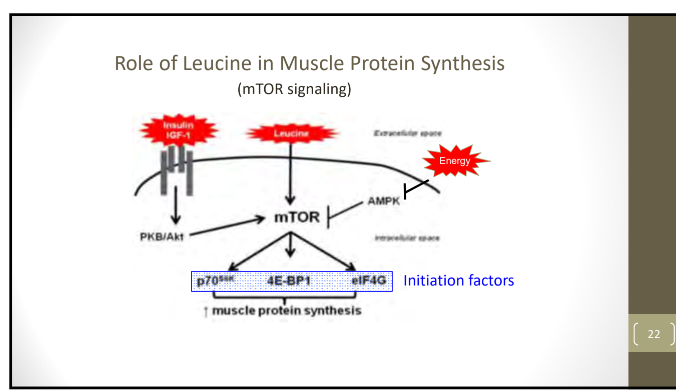
Aging reduces the Efficiency of protein use

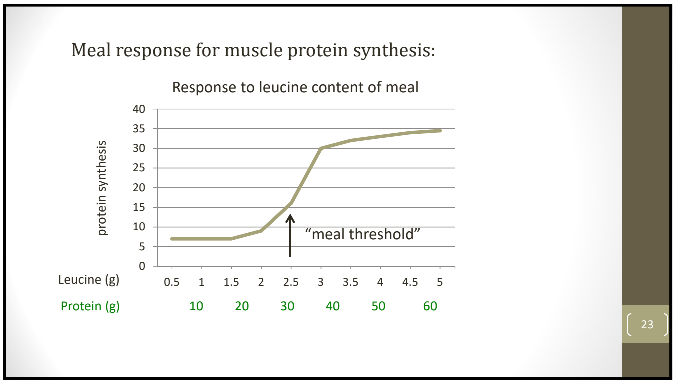
Cause (?)

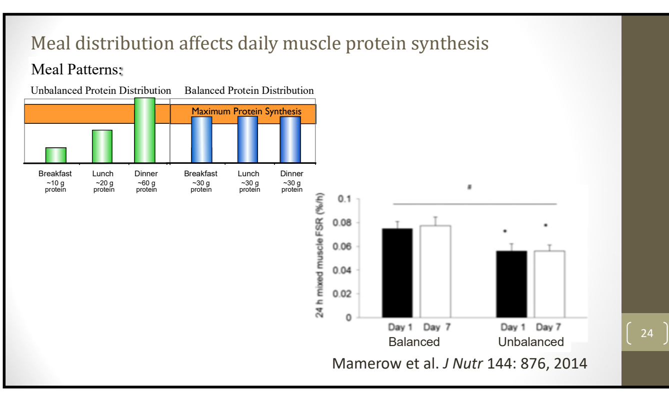
- reduced capillary blood flow
- reduced membrane transport
- reduced metabolic signaling

20




Role of Leucine in Muscle Protein Synthesis
(mTOR signaling)
Insulin IGF-1
Leucine
Extracellular space
Energy
AMPK
mTOR
PKB/Akt
Intracellular space
p70S6K
4E-BP1
eIF4G
Initiation factors
↑ muscle protein synthesis
22


Meal response for muscle protein synthesis:
Response to leucine content of meal
protein synthesis
"meal threshold"
Leucine (g)
0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
Protein (g)
10 20 30 40 50 60
23


Meal distribution affects daily muscle protein synthesis
Meal Patterns:
Unbalanced Protein Distribution
Balanced Protein Distribution
Maximum Protein Synthesis
Breakfast ~10 g protein
Lunch ~20 g protein
Dinner ~60 g protein
Breakfast ~30 g protein
Lunch ~30 g protein
Dinner ~30 g protein
24 h mixed muscle FSR (%/h)
Day 1 Day 7
Balanced
Day 1 Day 7
Unbalanced
Mamerow et al. J Nutr 144: 876, 2014
24

Myth: “Adults eat more protein than they need”

Recommended Dietary Allowance (RDA)

The lowest level of dietary protein intake that will balance the losses of nitrogen from the body … in persons at energy balance with modest levels of physical activity …

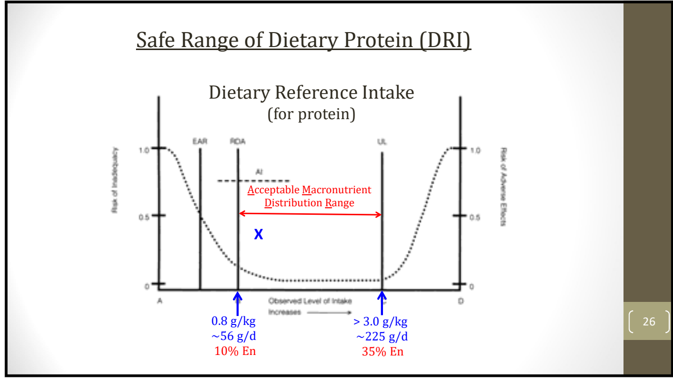
Minimum intake to prevent deficiencies

versus

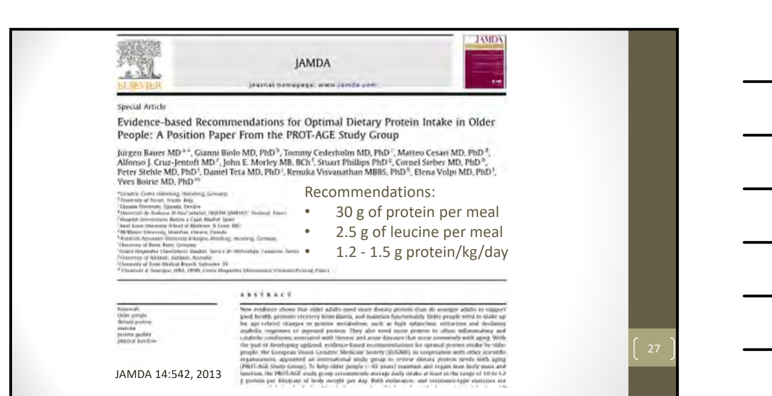
Optimum intake for health

25

Safe Range of Dietary Protein (DRI)



26



JAMDA

journal homepage: www.jamda.com

Special Article

Evidence-based Recommendations for Optimal Dietary Protein Intake in Older People: A Position Paper From the PROT-AGE Study Group

Jürgen Bauer MD, Gianni Biolo MD, PhD, Tommy Cederholm MD, PhD, Matteo Cesari MD, PhD, Alfonso J. Cruz-Jentoft MD, John E. Morley MB, BCh, Stuart Phillips PhD, Cornel Sieber MD, PhD, Peter Stehle MD, PhD, Daniel Teta MD, PhD, Renuka Visvanathan MBBS, PhD, Elena Volpi MD, PhD, Yves Boirie MD, PhD

Recommendations:

- 30 g of protein per meal
- 2.5 g of leucine per meal
- 1.2 - 1.5 g protein/kg/day

ABSTRACT

JAMDA 14:542, 2013

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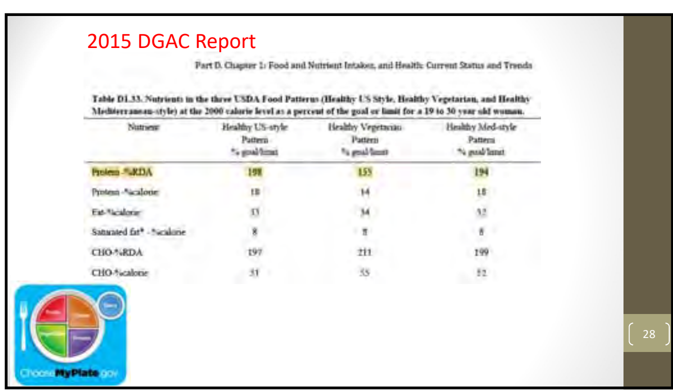
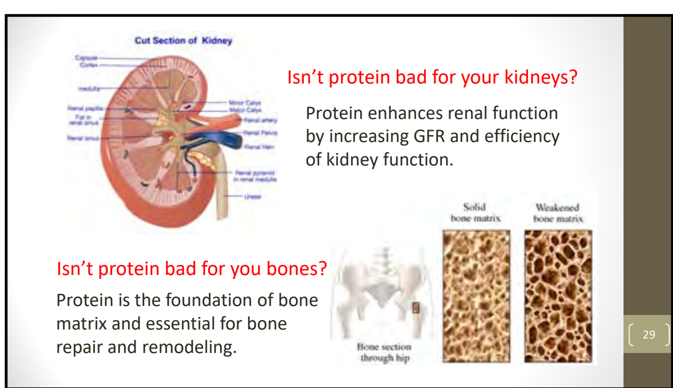
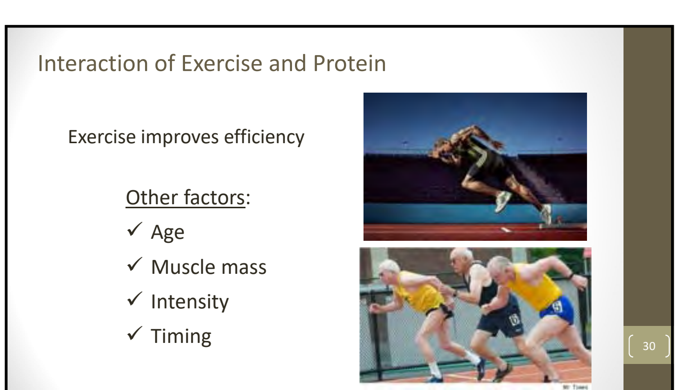
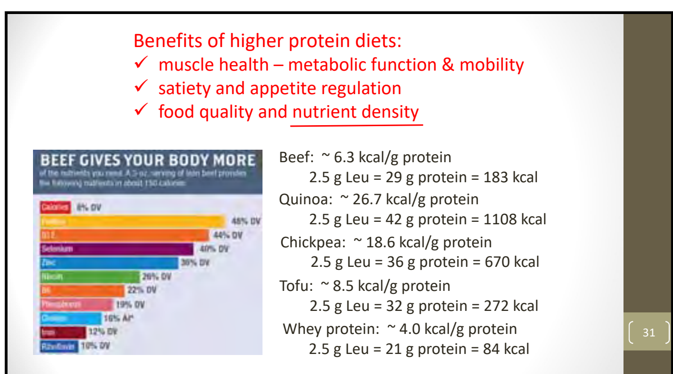


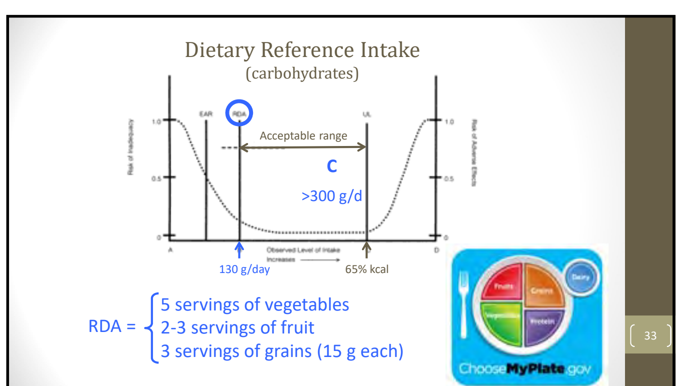
Nutrient	Healthy US-style Pattern % goal/limit	Healthy Vegetarian Pattern % goal/limit	Healthy Med-style Pattern % goal/limit
Protein -%RDA	198	153	194
Protein -%calorie	18	14	18
Fat-%calorie	33	34	32
Saturated fat* - %calorie	8	8	8
CHO-%RDA	197	211	199
CHO-%calorie	51	55	52

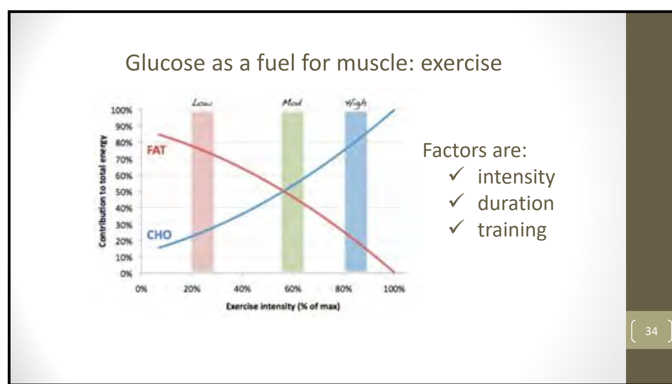





Benefits of higher protein diets:
✓ muscle health – metabolic function & mobility
✓ satiety and appetite regulation
✓ food quality and nutrient density
BEEF GIVES YOUR BODY MORE
Beef: ~ 6.3 kcal/g protein
2.5 g Leu = 29 g protein = 183 kcal
Quinoa: ~ 26.7 kcal/g protein
2.5 g Leu = 42 g protein = 1108 kcal
Chickpea: ~ 18.6 kcal/g protein
2.5 g Leu = 36 g protein = 670 kcal
Tofu: ~ 8.5 kcal/g protein
2.5 g Leu = 32 g protein = 272 kcal
Whey protein: ~ 4.0 kcal/g protein
2.5 g Leu = 21 g protein = 84 kcal
31

Carbohydrates:
The Good, the Bad, and the Ugly!
10 Carbohydrate Rich Foods
• sugar
• fructose
• gluten
• lactose
• VLCD
• Paleo
• diabetes
Glucose (sugar) is an essential fuel …
… but glucose can be toxic to cells (diabetes)
32


Dietary Reference Intake
(carbohydrates)
Acceptable range
C
>300 g/d
130 g/day
65% kcal
RDA = 5 servings of vegetables
2-3 servings of fruit
3 servings of grains (15 g each)
ChooseMyPlate.gov
33



Carbohydrate Tolerance (designing diets)

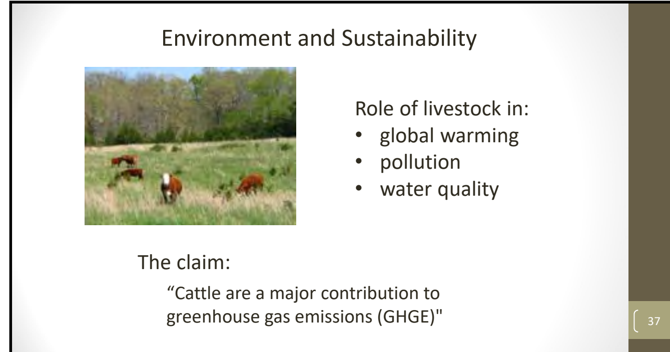
RDA = 130 g/day — RDA meets all nutrition needs (veggies, fruit, fiber, whole grains)

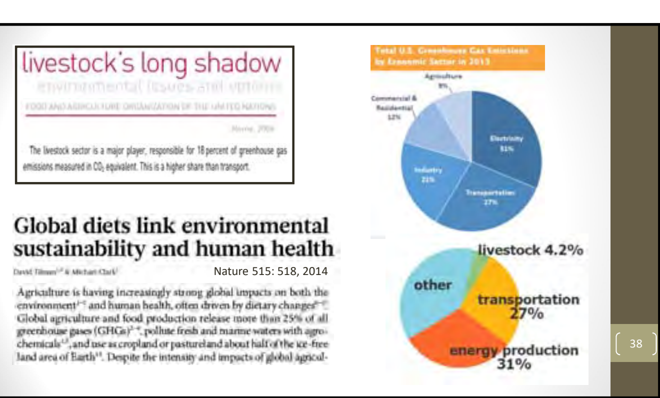
Carbs > 130 g/day are earned with exercise
~60 g/hr intense Ex; HR > 100

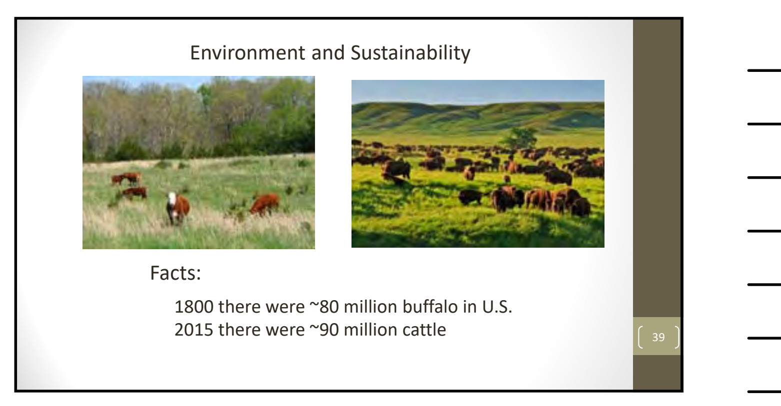
Meal threshold < 40 g/meal; minimizes insulin response

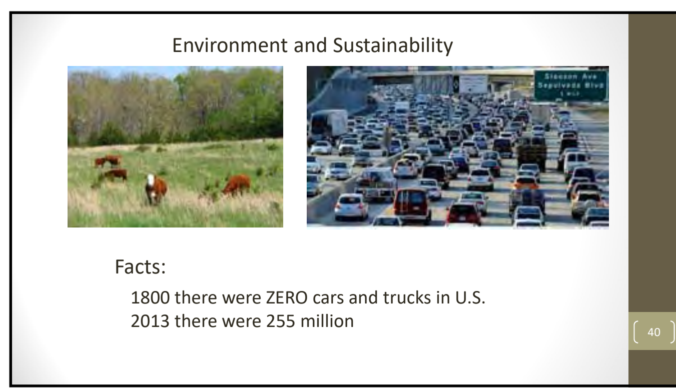
Meals > 40 g associated with exercise recovery

35

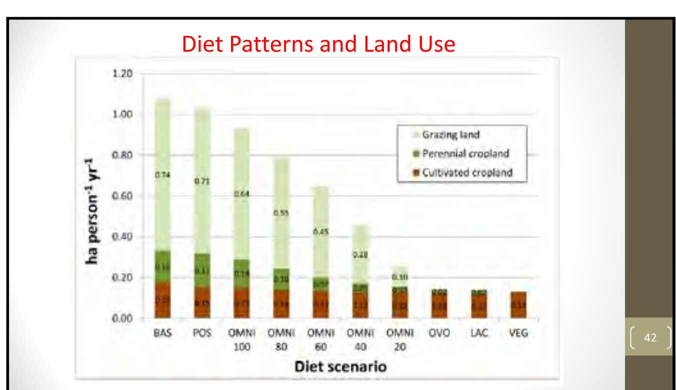

Environment and Sustainability
Role of livestock in:
• global warming
• pollution
• water quality
The claim:
"Cattle are a major contribution to
greenhouse gas emissions (GHGE)"
37


livestock's long shadow
The livestock sector is a major player, responsible for 18 percent of greenhouse gas emissions measured in CO2 equivalent. This is a higher share than transport.
Global diets link environmental sustainability and human health
Nature 515: 518, 2014
Agriculture is having increasingly strong global impacts on both the environment and human health, often driven by dietary changes. Global agriculture and food production release more than 25% of all greenhouse gases (GHGs), pollute fresh and marine waters with agro-chemicals, and use as cropland or pastureland about half of the ice-free land area of Earth. Despite the intensity and impacts of global agricul-
livestock 4.2%
other
transportation 27%
energy production 31%
38


Environment and Sustainability
Facts:
1800 there were ~80 million buffalo in U.S.
2015 there were ~90 million cattle
39


Environment and Sustainability
Facts:
1800 there were ZERO cars and trucks in U.S.
2013 there were 255 million
40

Malnutrition and Land Use
Need for a more equitable distribution of food
41


Diet Patterns and Land Use
ha person⁻¹ yr⁻¹
Diet scenario
Grazing land
Perennial cropland
Cultivated cropland
BAS
POS
OMNI 100
OMNI 80
OMNI 60
OMNI 40
OMNI 20
OVO
LAC
VEG
42

Summary: Optimizing Protein for Health

- Diets with higher protein & reduced Carbs are beneficial
- Optimal protein to protect muscle & stimulate metabolism should be 1.2 to 1.5 g/kg (100 to 140 g/day)
- Evidence supports meal distribution with ~30 g/meal
- The first meal is important for muscle response
- Resistance exercise enhances protein benefits in muscle

43

Return to Top

Caring for LGBTQ Patients and Families

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Caring for LGBTQ Patients and Families

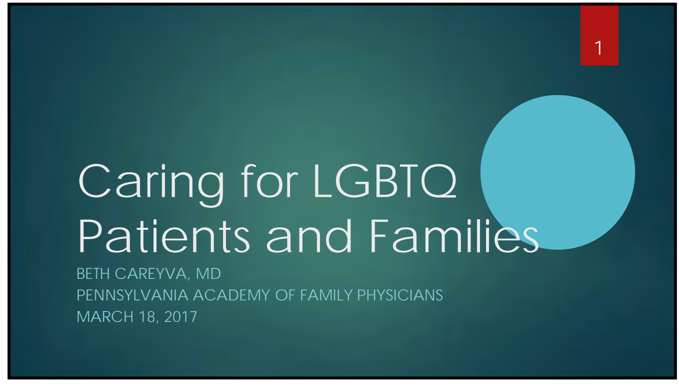
Beth Careyva, MD

Disclosures:

The speaker has received researching funding from PCORI in the area of Colorectal Cancer Screening. No conflict of interest exists within this presentation.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation **will include** discussion of unapproved or investigational uses of products or devices.



Disclosure

2

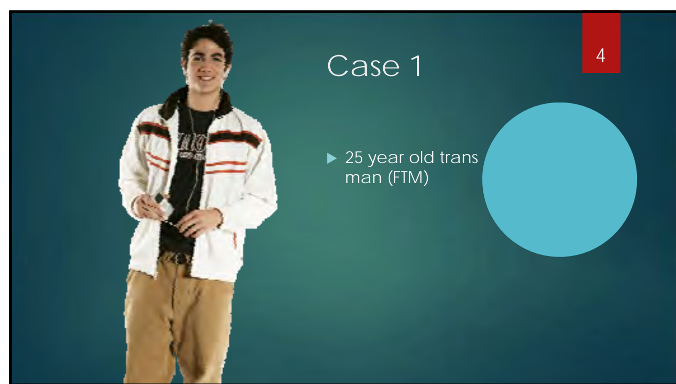
- The speaker has received researching funding from PCORI in the area of Colorectal Cancer Screening. No conflict of interest exist within this presentation.
- This session will include discuss of unapproved methods.
  - Hormone therapy for gender dysphoria is not FDA approved
- **Please Remember to Complete the Session Evaluation.**

https://www.surveymonkey.com/r/3_18_LGBTQ

Objectives

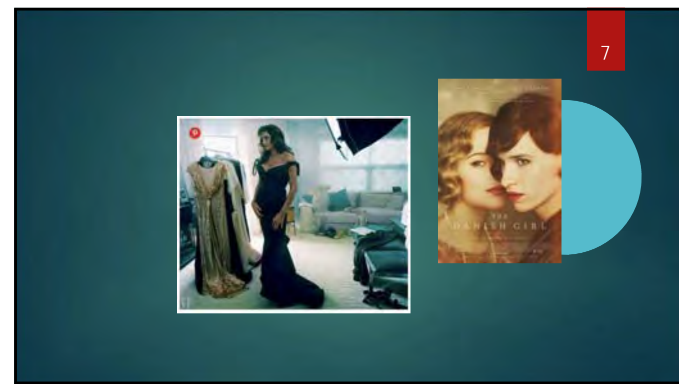
3

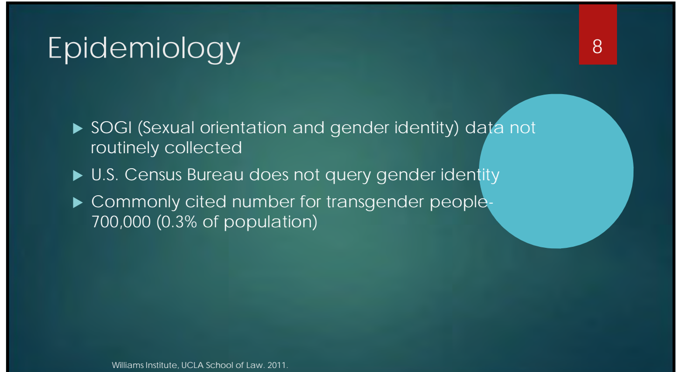
- Define terms related to LGBTQ population and health
- Identify strategies for effective primary care with LGBTQ patients
- Explain the basic approaches to LGBTQ medical and surgical treatment


Case 1
4
25 year old trans man (FTM)

5
"Lesbian, gay, bisexual, and transgender individuals have unique health experiences and needs, but as a nation, we do not know exactly what these experiences and needs are"
Institute of Medicine. (2011). The health of lesbian, gay, bisexual, and transgender people: building a foundation for better understanding. Washington, DC: The National Academic Press.

6
Christine Jorgensen in 1953. She was the first widely known transgender person in the United States. After serving in the Army during World War II, she later worked as an actress and nightclub entertainer. Art Edger/NY Daily News Archive, via Getty Images


7
THE DANISH GIRL

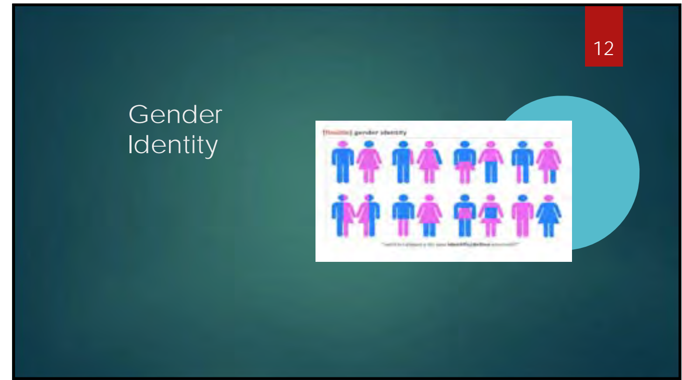

Epidemiology
8
SOGI (Sexual orientation and gender identity) data not routinely collected
U.S. Census Bureau does not query gender identity
Commonly cited number for transgender people- 700,000 (0.3% of population)
Williams Institute, UCLA School of Law. 2011.

9
The New York Times
Estimate of U.S. Transgender Population Doubles to 1.4 Million Adults

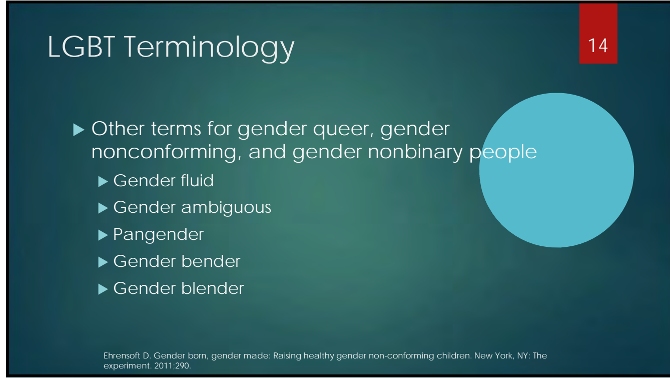
Sex vs. Gender

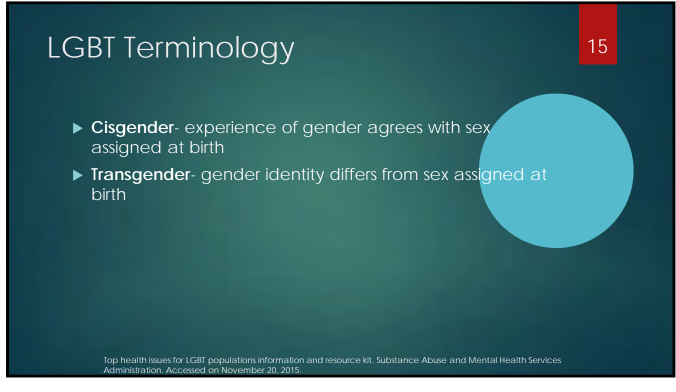
11

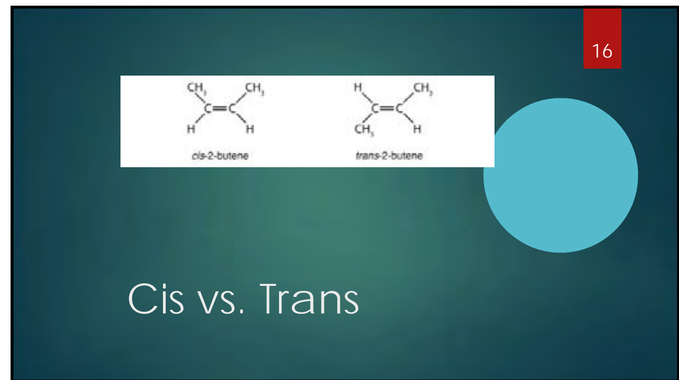
- **Sex**- determined at birth, based on sex chromosomes
- **Gender Identity**- fundamental sense of being a man, woman, or something else



LGBT Terminology
13
Bisexual- person who has emotional, sexual, and/or relational attraction to men and women
Gay- a man who has emotional, sexual, and/or relational attraction to other men
Lesbian- a woman who has an emotional, sexual, and/or relational attraction to women
Queer- persons who do not identify as either male or female


LGBT Terminology
14
Other terms for gender queer, gender nonconforming, and gender nonbinary people
Gender fluid
Gender ambiguous
Pangender
Gender bender
Gender blender
Ehrensoft D. Gender born, gender made: Raising healthy gender non-conforming children. New York, NY: The experiment. 2011:290.


LGBT Terminology
15
Cisgender- experience of gender agrees with sex assigned at birth
Transgender- gender identity differs from sex assigned at birth
Top health issues for LGBT populations information and resource kit. Substance Abuse and Mental Health Services Administration. Accessed on November 20, 2015.



LGBT Terminology

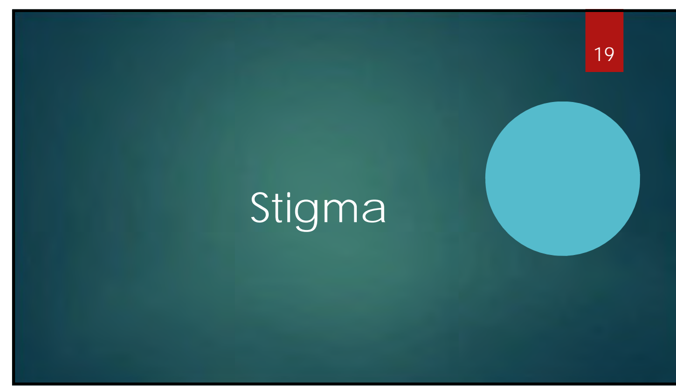
17

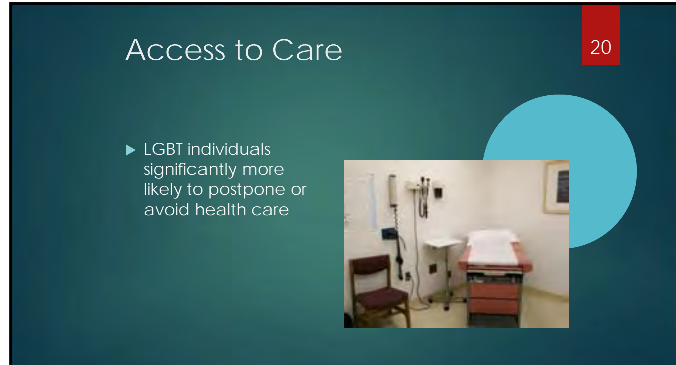
- **FTM** (Transgender Man)- Assigned female sex at birth, identifies and lives as male
- **MTF** (Transgender Woman)- Assigned male sex at birth, identifies and lives as female
- **Transition**- expression of gender identity including:
  - hormone therapy
  - gender affirming surgery
  - change in name/legal documents

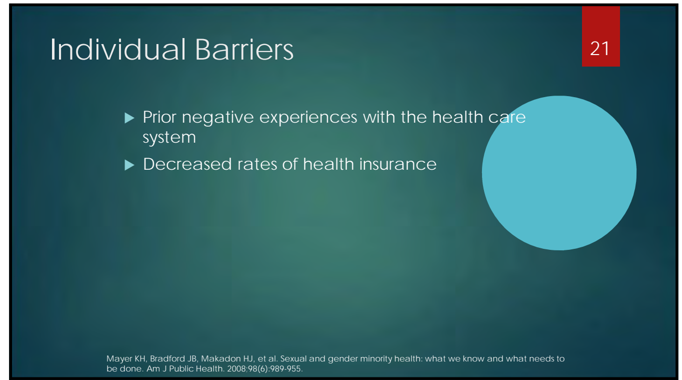
Top health issues for LGBT populations information and resource kit. Substance Abuse and Mental Health Services Administration. Accessed on November 20, 2015.

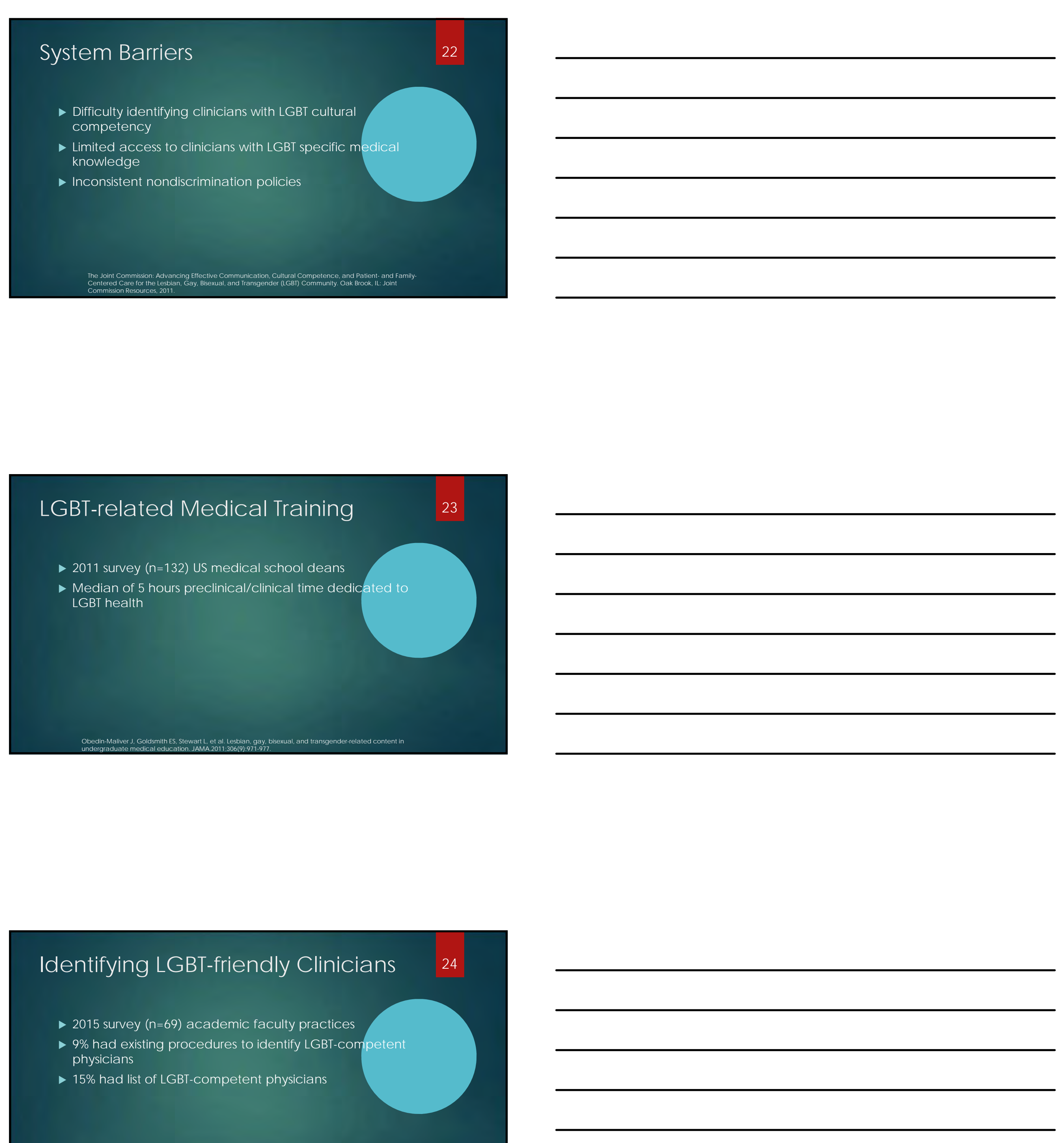
18

Patient-Centered Medical Care for LGBT Patients


19
Stigma

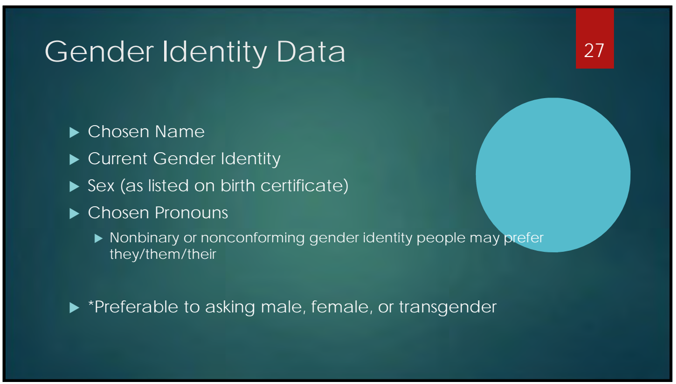

Access to Care
20
LGBT individuals significantly more likely to postpone or avoid health care

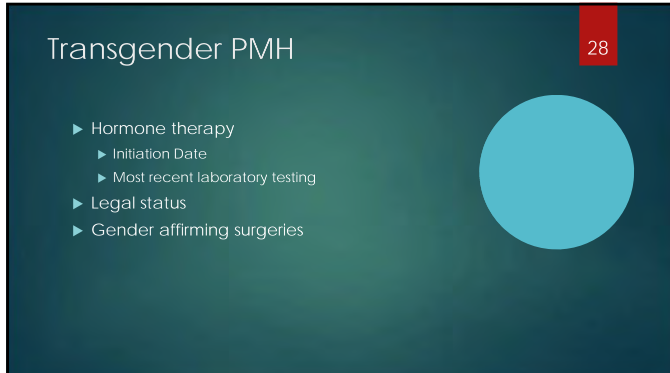

Individual Barriers
21
Prior negative experiences with the health care system
Decreased rates of health insurance
Mayer KH, Bradford JB, Makadon HJ, et al. Sexual and gender minority health: what we know and what needs to be done. Am J Public Health. 2008;98(6):989-955.


System Barriers
22
Difficulty identifying clinicians with LGBT cultural competency
Limited access to clinicians with LGBT specific medical knowledge
Inconsistent nondiscrimination policies
The Joint Commission: Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care for the Lesbian, Gay, Bisexual, and Transgender (LGBT) Community. Oak Brook, IL: Joint Commission Resources, 2011.
LGBT-related Medical Training
23
2011 survey (n=132) US medical school deans
Median of 5 hours preclinical/clinical time dedicated to LGBT health
Obedin-Maliver J, Goldsmith ES, Stewart L, et al. Lesbian, gay, bisexual, and transgender-related content in undergraduate medical education. JAMA 2011:306(9):971-977.
Identifying LGBT-friendly Clinicians
24
2015 survey (n=69) academic faculty practices
9% had existing procedures to identify LGBT-competent physicians
15% had list of LGBT-competent physicians
Khalili J, Leung LB, Diamant AL. Finding the perfect doctor: Identifying Lesbian, Gay, Bisexual, and Transgender-Competent Physicians. Am J Public Health. 2015:105:1114-1119.

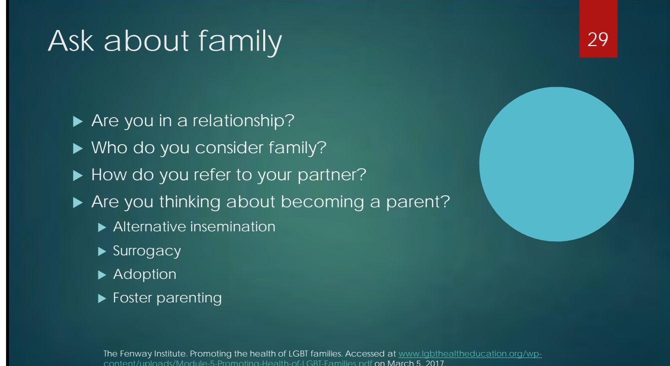
Clinician Biases
25
Impact of our own discomfort
Affirming and non-judgmental environment for disclosures

Creating an LGBT-friendly Office
26
Signage
LGBT-friendly from front desk to check out
Including SOGI on intake forms
Careful use of pronouns
Gender neutral bathrooms
LGBT


Gender Identity Data
27
Chosen Name
Current Gender Identity
Sex (as listed on birth certificate)
Chosen Pronouns
Nonbinary or nonconforming gender identity people may prefer they/them/their
*Preferable to asking male, female, or transgender



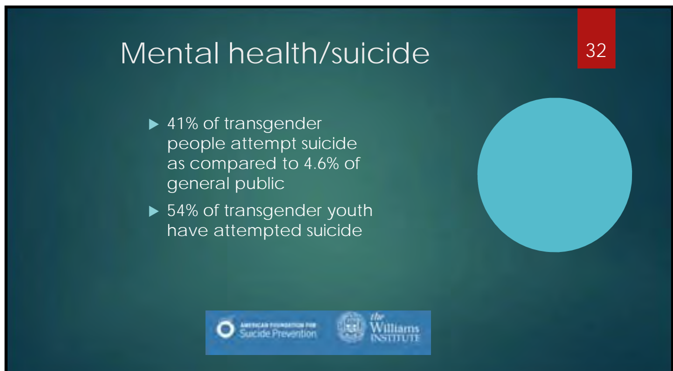
Transgender PMH
28
Hormone therapy
Initiation Date
Most recent laboratory testing
Legal status
Gender affirming surgeries

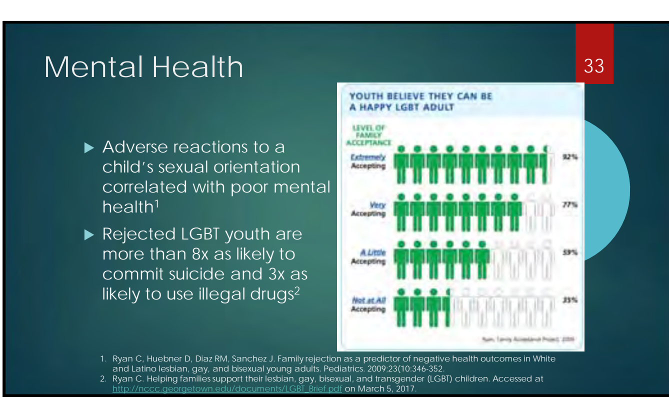


Ask about family
29
Are you in a relationship?
Who do you consider family?
How do you refer to your partner?
Are you thinking about becoming a parent?
Alternative insemination
Surrogacy
Adoption
Foster parenting
The Fenway Institute. Promoting the health of LGBT families. Accessed at www.lgbthealtheducation.org/wp-content/uploads/Module-5-Promoting-Health-of-LGBT-Families.pdf on March 5, 2017.

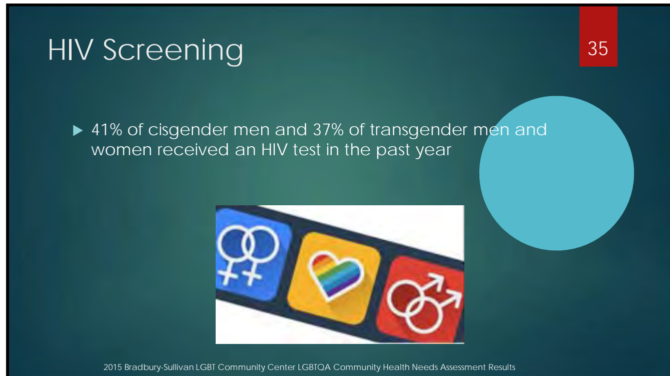
30
LGBT Health Disparities

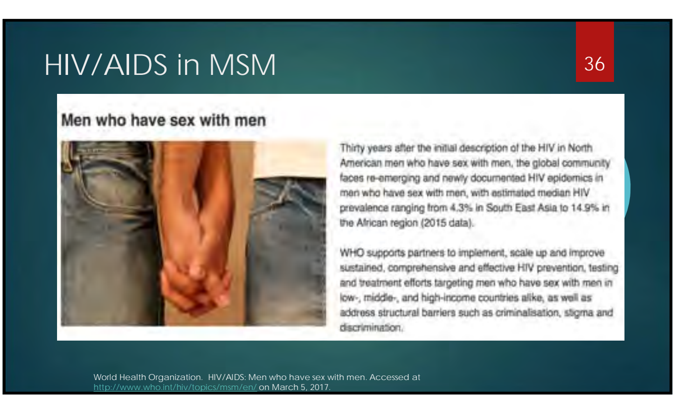
31
LGBT Health Disparities
Mental health/suicide
HIV
Tobacco use
Cancer screening
Obesity

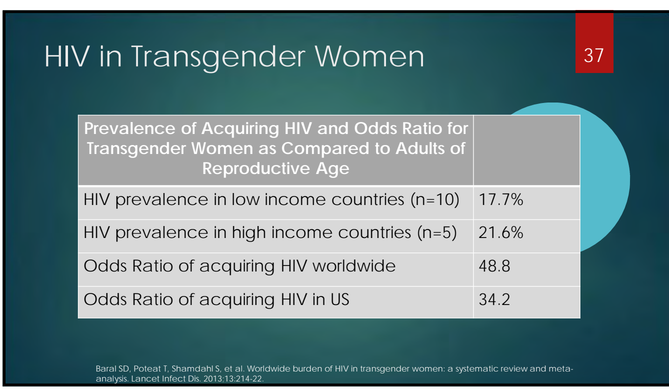

32
Mental health/suicide
41% of transgender people attempt suicide as compared to 4.6% of general public
54% of transgender youth have attempted suicide
Suicide Prevention
the Williams INSTITUTE


33
Mental Health
Adverse reactions to a child's sexual orientation correlated with poor mental health[1]
Rejected LGBT youth are more than 8x as likely to commit suicide and 3x as likely to use illegal drugs[2]
YOUTH BELIEVE THEY CAN BE A HAPPY LGBT ADULT
LEVEL OF FAMILY ACCEPTANCE
Extremely Accepting
92%
Very Accepting
77%
A Little Accepting
59%
Not at All Accepting
35%
1. Ryan C, Huebner D, Diaz RM, Sanchez J. Family rejection as a predictor of negative health outcomes in White and Latino lesbian, gay, and bisexual young adults. Pediatrics. 2009;23(10:346-352.
2. Ryan C. Helping families support their lesbian, gay, bisexual, and transgender (LGBT) children. Accessed at http://nccc.georgetown.edu/documents/LGBT_Brief.pdf on March 5, 2017.

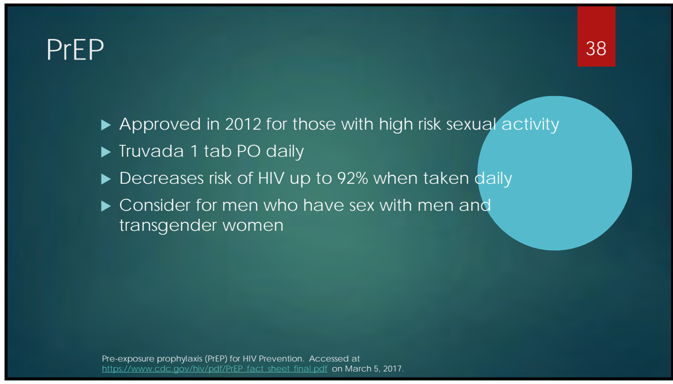
Mental Health
34
Lesbian and bisexual women who are not "out" are more likely to attempt suicide than heterosexual women[1]
Gay men more likely to have depression/anxiety than heterosexual men[2]
1. Koh AS, Ross LK. Mental health issues: A comparison of lesbian, bisexual and heterosexual women. Journal of Homsexuality. 2006;51(1):33-57.
2. Berg MB, Mimiaga MJ, Safren SA. Mental health concerns of gay and bisexual men seeking mental health services. Journal of Homosexuality. 2008;54(3):293-306.

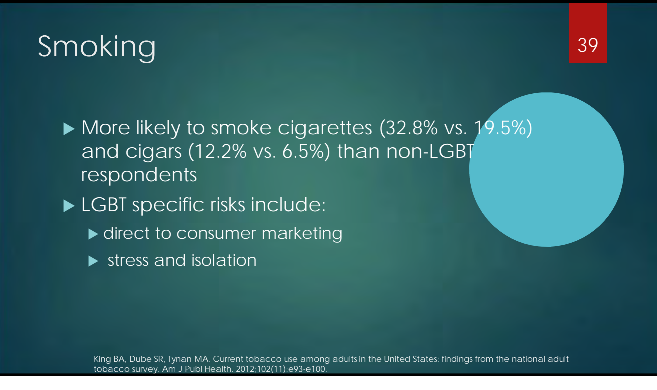

HIV Screening
35
41% of cisgender men and 37% of transgender men and women received an HIV test in the past year
2015 Bradbury-Sullivan LGBT Community Center LGBTQA Community Health Needs Assessment Results

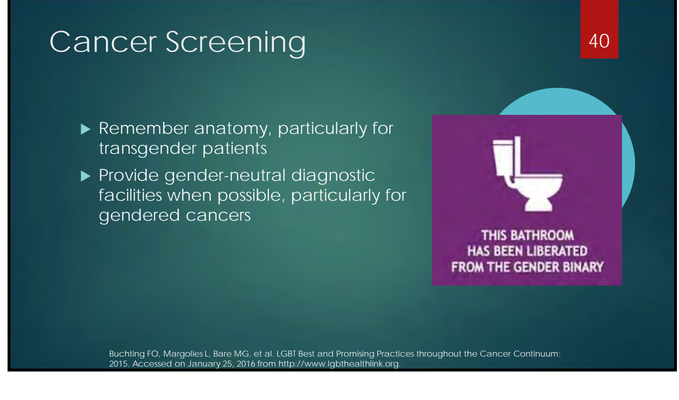

HIV/AIDS in MSM
36
Men who have sex with men
Thirty years after the initial description of the HIV in North American men who have sex with men, the global community faces re-emerging and newly documented HIV epidemics in men who have sex with men, with estimated median HIV prevalence ranging from 4.3% in South East Asia to 14.9% in the African region (2015 data).
WHO supports partners to implement, scale up and improve sustained, comprehensive and effective HIV prevention, testing and treatment efforts targeting men who have sex with men in low-, middle-, and high-income countries alike, as well as address structural barriers such as criminalisation, stigma and discrimination.
World Health Organization. HIV/AIDS: Men who have sex with men. Accessed at http://www.who.int/hiv/topics/msm/en/ on March 5, 2017.

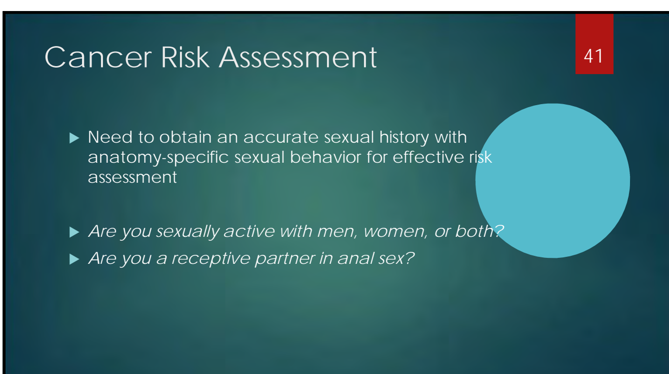


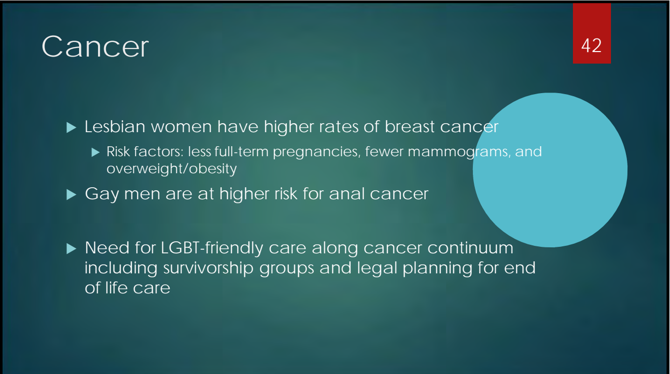
Prevalence of Acquiring HIV and Odds Ratio for Transgender Women as Compared to Adults of Reproductive Age	
HIV prevalence in low income countries (n=10)	17.7%
HIV prevalence in high income countries (n=5)	21.6%
Odds Ratio of acquiring HIV worldwide	48.8
Odds Ratio of acquiring HIV in US	34.2






Cancer Screening
40
Remember anatomy, particularly for transgender patients
Provide gender-neutral diagnostic facilities when possible, particularly for gendered cancers
THIS BATHROOM HAS BEEN LIBERATED FROM THE GENDER BINARY
Buchting FO, Margolies L, Bare MG, et al. LGBT Best and Promising Practices throughout the Cancer Continuum; 2015. Accessed on January 25, 2016 from http://www.lgbthealthlink.org.


Cancer Risk Assessment
41
Need to obtain an accurate sexual history with anatomy-specific sexual behavior for effective risk assessment
Are you sexually active with men, women, or both?
Are you a receptive partner in anal sex?


Cancer
42
Lesbian women have higher rates of breast cancer
Risk factors: less full-term pregnancies, fewer mammograms, and overweight/obesity
Gay men are at higher risk for anal cancer
Need for LGBT-friendly care along cancer continuum including survivorship groups and legal planning for end of life care

BMI and Sexual Minority Women

43

- Lesbians more likely to be overweight (OR=2.69) and obese (OR=2.47) as compared to heterosexual women[1]
- More likely to be dissatisfied with body image[2]
- More likely to engage in unhealthy weight control practices[2]

Boehmer U, Bowen DJ, Bauer GR. Overweight and obesity in sexual minority women: evidence from population-based data. Am J Pub Health. 2007;97(6):1134-1140.
Polimeni AM, Austin SB, Kavanaugh AM. Sexual orientation and weight, body image, and weight control practices among young Australian women. Journal Women's Health. 2009;18(3):355-362.

Summary of Health Disparities

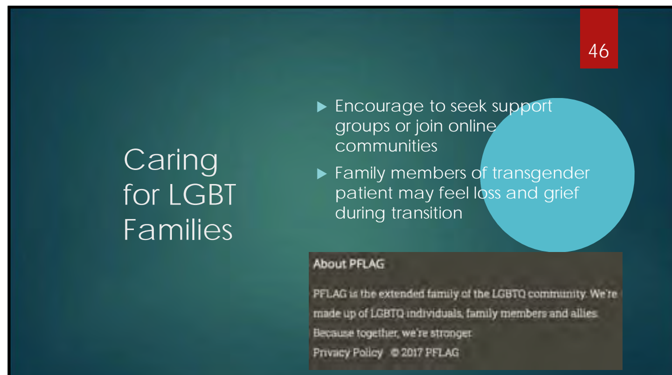
44

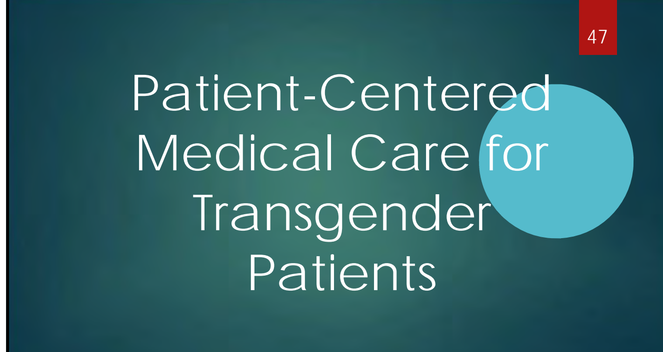
- Screen for mental health related illnesses
- Consider PrEP in individuals at high risk for HIV
- Address smoking cessation
- Ask appropriate sexual history questions to ensure appropriate STI and cancer screening

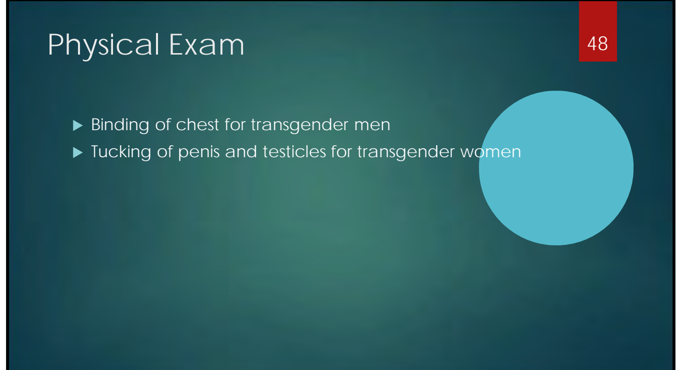
Case 2

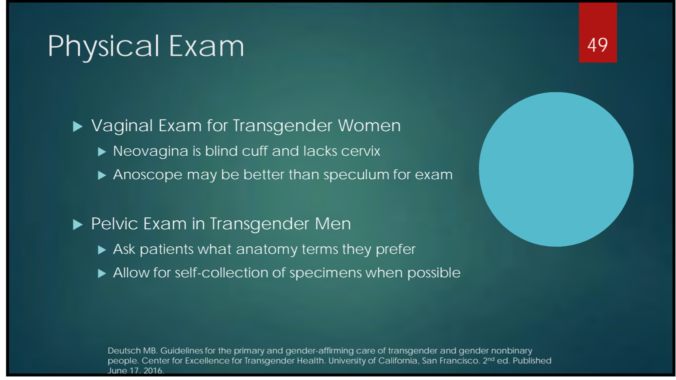
45

- 45 year old trans woman
- Initiated real-life experience 6 months ago
- Ready to start hormone therapy
- Her wife is supportive (also my patient) but is concerned about irreversible loss of sexual function


46
Caring for LGBT Families
Encourage to seek support groups or join online communities
Family members of transgender patient may feel loss and grief during transition
About PFLAG
PFLAG is the extended family of the LGBTQ community. We're made up of LGBTQ individuals, family members and allies. Because together, we're stronger.
Privacy Policy © 2017 PFLAG


47
Patient-Centered Medical Care for Transgender Patients


Physical Exam
48
Binding of chest for transgender men
Tucking of penis and testicles for transgender women

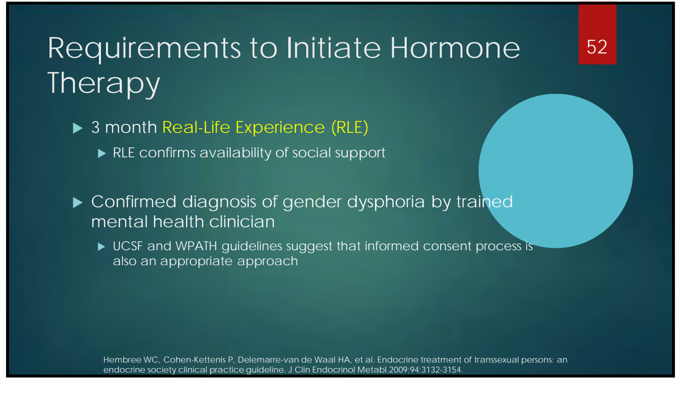


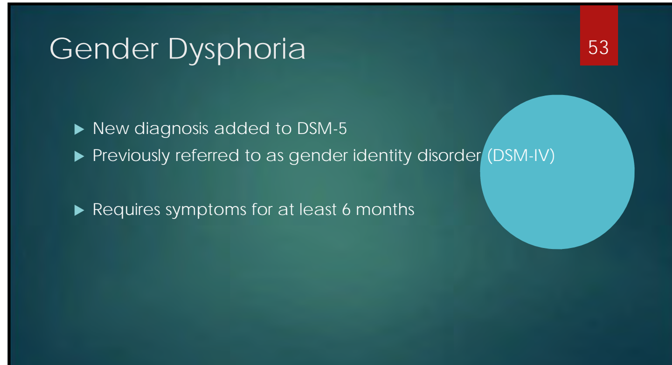
Gender Affirming Surgeries

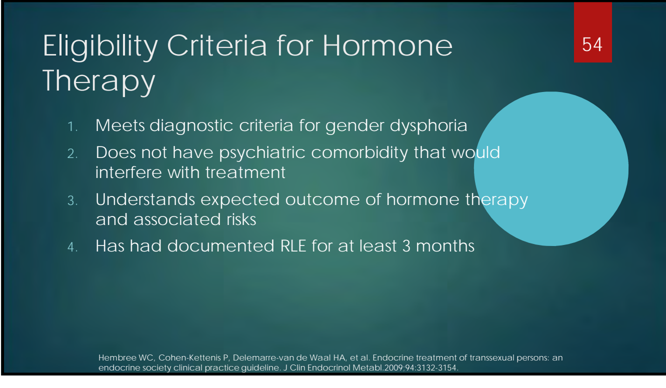
50

Transgender Men	Transgender Women
Masculinizing Phalloplasty/Scrotoplasty	Feminizing vaginoplasty
Metaoidioplasty	Facial feminizing procedures
Masculinizing Chest Surgery	Reduction Thyrochondroplasty
Hysterectomy/Oophorectomy	Augmentation mammoplasty
Vaginectomy	Orchiectomy

Deutsch MB. Guidelines for the primary and gender-affirming care of transgender and gender nonbinary people. Center for Excellence for Transgender Health. University of California, San Francisco. 2nd ed. Published June 17, 2016.


Requirements to Initiate Hormone Therapy
52
3 month Real-Life Experience (RLE)
RLE confirms availability of social support
Confirmed diagnosis of gender dysphoria by trained mental health clinician
UCSF and WPATH guidelines suggest that informed consent process is also an appropriate approach
Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metabl 2009;94:3132-3154.


Gender Dysphoria
53
New diagnosis added to DSM-5
Previously referred to as gender identity disorder (DSM-IV)
Requires symptoms for at least 6 months

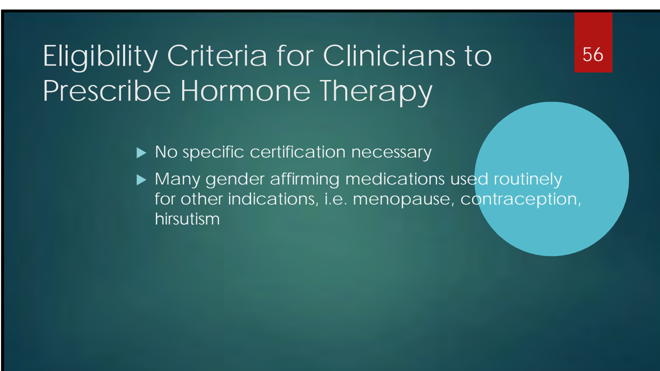

Eligibility Criteria for Hormone Therapy
54
1. Meets diagnostic criteria for gender dysphoria
2. Does not have psychiatric comorbidity that would interfere with treatment
3. Understands expected outcome of hormone therapy and associated risks
4. Has had documented RLE for at least 3 months
Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metabl 2009;94:3132-3154.

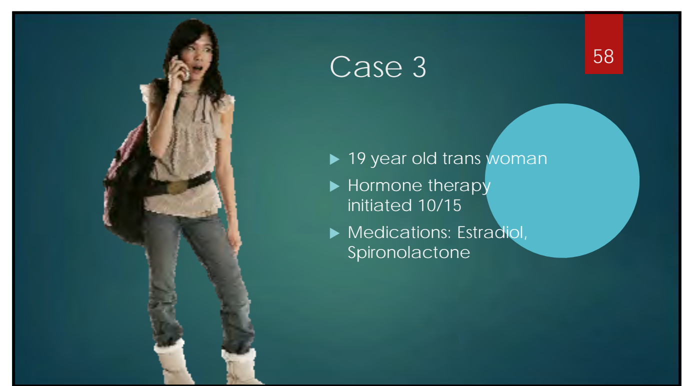
Readiness Criteria for Hormone Therapy

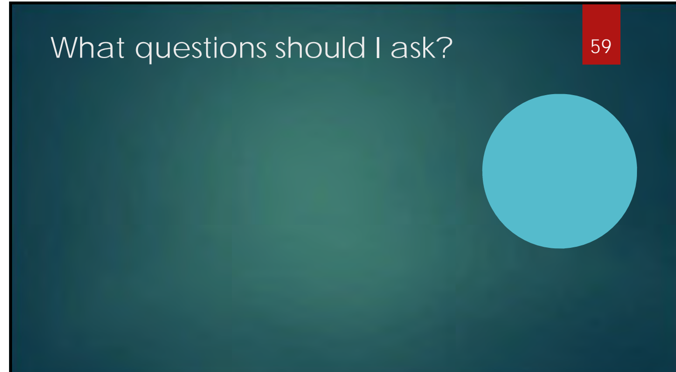
55

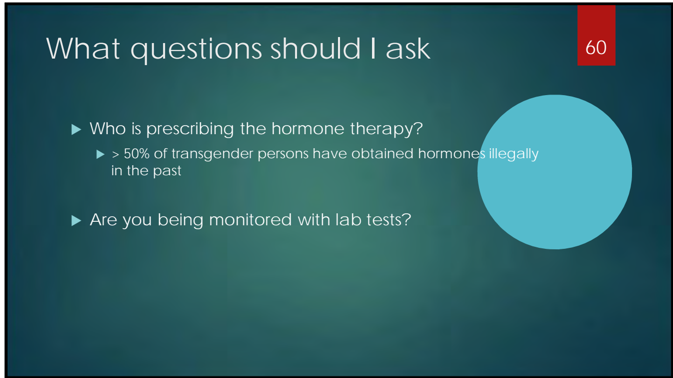
1. Experienced consolidation of gender identity during RLE and/or psychotherapy
2. Identified problems that may impact mental health during transition
3. Prepared to take hormones responsibly

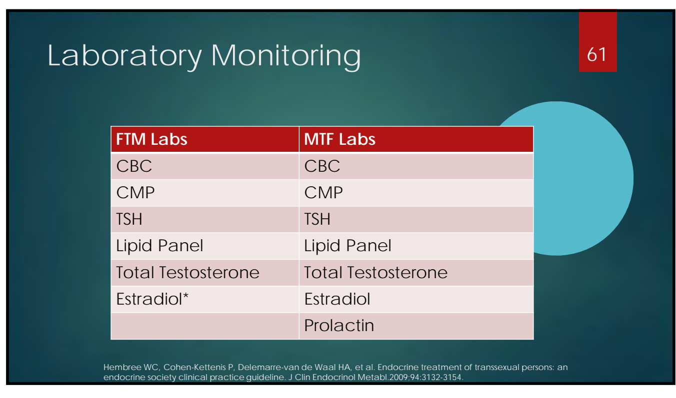
Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metabl.2009;94:3132-3154.



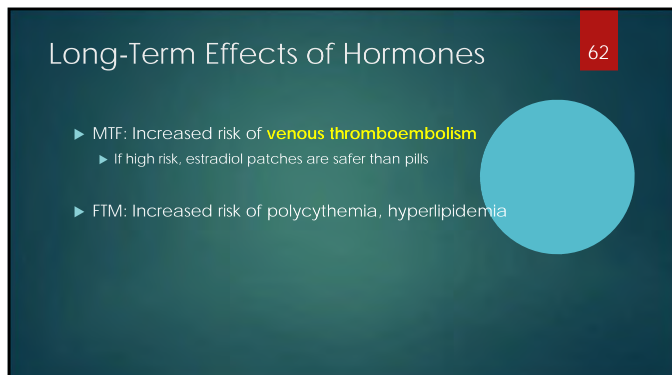

Case 3
58
19 year old trans woman
Hormone therapy initiated 10/15
Medications: Estradiol, Spironolactone


What questions should I ask?
59


What questions should I ask
60
Who is prescribing the hormone therapy?
> 50% of transgender persons have obtained hormones illegally in the past
Are you being monitored with lab tests?



FTM Labs	MTF Labs
CBC	CBC
CMP	CMP
TSH	TSH
Lipid Panel	Lipid Panel
Total Testosterone	Total Testosterone
Estradiol*	Estradiol
	Prolactin

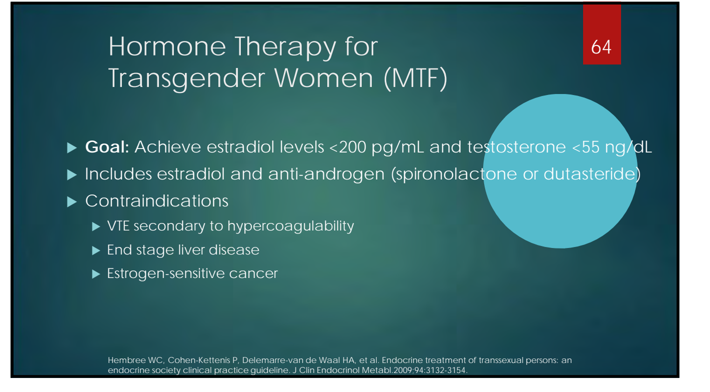


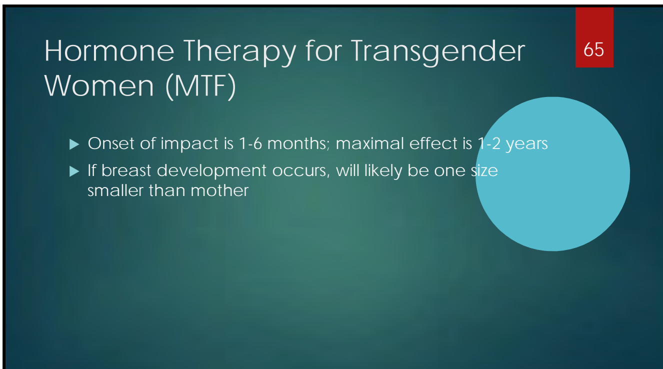
Hormone Therapy For Transgender Men (FTM)

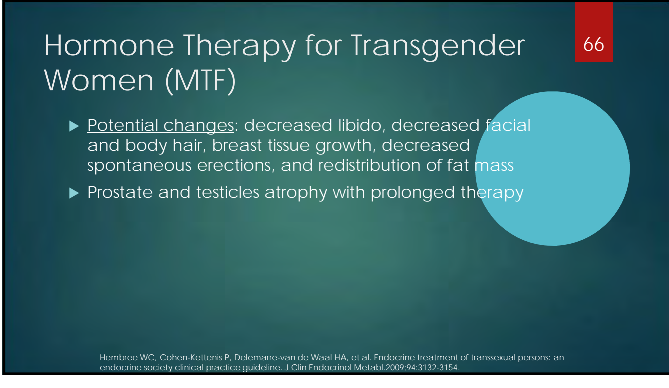
63

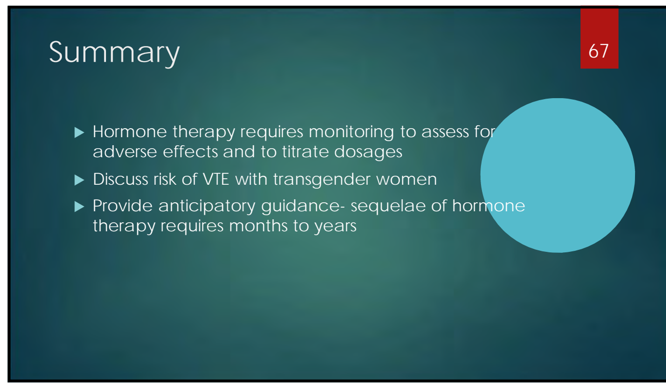
- Potential changes: deepening of voice, fat redistribution, increased muscle mass, enlargement of clitoris and labia, male pattern hair loss, infertility
- Menses typically cease within 6 months of initiation of testosterone therapy*

Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metab 2009;94:3132-3154.

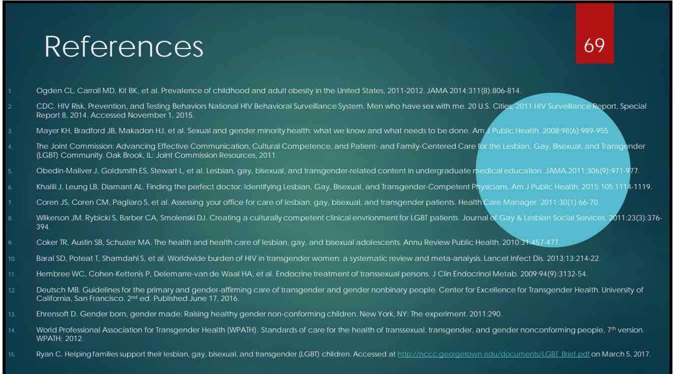

Hormone Therapy for Transgender Women (MTF)
64
Goal: Achieve estradiol levels <200 pg/mL and testosterone <55 ng/dL
Includes estradiol and anti-androgen (spironolactone or dutasteride)
Contraindications
VTE secondary to hypercoagulability
End stage liver disease
Estrogen-sensitive cancer
Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metabl 2009;94:3132-3154.


Hormone Therapy for Transgender Women (MTF)
65
Onset of impact is 1-6 months; maximal effect is 1-2 years
If breast development occurs, will likely be one size smaller than mother


Hormone Therapy for Transgender Women (MTF)
66
Potential changes: decreased libido, decreased facial and body hair, breast tissue growth, decreased spontaneous erections, and redistribution of fat mass
Prostate and testicles atrophy with prolonged therapy
Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an endocrine society clinical practice guideline. J Clin Endocrinol Metabl 2009;94:3132-3154.


Summary
67
Hormone therapy requires monitoring to assess for adverse effects and to titrate dosages
Discuss risk of VTE with transgender women
Provide anticipatory guidance- sequelae of hormone therapy requires months to years

Guidelines and Tools
68
Endocrine Society Clinical Practice Guideline
UCSF Center for Excellence for Transgender Care
World Professional Association for Transgender Health Standards
"Vanessa Goes to the Doctor" Video: https://www.youtube.com/watch?v=S3eDKf3PFRo&t=8s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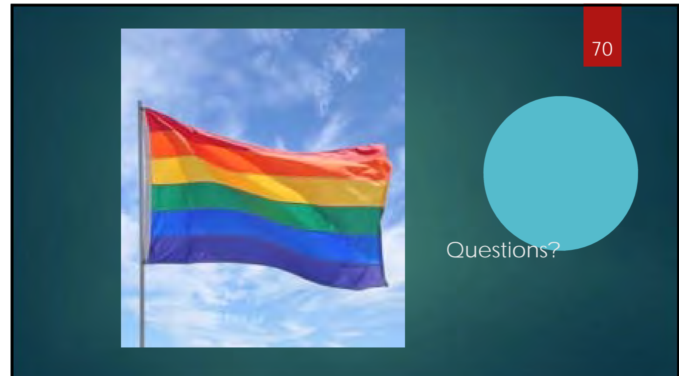
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Questions?

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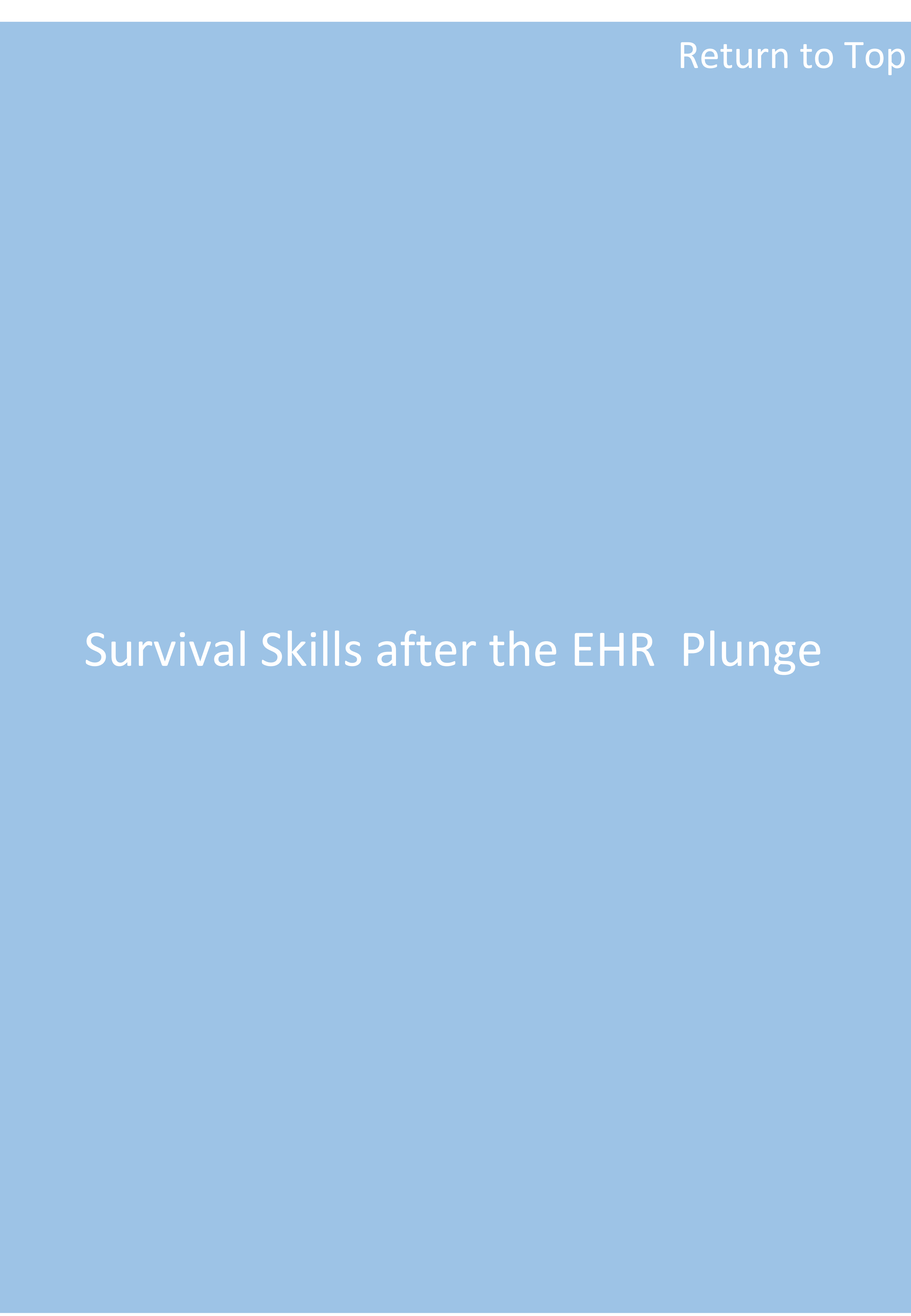
Beth_a.careyva@lvhn.org


Return to Top
Survival Skills after the EHR Plunge

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Survival Skills after the EHR Plunge
Christoper (Kit) Robert Heron, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

How I Learned to Stop Worrying and Love the Bomb

Christopher R. Heron, MD
Peter D. Rainey, MS

1

Disclosure

- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_18_EHR

2

What We Think You Might Be Thinking

1. There wasn't any real need to implement EHR's in the first place.
2. The EHR makes it harder for me to do my work.
3. The risks to changing my EHR use outweigh the benefits
4. I don't have the time or ability to change my EHR use in meaningful way
5. I have tried to make changes in the past and they could not be sustained
6. The EHR change process is handled improperly by administration

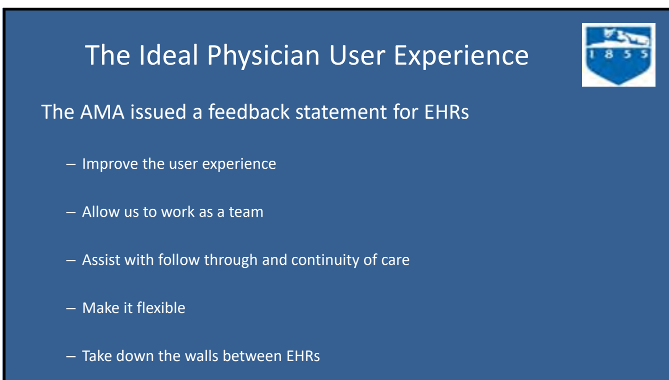
Learning Objectives

- Understand the available organizational resources to improve your Electronic Health Record (EHR) experience
- Examine the provider workflow in the clinic and use the understanding to improve EHR interactions
- Review automation techniques and their applications in the clinic
- Understand how team structure impacts EHR use and workflow in the clinic setting

"Certainly the doctor who thinks his student days are over when he gets his medical diploma, or even his certificate of hospital internship, is unfortunate – but his patients are more unfortunate than he. In no other profession in the world is it so necessary to keep up with the times."--American physician W. M. Johnson[12]

More Productive Work & Burnout[28]

My control over my workload is:	1 Poor	2 Marginal	3 Satisfactory	4 Good	5 Optimal
Sufficiency of time for documentation is:	1 Poor	2 Marginal	3 Satisfactory	4 Good	5 Optimal
Which number best describes the atmosphere in your primary work area?	1 Calm	2	3 Busy, but reasonable	4	5 Hectic, chaotic
My professional values are well aligned with those of my department leaders:	1 Strongly disagree	2 Disagree	3 Neither agree nor disagree	4 Agree	5 Strongly Agree
The degree to which my care team works efficiently together is:	1 Poor	2 Marginal	3 Satisfactory	4 Good	5 Optimal
The amount of time I spend on the electronic health record (EHR) at home is:	1 Excessive	2 Moderately high	3 Satisfactory	4 Modest	5 Minimal/none
My proficiency with EHR use is:	1 Poor	2 Marginal	3 Satisfactory	4 Good	5 Optimal


The Ideal Physician User Experience
The AMA issued a feedback statement for EHRs
– Improve the user experience
– Allow us to work as a team
– Assist with follow through and continuity of care
– Make it flexible
– Take down the walls between EHRs

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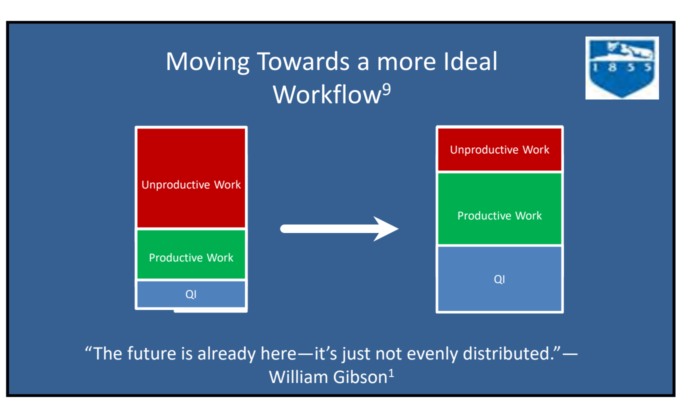
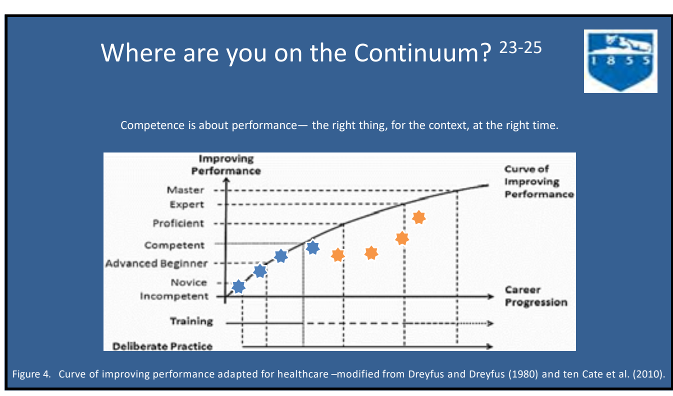
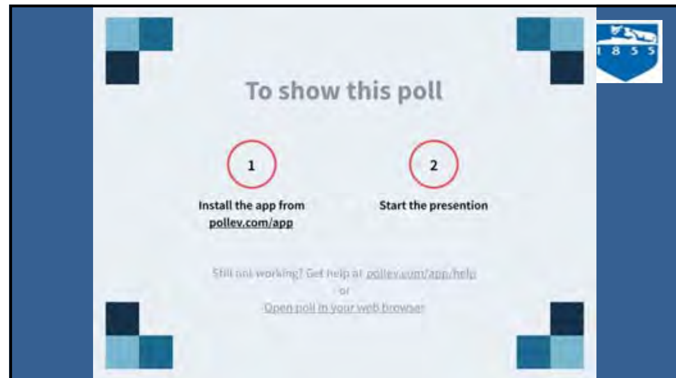

Moving Towards a more Ideal Workflow9
Unproductive Work
Productive Work
QI
Unproductive Work
Productive Work
QI
"The future is already here—it's just not evenly distributed."— William Gibson1


Where are you on the Continuum? 23-25
Competence is about performance— the right thing, for the context, at the right time.
Improving Performance
Master
Expert
Proficient
Competent
Advanced Beginner
Novice
Incompetent
Training
Deliberate Practice
Curve of Improving Performance
Career Progression
Figure 4. Curve of improving performance adapted for healthcare –modified from Dreyfus and Dreyfus (1980) and ten Cate et al. (2010).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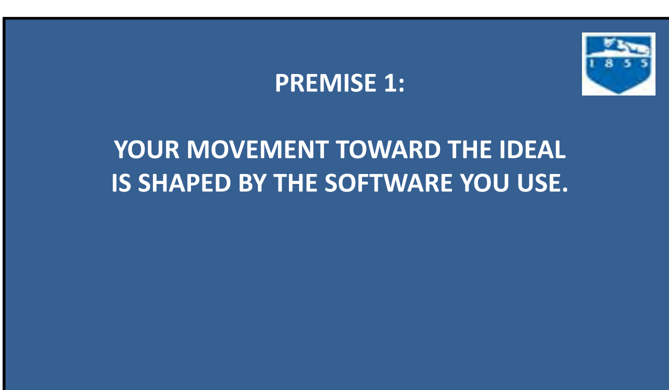

PREMISE 1:
YOUR MOVEMENT TOWARD THE IDEAL IS SHAPED BY THE SOFTWARE YOU USE.

Shifting Gears

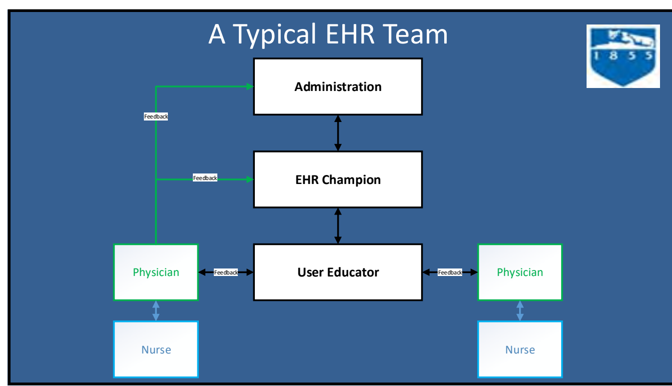
- Software has become a SERVICE instead of a TOOL
- Change is frequent, but not frequently drastic
- We feel it when change impacts our typical workflow

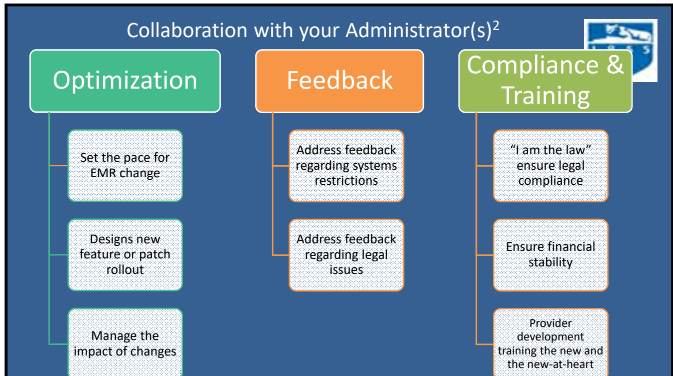
Shifting Gears

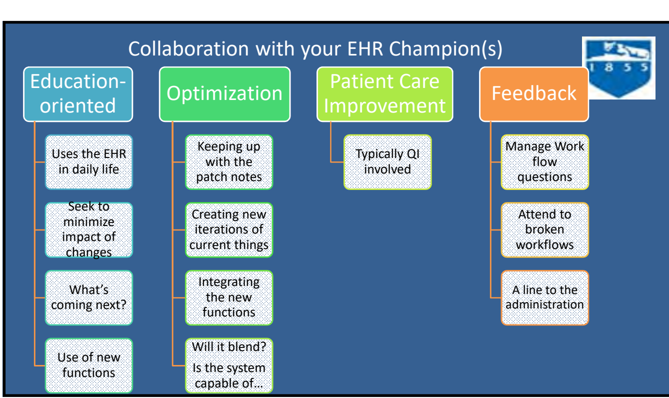
- Software has become a SERVICE instead of a TOOL
- Change is frequent, but not frequently drastic
- We feel it when change impacts our typical workflow

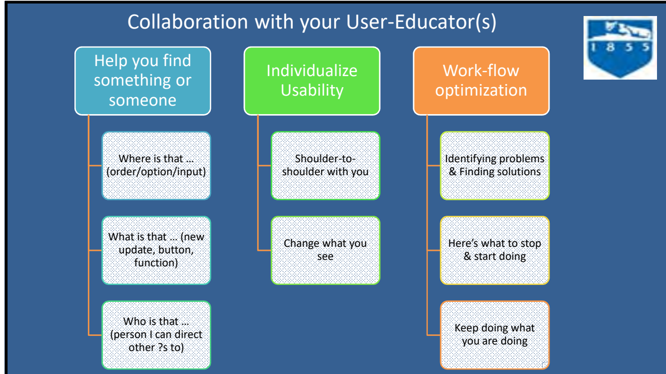
PREMISE 2:

INCREASING COLLABORATION WITH YOUR EHR TEAM WILL HELP YOU MOVE TOWARD THE IDEAL.


A Typical EHR Team
Administration
EHR Champion
User Educator
Physician
Physician
Nurse
Nurse
Feedback
Feedback
Feedback
Feedback


Collaboration with your Administrator(s)2
Optimization
Feedback
Compliance & Training
Set the pace for EMR change
Designs new feature or patch rollout
Manage the impact of changes
Address feedback regarding systems restrictions
Address feedback regarding legal issues
"I am the law" ensure legal compliance
Ensure financial stability
Provider development training the new and the new-at-heart


Collaboration with your EHR Champion(s)
Education-oriented
Optimization
Patient Care Improvement
Feedback
Uses the EHR in daily life
Seek to minimize impact of changes
What's coming next?
Use of new functions
Keeping up with the patch notes
Creating new iterations of current things
Integrating the new functions
Will it blend? Is the system capable of...
Typically QI involved
Manage Work flow questions
Attend to broken workflows
A line to the administration

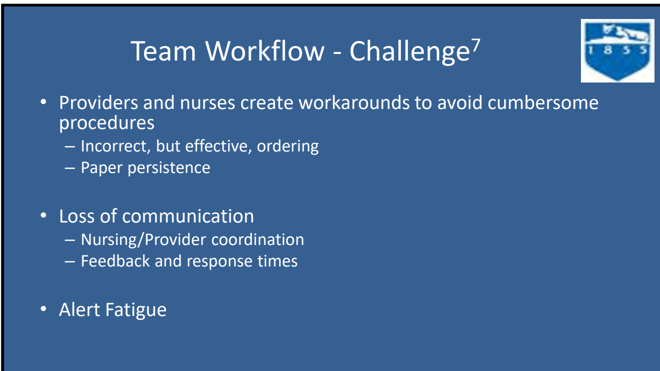


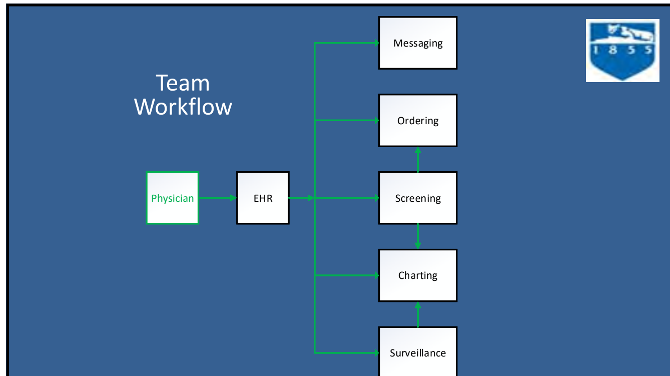
PREMISE 3:

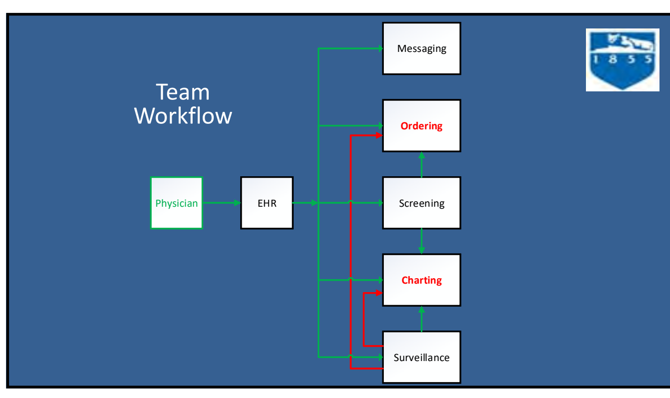
THE EHR *CHANGES WORKFLOW* BUT CLINICIANS STILL *OWN THE WORKFLOW*.

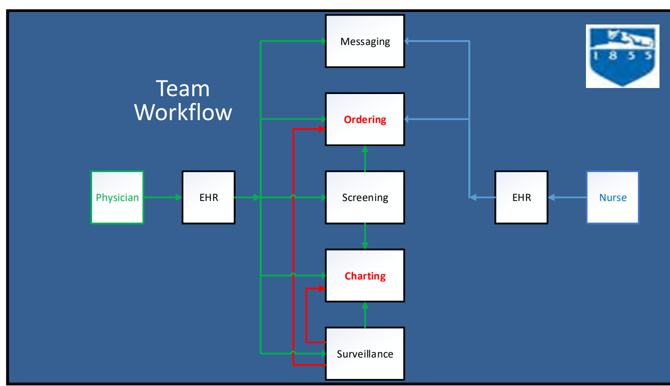
Team Workflow

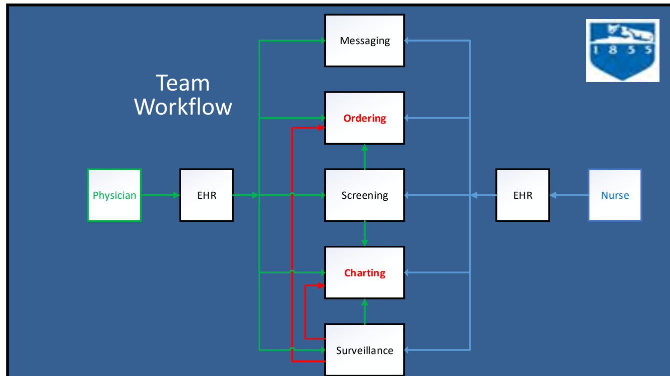
- Healthcare IT interventions generate a lot of changes unintentionally
  - Computerized ordering, new documentation, screening and monitoring
  - Impact is primarily focused on clinicians, but why?

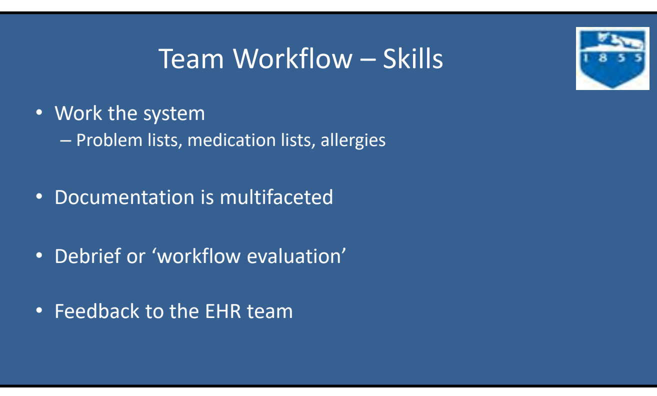

Team Workflow - Challenge[7]
Providers and nurses create workarounds to avoid cumbersome procedures
– Incorrect, but effective, ordering
– Paper persistence
Loss of communication
– Nursing/Provider coordination
– Feedback and response times
Alert Fatigue


Team Workflow
Physician
EHR
Messaging
Ordering
Screening
Charting
Surveillance


Team Workflow
Physician
EHR
Messaging
Ordering
Screening
Charting
Surveillance


Team
Workflow
Messaging
Ordering
Screening
Charting
Surveillance
Physician
EHR
EHR
Nurse


Team
Workflow
Messaging
Ordering
Screening
Charting
Surveillance
Physician
EHR
EHR
Nurse


Team Workflow – Skills
• Work the system
– Problem lists, medication lists, allergies
• Documentation is multifaceted
• Debrief or 'workflow evaluation'
• Feedback to the EHR team

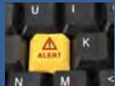
Teaching and EHR Use—Challenge

"At first sight, the medical record seems a mere re-enactment of time: tables listing, past measurements; pages and pages of notes of meetings and examinations… . Yet it is a mistake…to conceptualize the record as a more or less adequate representation of events. By being part and parcel of the activity of *transforming a patient's problem into a manageable problem*, by functioning as a structured distributor and collector of work activities, the *record is actively involved in shaping the very event it 'represents*.'"

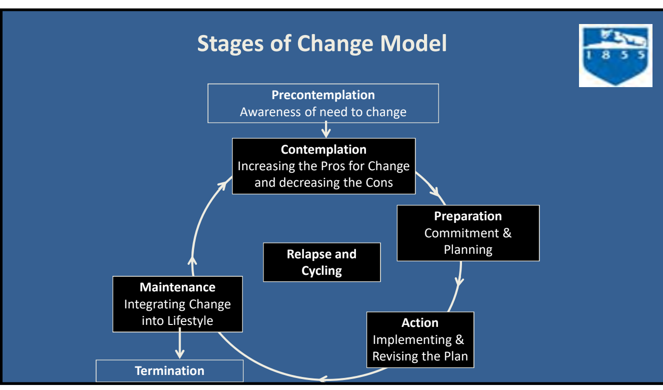
- Marc Berg, Dutch physician and medical sociologist[8]

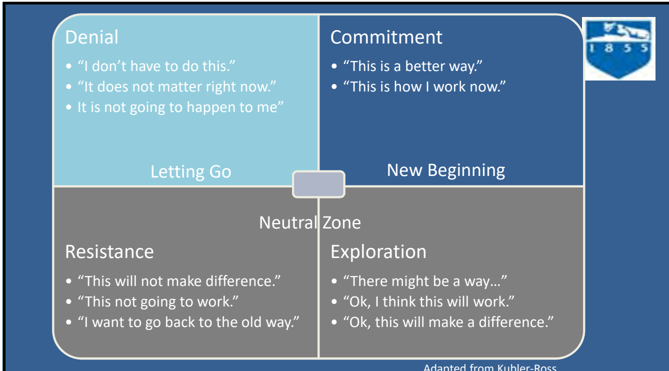
PREMISE 3:

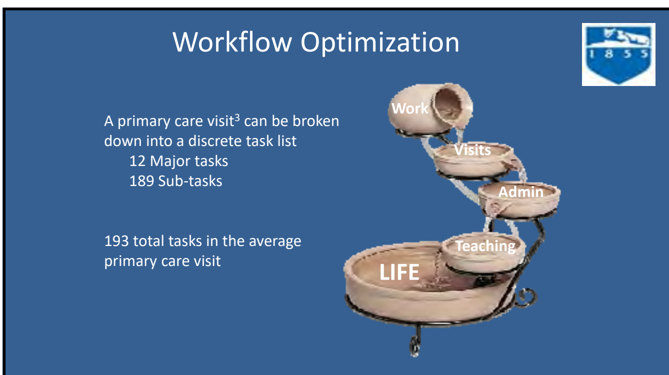
***MAKING CHANGES* IN YOUR EHR WORKFLOW MAY NOT BE YOUR MOST DIFFICULT CHALLENGE – *RESISTANCE TO CHANGE* MAY BE YOUR MOST DIFFICULT CHALLENGE.**

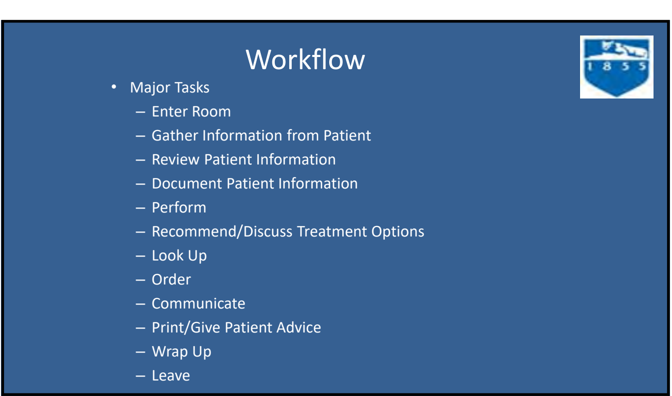


Stages of Change Model




Denial
• "I don't have to do this."
• "It does not matter right now."
• It is not going to happen to me"
Letting Go
Commitment
• "This is a better way."
• "This is how I work now."
New Beginning
Neutral Zone
Resistance
• "This will not make difference."
• "This not going to work."
• "I want to go back to the old way."
Exploration
• "There might be a way…"
• "Ok, I think this will work."
• "Ok, this will make a difference."
Adapted from Kubler-Ross
1 8 5 5


Workflow Optimization
A primary care visit3 can be broken down into a discrete task list
12 Major tasks
189 Sub-tasks
193 total tasks in the average primary care visit
Work
Visits
Admin
Teaching
LIFE
1 8 5 5


Workflow
• Major Tasks
– Enter Room
– Gather Information from Patient
– Review Patient Information
– Document Patient Information
– Perform
– Recommend/Discuss Treatment Options
– Look Up
– Order
– Communicate
– Print/Give Patient Advice
– Wrap Up
– Leave
1 8 5 5

Workflow= Multiactivity Technology Use[13-14]

- Major Tasks which involve Technology
  - Enter Room
  - Gather Information from Patient
  - Review Patient Information
  - Document Patient Information
  - Perform
  - Recommend/Discuss Treatment Options
  - Look Up
  - Order
  - Communicate
  - Print/Give Patient Advice
  - Wrap Up
  - Leave

PREMISE 4:

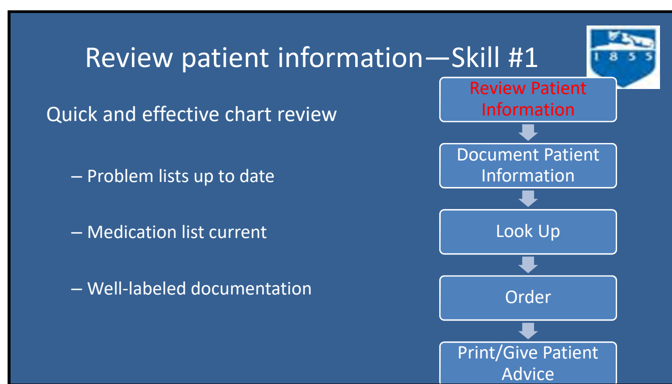
IMPROVING YOUR EHR SKILLS—LIKE EVERY OTHER MEDICAL PROCEDURE—WILL IMPROVE YOUR *EFFICIENCY* AND *ACCURACY*.

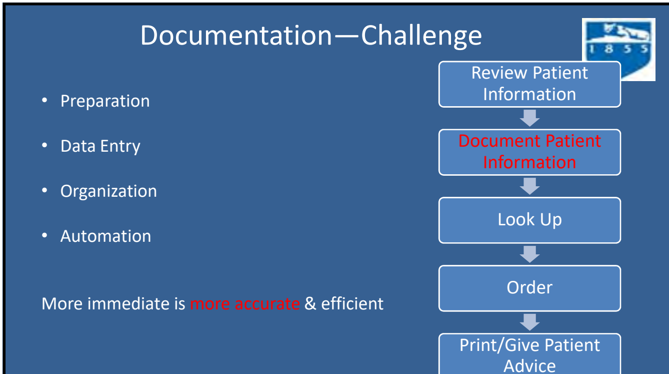
Review patient information[4]—Challenge

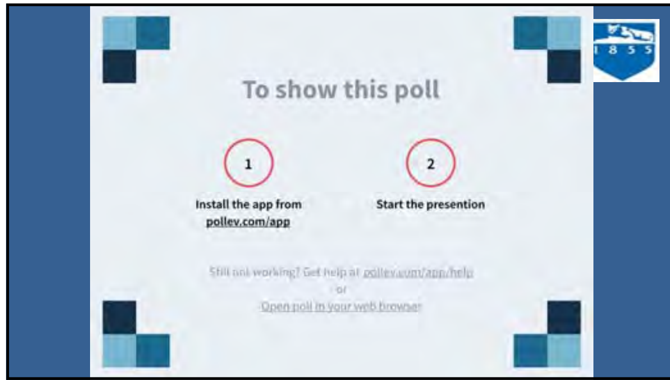
Over the course of a 30 minute visit:

- ~150 discrete clicks in the EHR
- 10 minutes spent staring at the computer
- Roughly 8 minutes of silence

Review Patient Information → Document Patient Information → Look Up → Order → Print/Give Patient Advice


Review patient information—Skill #1
Quick and effective chart review
– Problem lists up to date
– Medication list current
– Well-labeled documentation
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice
1 8 5 5


Documentation—Challenge
• Preparation
• Data Entry
• Organization
• Automation
More immediate is more accurate & efficient
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice
1 8 5 5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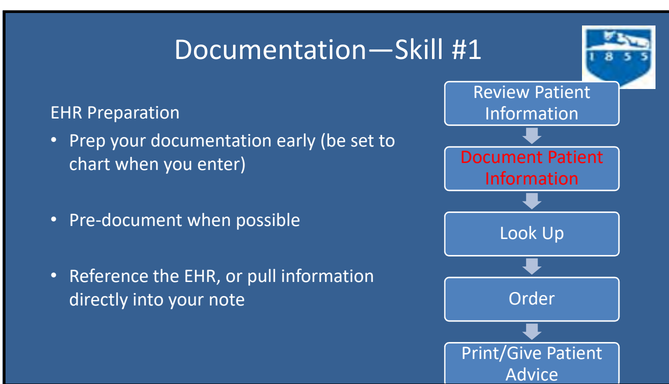
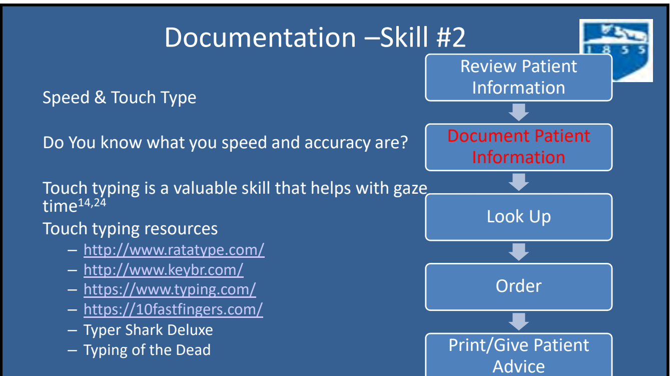
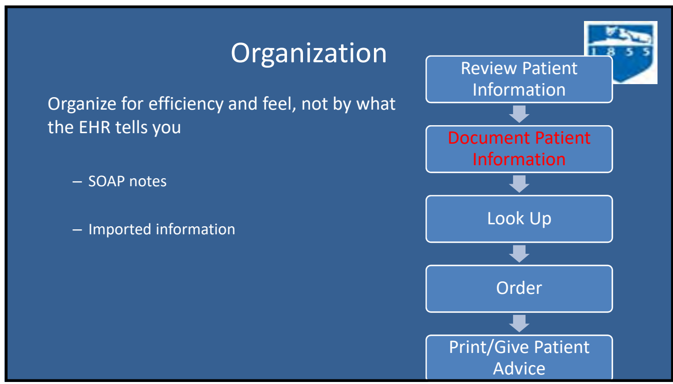
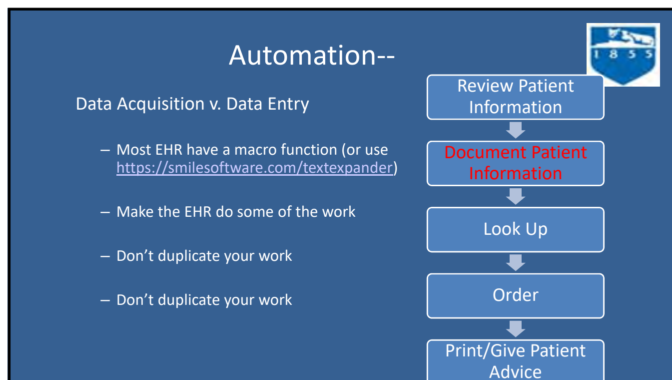
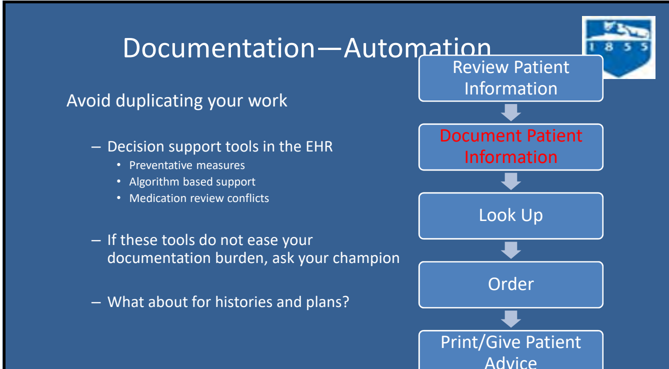
1 8 5 5

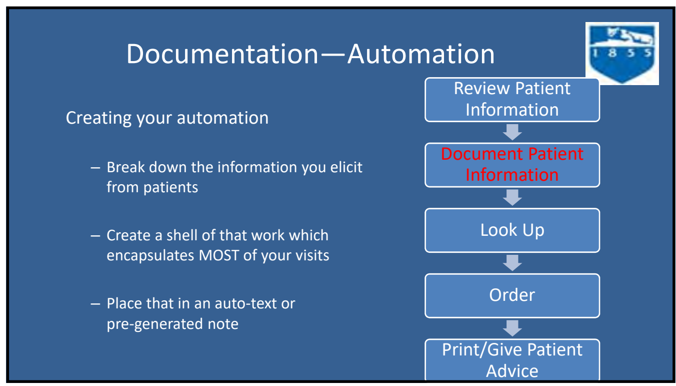

Documentation—Skill #1
1 8 5 5
EHR Preparation
• Prep your documentation early (be set to chart when you enter)
• Pre-document when possible
• Reference the EHR, or pull information directly into your note
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

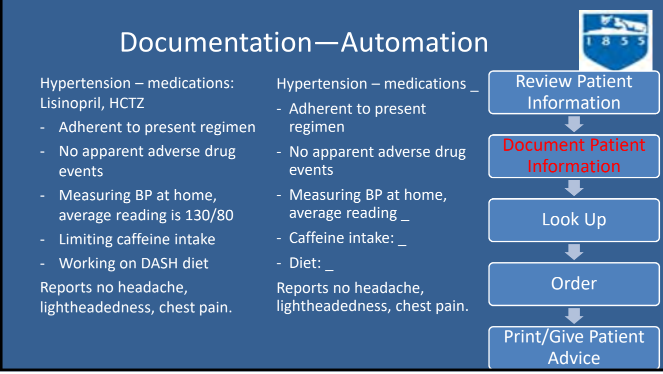

Documentation –Skill #2
Speed & Touch Type
Do You know what you speed and accuracy are?
Touch typing is a valuable skill that helps with gaze time14,24
Touch typing resources
– http://www.ratatype.com/
– http://www.keybr.com/
– https://www.typing.com/
– https://10fastfingers.com/
– Typer Shark Deluxe
– Typing of the Dead
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

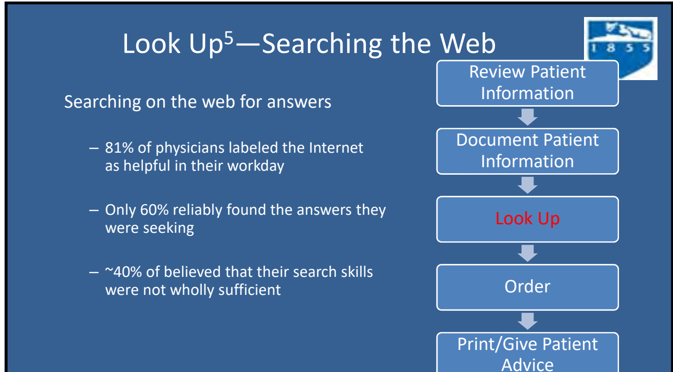

Organization
Organize for efficiency and feel, not by what the EHR tells you
– SOAP notes
– Imported information
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

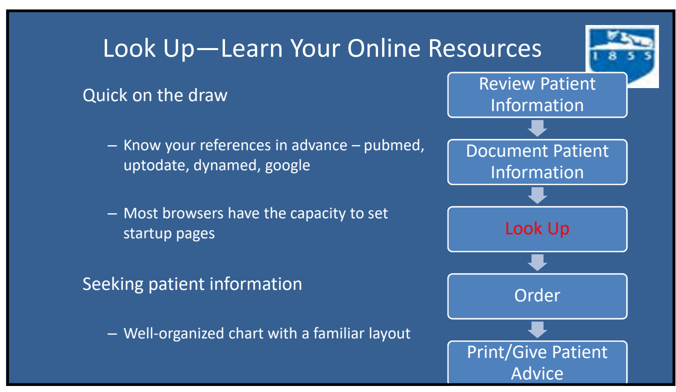

Automation--
Data Acquisition v. Data Entry
– Most EHR have a macro function (or use https://smilesoftware.com/textexpander)
– Make the EHR do some of the work
– Don't duplicate your work
– Don't duplicate your work
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

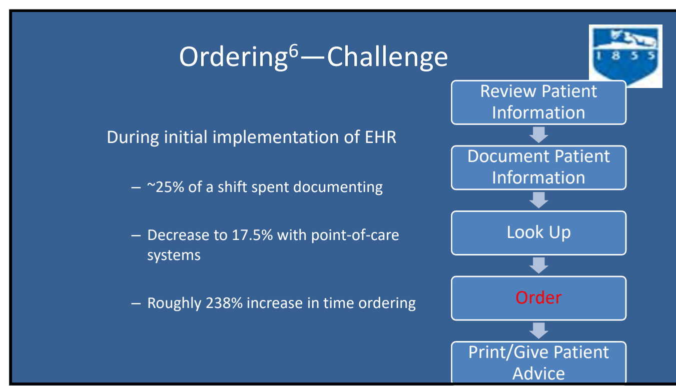

Documentation—Automation
Avoid duplicating your work
– Decision support tools in the EHR
• Preventative measures
• Algorithm based support
• Medication review conflicts
– If these tools do not ease your documentation burden, ask your champion
– What about for histories and plans?
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

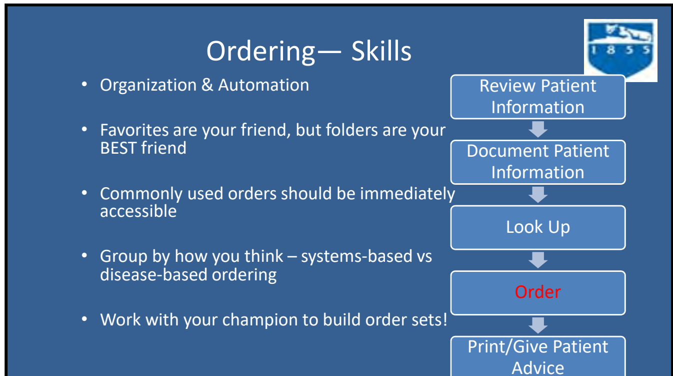

Documentation—Automation
Creating your automation
– Break down the information you elicit from patients
– Create a shell of that work which encapsulates MOST of your visits
– Place that in an auto-text or pre-generated note
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice


Documentation—Automation
Hypertension – medications: Lisinopril, HCTZ
- Adherent to present regimen
- No apparent adverse drug events
- Measuring BP at home, average reading is 130/80
- Limiting caffeine intake
- Working on DASH diet
Reports no headache, lightheadedness, chest pain.
Hypertension – medications _
- Adherent to present regimen
- No apparent adverse drug events
- Measuring BP at home, average reading _
- Caffeine intake: _
- Diet: _
Reports no headache, lightheadedness, chest pain.
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice


Look Up5—Searching the Web
Searching on the web for answers
– 81% of physicians labeled the Internet as helpful in their workday
– Only 60% reliably found the answers they were seeking
– ~40% of believed that their search skills were not wholly sufficient
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice


Look Up—Learn Your Online Resources
Quick on the draw
– Know your references in advance – pubmed, uptodate, dynamed, google
– Most browsers have the capacity to set startup pages
Seeking patient information
– Well-organized chart with a familiar layout
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice


Ordering6—Challenge
During initial implementation of EHR
– ~25% of a shift spent documenting
– Decrease to 17.5% with point-of-care systems
– Roughly 238% increase in time ordering
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice


Ordering— Skills
Organization & Automation
Favorites are your friend, but folders are your BEST friend
Commonly used orders should be immediately accessible
Group by how you think – systems-based vs disease-based ordering
Work with your champion to build order sets!
Review Patient Information
Document Patient Information
Look Up
Order
Print/Give Patient Advice

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Start the presention

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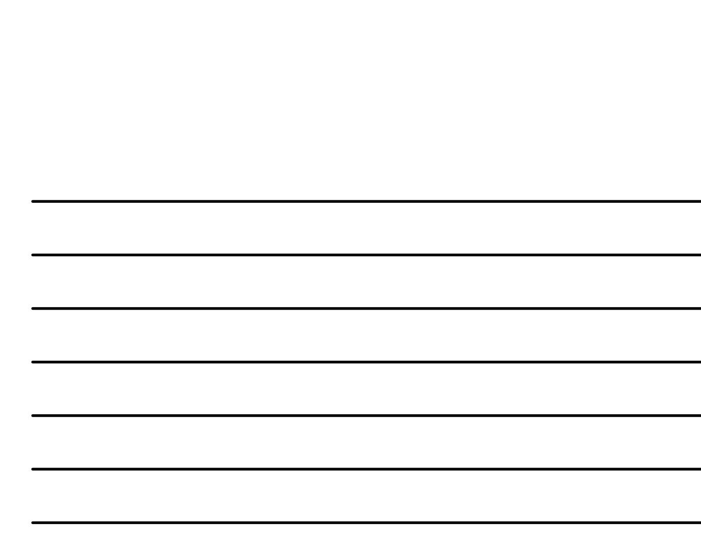

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Some claims EHR advocates make[15-22]

- **Improved Diagnostics & Patient Outcomes[15-17, 26-27]**
  - Prompts & reminders improve care
  - Improved "quality of care" screenings
  - Increase physician adherence to guidelines
  - Reduce medical errors through automation
- **Improved Care Coordination [18-20]**
  - Improved documentation & coding
  - Up-to-date info
  - Better availability of info for all providers
  - E-Prescribing
- **Improve Quality Improvement[21]**
  - Track trends in patient care
  - Facilitate QI
- **Increased Cost Savings/ Revenue Generation[22]**
  - Reduction of time consuming & labor intensive tasks
  - Improved & more accurate reimbursement coding

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Adolescents Vaccines – including HPV – Meningitis

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Vaccines – including HPV – Adolescents - Meningitis

Jennifer Hamilton, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

This session is funded in part by an educational grant provided by Sanofi Pasteur which has no control over the content.

VACCINES FOR ADOLESCENTS MARCH 2017

Jennifer Hamilton, MD, PhD, FAAFP

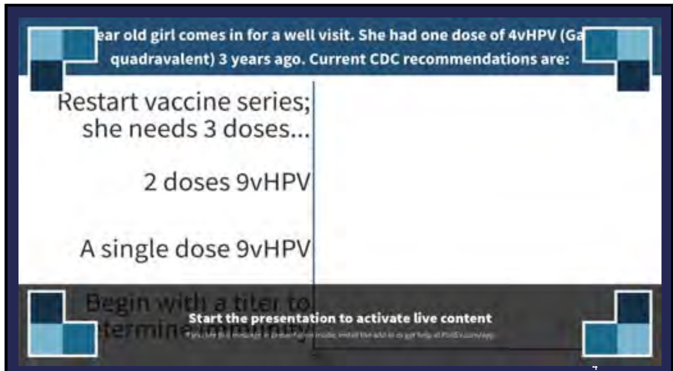
DISCLOSURE

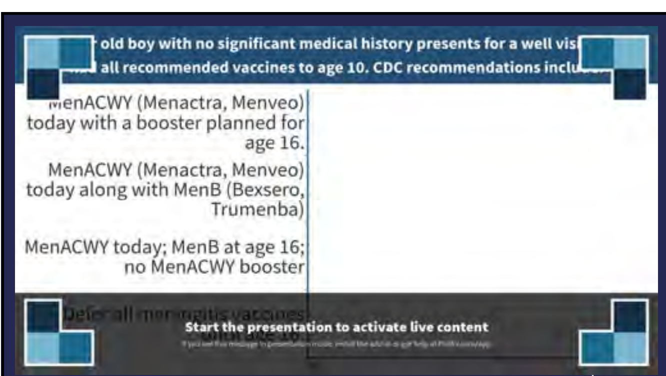
- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.
- All of the recommendations to be discussed are endorsed by the CDC and AAFP. In certain cases, these recommendations represent off-label use. The off-label uses will be noted.
- This session is funded in part by an educational grant from Sanofi Pasteur, which has no control over the content.

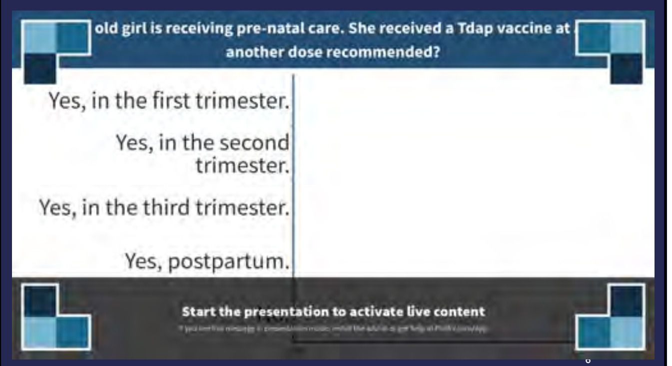
Please Remember to Complete Session Evaluation Online

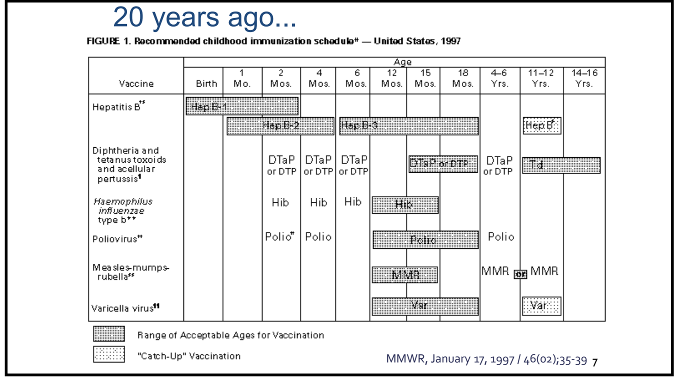
https://www.surveymonkey.com/r/3_18_Vaccine

Then and Now


ear old girl comes in for a well visit. She had one dose of 4vHPV (Ga
quadravalent) 3 years ago. Current CDC recommendations are:
Restart vaccine series; she needs 3 doses...
2 doses 9vHPV
A single dose 9vHPV
Start the presentation to activate live content


old boy with no significant medical history presents for a well visi
all recommended vaccines to age 10. CDC recommendations inclu
MenACWY (Menactra, Menveo) today with a booster planned for age 16.
MenACWY (Menactra, Menveo) today along with MenB (Bexsero, Trumenba)
MenACWY today; MenB at age 16; no MenACWY booster
Start the presentation to activate live content


old girl is receiving pre-natal care. She received a Tdap vaccine at
another dose recommended?
Yes, in the first trimester.
Yes, in the second trimester.
Yes, in the third trimester.
Yes, postpartum.
Start the presentation to activate live content



20 years ago...

FIGURE 1. Recommended childhood immunization schedule* — United States, 1997

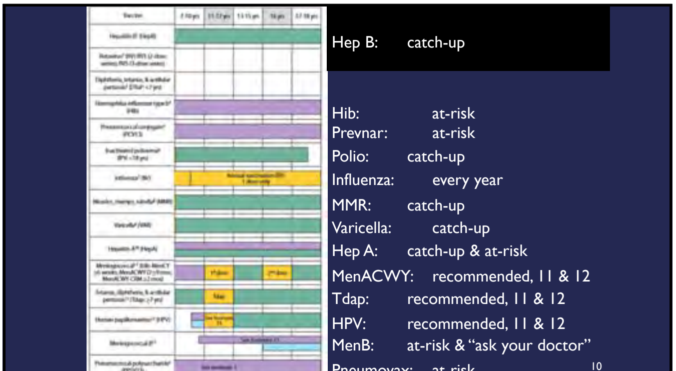
Vaccine	Birth	1 Mo.	2 Mos.	4 Mos.	6 Mos.	12 Mos.	15 Mos.	18 Mos.	4–6 Yrs.	11–12 Yrs.	14–16 Yrs.
Hepatitis B[††]	Hep B-1	Hep B-1									
		Hep B-2	Hep B-2	Hep B-2	Hep B-3	Hep B-3	Hep B-3	Hep B-3		Hep B	
Diphtheria and tetanus toxoids and acellular pertussis[§]			DTaP or DTP	DTaP or DTP	DTaP or DTP		DTaP or DTP	DTaP or DTP	DTaP or DTP	Td	Td
Haemophilus influenzae type b**			Hib	Hib	Hib	Hib	Hib				
Poliovirus[¶¶]			Polio	Polio		Polio	Polio	Polio	Polio		
Measles-mumps-rubella[**]						MMR	MMR		MMR	or MMR	
Varicella virus[¶¶]						Var	Var	Var		Var	

Range of Acceptable Ages for Vaccination

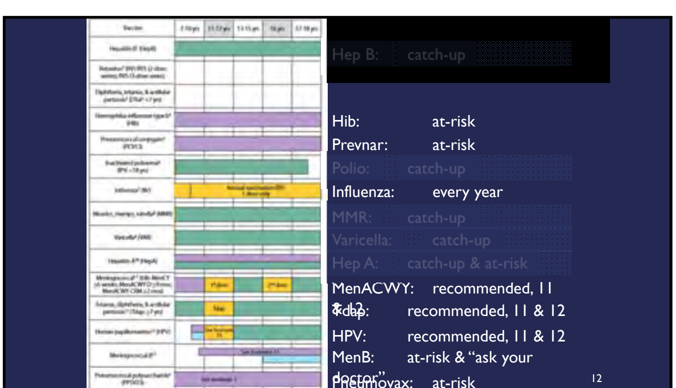
"Catch-Up" Vaccination

MMWR, January 17, 1997 / 46(02);35-39

...and now


Hep B: catch-up
Hib: at-risk
Prevnar: at-risk
Polio: catch-up
Influenza: every year
MMR: catch-up
Varicella: catch-up
Hep A: catch-up & at-risk
MenACWY: recommended, 11 & 12
Tdap: recommended, 11 & 12
HPV: recommended, 11 & 12
MenB: at-risk & "ask your doctor"
Pneumovax: at-risk
10

Hep B: catch-up
Hib: at-risk
Prevnar: at-risk
Polio: catch-up
Influenza: every year
MMR: catch-up
Varicella: catch-up
Hep A: catch-up & at-risk
MenACWY: recommended, 11 & 12
Tdap: recommended, 11 & 12
HPV: recommended, 11 & 12
MenB: at-risk & "ask your doctor"
Pneumovax: at-risk
11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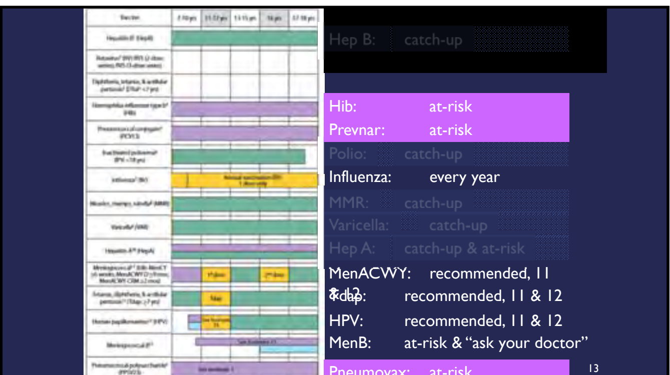
HPV: recommended, 11 & 12
MenB: at-risk & "ask your doctor"
Pneumovax: at-risk
12



Hep B: catch-up
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MenACWY: recommended, 11 & 12
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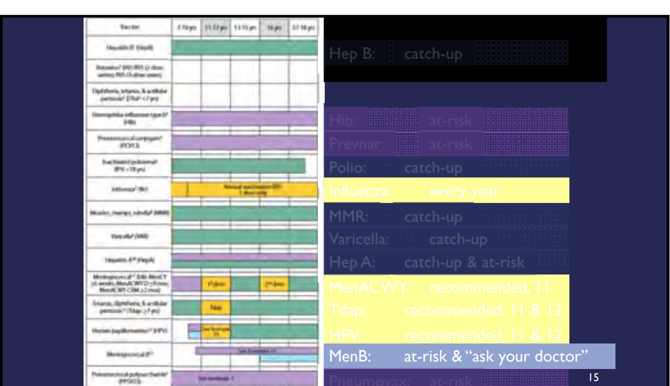
HPV: recommended, 11 & 12
MenB: at-risk & "ask your doctor"
Pneumovax: at-risk
14



The "*a*" in "*Tdap*" doesn't stand for *"and"*

Tetanus, diphtheria, and pertussis

16

Tdap in adolescence

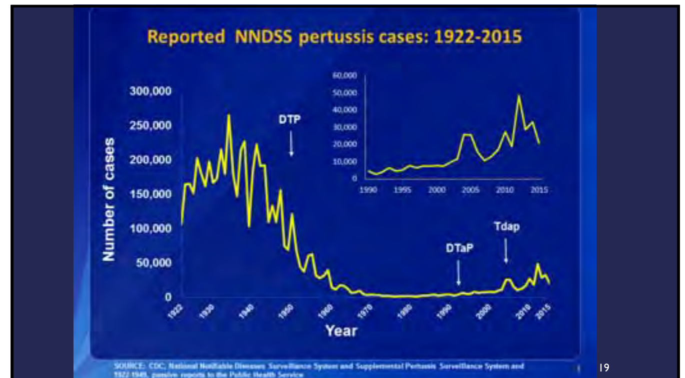
"Administer 1 dose of Tdap vaccine to all adolescents aged 11 through 12 years."

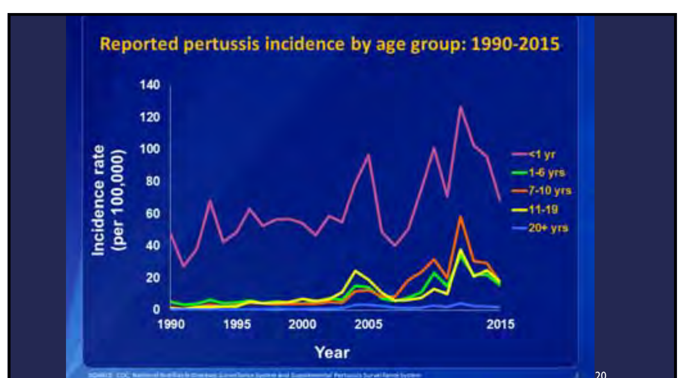
17

Tdap in adolescence: *why?*

- Recent emphasis on maintaining immunity to pertussis
- Immunity derived from acellular pertussis vaccines (DTaP in childhood, Tdap later in life) wanes more quickly than immunity from the discontinued whole-cell vaccines did.

18





A cancer vaccine that prevents warts, too!

HPV

About the HPV vaccines

Cervarix (HPV bivalent)

- HPV 16, 18

Gardasil (HPV quadravalent)

- HPV 6, 11, 16, 18

Gardasil-9 (HPV 9-valent)

- HPV 6, 11, 16, 18, 31, 33, 45, 52, 58
  Additional strains increase coverage from ~70% HPV-related cancer to ~90%

About the HPV vaccines

Cervarix (HPV bivalent)

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Gardasil-9 (HPV 9-valent)

- HPV 6, 11, 16, 18, 31, 33, 45, 52, 58
  Additional strains increase coverage from ~70% HPV-related cancer to ~90%

HPV VACCINE: HOW MANY DOSES?

- If first dose is given at age 14 or younger: 2 doses, with second 6-12 months after the first

- If first dose is given at age 15 or older: 3 doses, at 0, 1-2 months, and 6 months.

HPV VACCINE: WHEN TO GIVE IT?

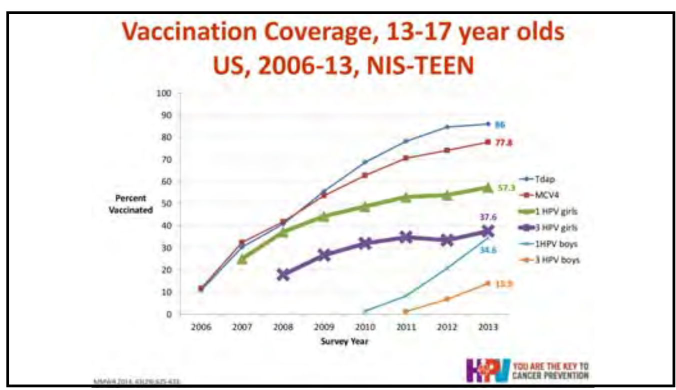
- Ideally, give at age 11 or 12.
  This ties in with the schedule for other vaccines, making it easier to remember.
  Plus, it's early enough that only two doses are needed.
- Think about giving it EARLIER… (to age 9)
  If you have reason to think the patient may start having sex younger, as in cases of abuse.
- Give it LATER… (to age 26)
  If you have to. But remember, a later start means more shots!

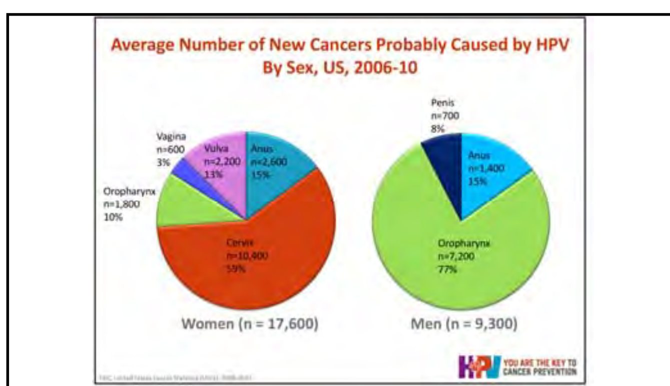
HPV VACCINE: RISKS

- Subdural hematoma is a documented adverse effect
- Syncope risk: patient fell and hit head

Post-Licensure Safety Monitoring

- > 62 million doses of quadrivalent vaccine distributed
- Vaccine Adverse Events Reporting System (VAERS) – June 2006 – March 2013
  - 21,194 reports:
    - 92.1% non-serious
      - Generalized symptoms: syncope, dizziness, nausea, headache, fever, urticaria
      - Local: injection-site pain, redness, swelling
    - 7.9% serious
      - Headache, nausea, vomiting, fatigue, dizziness, syncope, generalized weakness





"Ask your doctor if Trumenba is right for your child."

MENINGOCOCCUS

About the meningo vaccines

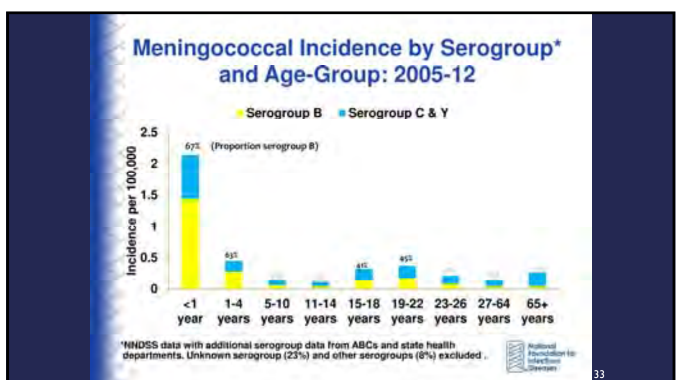
MenACWY (Menveo, Menactra)

- Recommended at age 11-12
- Booster at age 16
- Other schedules for special populations

MenB (Bexsero, Trumenba)

- *MAY* be given age 16-23 (“ask your doctor”), with 16-18 preferred
- Bexsero is 2 doses *at least 1 month apart*
  Trumenba is 2 doses *6 months apart*
- Can’t intermix the two versions
- Other recommendations for special populations

MENACWY: WHEN TO VACCINATE?



MENACWY: WHEN TO VACCINATE?

- First dose age 11 or 12
- Second dose age 16

Meningococcal Incidence by Serogroup* and Age-Group: 2005-12

Serogroup B · Serogroup C & Y

Incidence per 100,000 — <1 year, 1-4 years, 5-10 years, 11-14 years, 15-18 years, 19-22 years, 23-26 years, 27-64 years, 65+ years

*NNDSS data with additional serogroup data from ABCs and state health departments. Unknown serogroup (23%) and other serogroups (8%) excluded.

MENB: WHAT'S THE RECOMMENDATION?

- Level B: "may be used"
  (or, more informally, "ask your doctor")
- Lowest level recommendation that makes VFC funding available
- "Young adults aged 16 through 23 years (preferred age
- range is 16 through 18 years) who are not at increased
- risk for meningococcal disease may be vaccinated with a
- 2-dose series of either Bexsero (0, ≥1 month) or Trumenba
- (0, 6 months) vaccine to provide short-term protection
- against most strains of serogroup B meningococcal
- disease."

MENB: WHAT'S THE MATH?

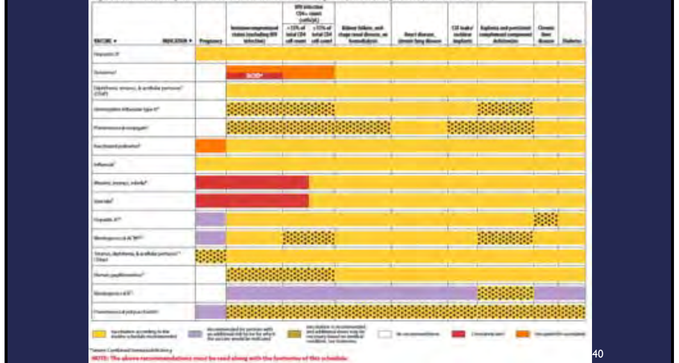
- Concern for cost
  2010-2012: average of 29 adolescent cases/year
  How many millions would need vaccination?
- Concern for adverse effects
  Approved when under 20,000 vaccinated in US
  Theoretic concern for juvenile arthritis, thyroiditis
- Concern for duration

INFLUENZA

Influenza: Some Reminders

- 5-20% of US population gets infected in any given year
- ~3000 - ~49,000 deaths per year; with over 90% of those in people age 65+
- About 200,000 hospitalizations annually
  - Highest among young children and elderly
  - About 60% of hospitalizations in those under age 65
- Morbidity and mortality vary with novelty of strains (pandemics) and family of strains (H3N2 tends to be rough)

Special Needs Vaccines



40

MEDICAL INDICATIONS

- Pregnancy:
- Tdap

- Immunocompromise (not HIV):
- Hib, Prevnar, Pneumovax, HPV

- HIV:
- Hib, Prevnar, Pneumovax, HPV, MenACWY

- ESRD/dialysis:
- Prevnar, Pneumovax

- Heart dz, chronic lung dz:
- Pneumovax

- CSF leaks, cochlear implants:
- Prevnar, Pneumovax

Note: Tdap vaccines are FDA category C for use in pregnancy

41

MEDICAL INDICATIONS

- Asplenia, complement deficiencies:
- Hib, Prevnar, Pneumovax, MenACWY, MenB

- Chronic liver disease:
- Pneumovax, MenACWY

- Diabetes:
- Pneumovax

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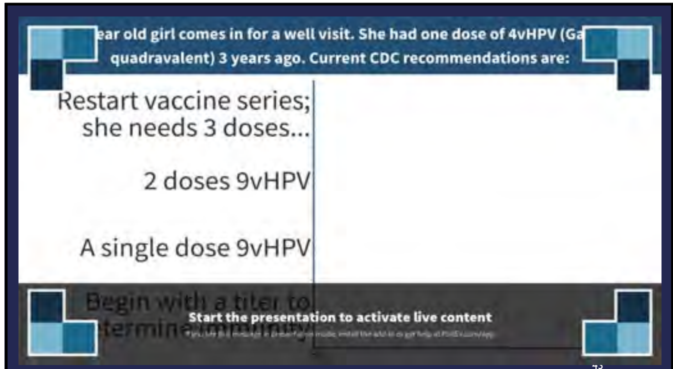
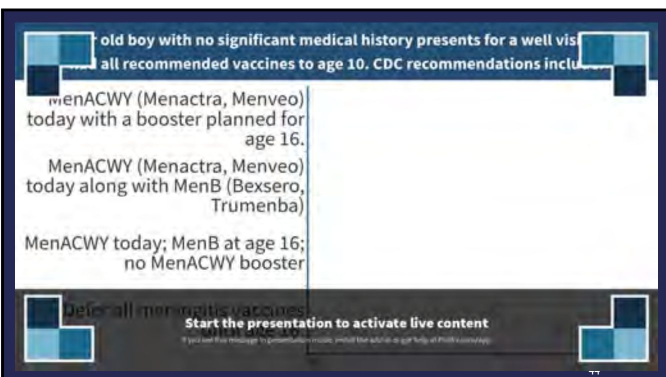

ear old girl comes in for a well visit. She had one dose of 4vHPV (Ga
quadravalent) 3 years ago. Current CDC recommendations are:
Restart vaccine series; she needs 3 doses...
2 doses 9vHPV
A single dose 9vHPV
Start the presentation to activate live content


old boy with no significant medical history presents for a well visi
all recommended vaccines to age 10. CDC recommendations inclu
MenACWY (Menactra, Menveo) today with a booster planned for age 16.
MenACWY (Menactra, Menveo) today along with MenB (Bexsero, Trumenba)
MenACWY today; MenB at age 16; no MenACWY booster
Start the presentation to activate live content

old girl is receiving pre-natal care. She received a Tdap vaccine at
another dose recommended?
Yes, in the first trimester.
Yes, in the second trimester.
Yes, in the third trimester.
Yes, postpartum.
Start the presentation to activate live content

QUESTIONS AND DISCUSSION?

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Workshop - Suturing

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Workshop - Suturing
Louis Mancano, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

Suturing Workshop

Lou Mancano MD
Reading Health System - Reading, PA
Dept. of Family and Community Medicine
Pa. Academy of Family Physicians
March 18, 2017

1

Disclosure

- The speakers have no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_18_Suturing

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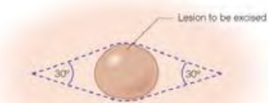
Objectives

- Identify proper materials and instruments to prepare lacerations and biopsy sites
- Become familiar with administering local anesthesia
- Apply appropriate technique for reducing wound tension
- Illustrate and practice simple interrupted, vertical mattress, horizontal mattress, running, running locked, and corner stitch suturing techniques

3

The Wound

- Instruments and materials used are similar when repairing traumatic wounds and wounds due to excision



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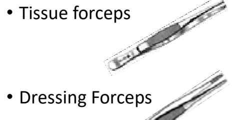
Surgical Instruments

- Tissue forceps



- Dressing Forceps

- Needle Holders
- Iris Scissors – For wound debridement, revision, and undermining thinner tissue
- Dissection Scissors - For heavier tissue revision and for wound undermining thicker tissue

5

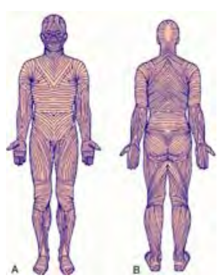
Surgical Instruments

- Hemostats – curved and straight used for
  - Bleeding control
  - Grasping
  - Exploring
  - Visualizing
- Skin Hooks - used to grasp, hold, and position delicate tissues during suturing, especially around the eyes, facial skin, and delicate individual skin layers

6

Langerhans Lines

- Whether performing an excision, debriding, or revising a wound, closely consider skin tension lines and function



7

Langerhans lines accentuate with expression

8

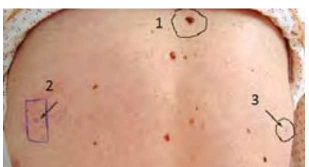
Preparation for Biopsy or Excision: Informed Consent

- Discuss reason for biopsy, benefits, risks and alternatives
  - Usual risks include bleeding, infection, discomfort, scarring
    - Ask patient about existing scars, hyperpigmentation, hypertrophic scars, keloids
- Disclose that a biopsy might not yield a specific diagnosis, but can rule out some conditions
- Discuss that depending on biopsy results, additional procedures could be necessary
- Answer questions
- Document informed consent

9

Document Biopsy Location(s)

- Consider photographs (include photography in consent form)
- If more than one biopsy, mark the edges and label them prior to the photograph



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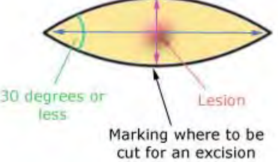
Preparation for Biopsy or Excision

- Preferably lie the patient down as vasovagal reactions are not uncommon
- Mark the edges following skin lines as best as possible
- To reduce tension, elliptical excision length is typically 2.5 to 3 times the width



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Preparation for Biopsy or Excision

- Clean the field with chlorhexidine, isopropyl alcohol or povidone iodine
- Chlorhexidine is often preferred as it has broad spectrum activity again G + and G – organisms and fungi
- Allow to dry

12

Local Anesthesia

- Question lidocaine allergy or sensitivity to epinephrine
- Lidocaine is Pregnancy Category B
- Follow universal precautions
- Draw up 1% or 2% lidocaine with or without 1:100,000 epinephrine with a 22 g. or larger needle

- Maximum dose is 5 mg/kg (17.5 cc of 2% if 70 kg)

13

Local Anesthesia

- Lidocaine with epinephrine
  - Useful in non-apical vascular areas with quick “washout times” (scalp, cheek, lip) and/or with patients on anticoagulant or antiplatelet medications
  - Avoid in eyelids, ears, nose, fingers, toes, genitalia
  - Prolongs duration of anesthesia
- Lidocaine can be mixed 9:1 with $NaHCO_3$ to reduce burning
- If lidocaine allergy, injectable diphenhydramine (50 mg/cc) infiltrated locally is an off-label effective alternative
- Use universal precautions

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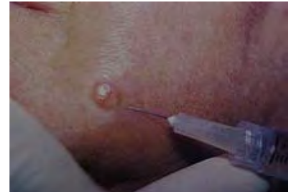
Local Anesthesia

- Draw into a 3 to 10 cc syringe
- Depending on location, inject using a 25, 27, or 30-gauge needle
- Enter at the proximal area of innervation, aspirate, inject slowly and move distally
- Inject around and/or under a lesion or laceration rather than into it
- Wait about one minute and test for anesthesia



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Surgical Instruments

- Scalpels and Blades

#10 Blade

#15 Blade

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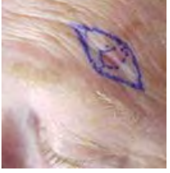
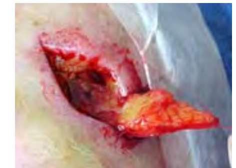
Elliptical Excisions

- Familiarize yourself with local anatomy and carefully avoid underlying nerves, arteries, and tendons
- Especially after entering adipose tissue, take time to visualize





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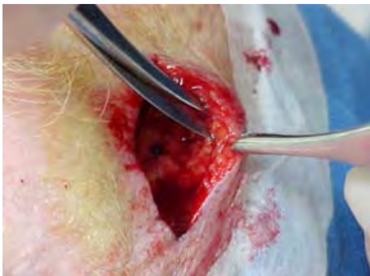
Undermine when Appropriate



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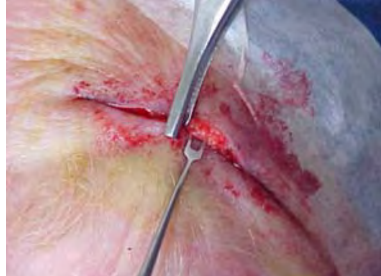
Get edges as opposed as possible before suturing



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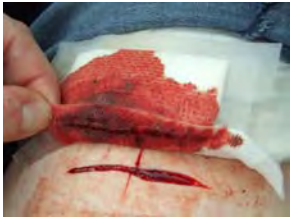
Before we review suturing techniques…

- Let's review traumatic wound principles



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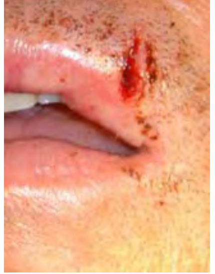
Wound Evaluation and Records

- Time and mechanism of injury
- Location (face, lip, finger, etc.)
- Size, configuration, depth
- Tendon and/or nerve involvement; distal function
- Bleeding at site and capillary refill/pulses distal to the wound
- Foreign bodies
- Swelling of wound margins
- Infection



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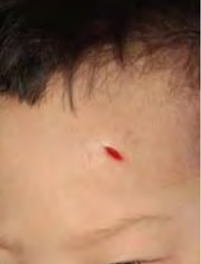
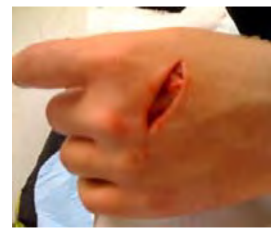
Wound Assessment for Repair





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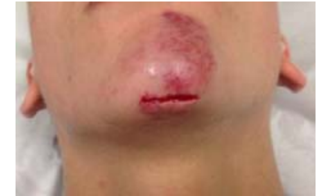
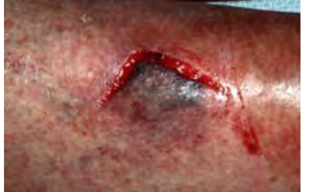
Wound Assessment for Repair





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Wound Preparation - Cleansing

- Usually after local anesthesia, irrigate with normal saline, remove foreign bodies and carefully excise and remove necrotic or significantly fragmented tissue
- Can irrigate using the soft, flexible part from an 18 gauge IV needle attached to a 20 cc or 50 cc syringe
- This reduces risk of infection and improves chances of a cosmetically acceptable scar

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Wound Assessment and Repair

- Evaluate for other potential injuries
- Assess tetanus vaccination status
- Determine if a wound needs to be sutured or if an alternate means of opposing wound edges may be appropriate
- Gather the proper instruments
- Choose appropriate suture material
- Identify and choose an anesthetic agent
- Anesthetize and close the wound with sutures

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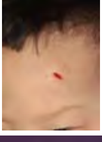
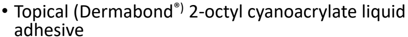
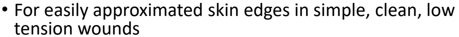
Alternatives to Suturing





- Topical (Dermabond®) 2-octyl cyanoacrylate liquid adhesive



- For easily approximated skin edges in simple, clean, low tension wounds
- Can use in combination with deep dermal sutures
- Apply at least 2 thin layers to skin wound edges
- Do not use on infected or ischemic wounds, on mucosal surfaces, across mucocutaneous junctions (e.g., oral cavity, lips), close to the eyes, on skin exposed to body fluids, or in areas of dense hair (e.g., scalp)

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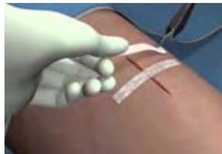
Alternatives to Suturing

- Steri-Strips™
- For securing, closing and supporting small clean wounds under low tension
- For wound support following suture or staple removal



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You've decided to suture

- Choose suture material based on:
  - Tensile strength
  - Knot security
  - Potential for scarring
  - Workability in handling
  - Tissue reactivity
  - Ability to resist bacterial infection
- Choose your needle size based on:
  - Size and depth of the wound
  - Thickness of skin

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Absorbable Sutures

- Original absorbable sutures are processed collagen derived from animal "gut" intestines and are broken down enzymatically
- Synthetic absorbable materials made from polymers are broken down non-enzymatically by water penetrating and breaking down suture filaments (hydrolysis)
  - Synthetic absorbables tend to evoke less tissue reaction than plain or chromic gut.
- Absorbable sutures have less tensile strength than same sized non-absorbable ones

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Absorbable Suture Materials

- Absorbable Plain Gut
  - Derived from small intestine of healthy sheep
  - Loses 50% of tensile strength by 5 - 7 days
  - Useful on mucosal surfaces
- Absorbable Chromic Gut
  - Treated with chromic acid to delay tissue absorption time
  - 50% tensile strength by 10 - 14 days
  - Use subcutaneously or on mucosal surfaces

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Absorbable Suture Materials

- Polyglycan 910 (Vicryl®)
  - Braided, synthetic polymer
  - 50% tensile strength at 30 days
  - Used subcutaneously

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Non-absorbable Sutures

- Non-absorbable sutures are not readily broken down by enzymes or hydrolysis
  - Naturally occurring materials (silk, cotton, steel)
  - Synthetic materials (nylon, Prolene)
- They are removed after adequate healing has occurred

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Non-absorbable Sutures

- Nylon (Ethilon®) monofilament nylon is the most commonly used in surface closures
- Polypropylene (Prolene®) seems to be moderately stronger than nylon
- Braided silk, braided nylon and multifilament Dacron
  - Excellent workability and knot security
  - Useful on mucosal surfaces
  - Disadvantages can be higher tissue reactivity and infection due to absorption of body fluids and bacteria by braided fibers

33

Suture Size

- The higher the number, the thinner the suture
- 6-0 commonly used on the face
- 5-0 used for flexural surfaces and skin under low tension
- 4-0 used for areas under moderate skin tension
- 3-0 used when there is higher tension on the tissue
- The more tissue to oppose, typically the larger the needle size needed

34

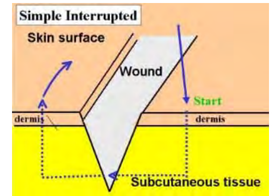
Surgical Needles and Needle Size

- Two basic needle configurations
  - Triangular cutting edge needles can cut through tougher or thicker skin
  - Tapered round needles used with softer or thinner tissue
- Larger needles are typically needed for larger wounds

35

Suturing Principles

- Ideally placed interrupted or running skin sutures should form a “rectangle”
- Distance from the edges should usually be the same on both sides of the wound
- When tied, a suture placed in this fashion optimally approximates wound edges



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Suturing

- Clasp the needle with the needle driver 2/3 back from tip
- Puncture the skin at 90 degrees usually 1/8 to ¼ inch from the wound edge
- Release the needle from the needle driver, reach into the wound and grasp the needle tip with the needle driver
- Pull the free to give enough suture material to enter the opposite side of the wound; again clasp the needle with the needle driver 2/3 back from tip
- Using forceps, lightly grasp the opposite skin edge and arc the needle through the inside of the wound edge taking equal bites

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Follow the needle's arc

- Rotate your wrist to follow the arc of the needle
- Try to exit at 90 degrees
- Release the needle, grasp the portion of the needle protruding from the skin with the needle driver
- Pull the needle through the skin until you have approximately 1 inch suture strand protruding from the first bite site
- Release the needle from the needle driver and instrument tie beginning by wrapping the suture around the needle driver two times

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Suturing

- Grasp the end of the suture material with the needle driver and pull the two lines across the wound site in opposite direction (this is one throw)
- Do not position the knot directly over the wound edge
- Repeat 3-4 throws to ensuring knot security. On each throw reverse the order of wrap
- Cut the ends of the suture 1/4-inch from the knot
- The remaining sutures are inserted in the same manner

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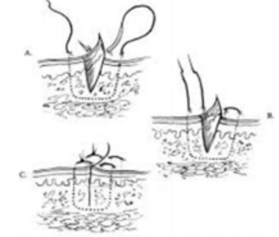
Evert the Edges

- Sutured wound margins have a natural tendency to invert
- Can result in a deeper wider scar or inclusion cyst formation
- Attempt to evert wound edges
- When placing simple interrupted sutures, the depth of the stitch should be a little greater than its width
- The needle should enter and exit the skin at a 90 degree angle
- Vertical and horizontal mattress sutures also promote wound eversion



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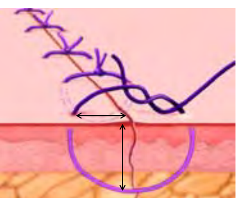
Simple Interrupted

- Advantages
  - Strength
  - Good approximation of superficial tissue
- Disadvantage
  - Can leave suture marks



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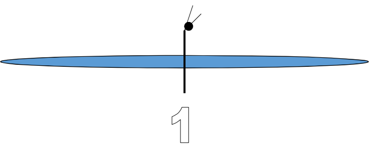
Suturing

- Rule of halves - matches wound edges well to avoids “dog ears”
- Vary from this rule and start from the ends when there is too much tension across wound



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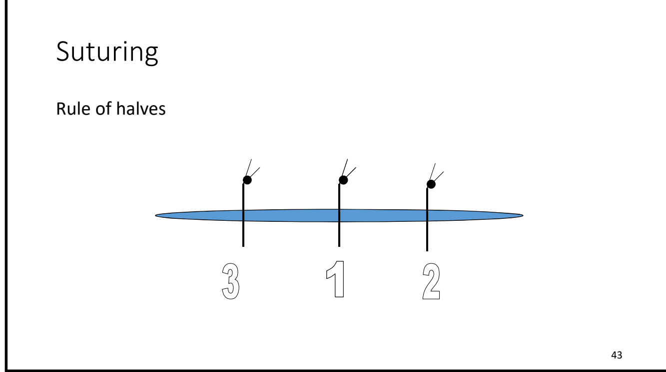

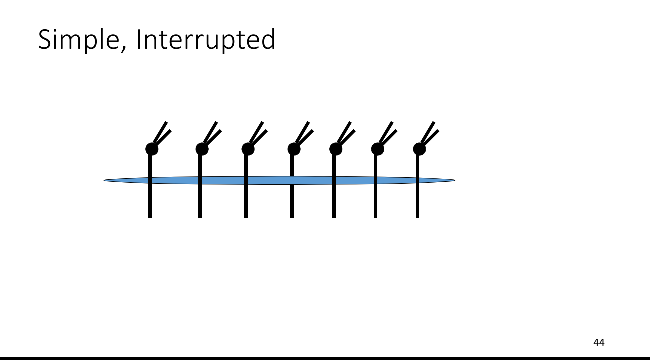

Vertical Mattress

- Advantages
  - Greater strength for higher tension areas
  - Enhances wound eversion and possibly improves scarring over simple interrupted sutures
- Disadvantage
  - Additional time
  - Extra suture marks possible

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Vertical Mattress

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Horizontal Mattress

- Advantage
  - Good strength for high tension wounds
- Disadvantages
  - Higher potential to compromise blood supply, so higher risk of dehiscence or scarring
  - Additional time

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Horizontal Mattress

Good for closing wound edges under high tension,
And for hemostasis.

48

Corner Stitch

- Similar principle to horizontal mattress suture
- Occasionally used in plastics, flap wounds, star lacerations
- Make it your last suture so the area is under low tension
- Stay superficial to avoid tissue strangulation

49

Running Suture

- Advantages
  - Less time
  - Tie only 2 knots, one at each end
- Disadvantage
  - Can be difficult to evert edges
  - Not for high tension areas
  - If one suture breaks, they all break

50

Running Locked Suture

- Advantages
  - Less time than interrupted
  - Tie only 2 knots, one at each end
  - Stronger than running unlocked technique
- Disadvantages
  - Can be difficult to evert edges
  - If one suture breaks, the wound could dehisce

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Aftercare used for Various Biopsies

- Document number of sutures
- Apply petroleum jelly to the area (antibiotic ointment is not necessary)
- Cover with a dressing
- Typically keep dry for 24 hours
- Cleanse daily and gently with soap and water
- Dry gently and reapply petroleum jelly daily to keep the area from becoming too dry
- Give patient written instructions about wound care and signs of infection

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Suture Removal Timeline Guidelines

- Area/Removal time (in days) will vary based on age, specific location, and comorbidities
  - Face - 3 to 5
  - Neck - 5 to 8
  - Scalp - 7 to 9
  - Upper extremity - 8 to 14
  - Trunk - 10 to 14
  - Extensor surface hands – 12 to 14
  - Lower extremity - 10 to 21

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Suture Removal

1. Clean with normal saline or hydrogen peroxide to remove any crusting or dried blood
2. Using the forceps, grasp the knot and snip only one side of the suture below the knot, close to the skin
3. Pull the suture line through the tissue in the direction that keeps the wound closed and place suture on a 4 x 4
4. If the sutures are too tight, a #11 blade can be slid under the knot with the sharp edge facing away from the skin
5. Once all sutures have been removed, count the sutures. The number of sutures should match the number indicated in the patient's health record.

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Summary and Session Pearls

1. Assess wounds carefully, consider a variety of closure techniques, and use proper instruments and materials
2. Follow Langerhans tension lines whenever possible
3. Close with the suturing style or styles that you believe will balance the best healing, function, and cosmetic result
4. Explain and document wound care instructions to the patient
5. Keep sutures in for the appropriate number of days
6. Practice, practice, practice

55

References

- Mayo Clinic.com/healthlibrary
- aafp.org/images
- http://www.aafp.org/afp/2002/1215/p2231.html
- emedicinehealth.com
- http://www.aafp.org/afp/2008/1015/p945.html
- http://library.bjmu.edu.cn

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Workshop - Skin Biopsy

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Workshop - Skin Biopsy

John Pfenninger, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

*****HANDOUTS ARE NOT AVAILABLE ONLINE FOR THIS SESSION*****

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Workshop - Splinting & Casting

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Workshop - Splinting & Casting

Matthew Silvis, MD & Shawn Phillips, MD

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Casting and Splinting Workshop

Matthew Silvis, MD
Shawn Phillips, MD
Penn State Health
Milton S. Hershey Medical Center
PAFP Conference
March 18th, 2017

1

Disclosure

- The speakers have no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_18_Casting

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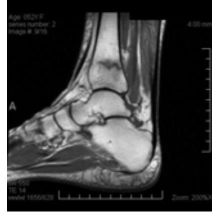
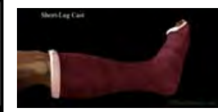
Outline of the workshop…





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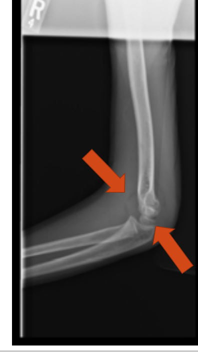
Learning objectives

- List reasons why you would choose a splint versus a cast for an orthopedic injury.
- Explain why stability of a fracture is critical for healing.
- Describe complications of casting and methods for avoidance.
- Place a thumb spica splint, ulnar gutter splint, and lower extremity posterior splint.

4

Background

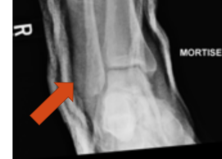
- Why immobilize?
  - Fracture
  - Sprains
  - Severe soft tissue injuries
  - Reduced joint dislocations
  - Inflammatory conditions
  - Deep laceration repairs across joint lines
  - Tendon lacerations



5

Splinting versus Casting

- Serve to immobilize orthopedic injuries
  - Promote healing
  - Maintain bone alignment
  - Diminish pain
  - Protect injury
  - Help compensate for surrounding muscle weakness
- *Splints*, simple/stable fractures, sprains, tendon injuries
- *Casts*, definitive and/or complex fracture management



6

The functions of bone…

- Mineral storage
  - Provides a "sink" for calcium, phosphates, etc.
- Hematopoietic
  - Medullary canal is the site for hematopoiesis
- **Mechanical support**
  - **Provides a framework for muscles and protection of soft tissues**
  - **Transmit loads and maintains shape**

Foxnews.com

7

Strain tolerance – capacity to tolerate deformation prior to rupture (stiffness)

High strain tolerance

Foxsports.com

Low strain tolerance

Foxglassinc.com

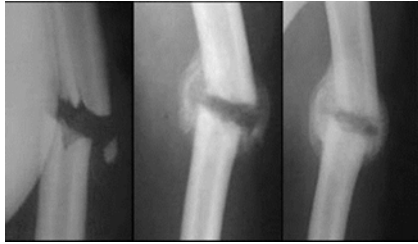
8

Inter-fragmentary strain theory

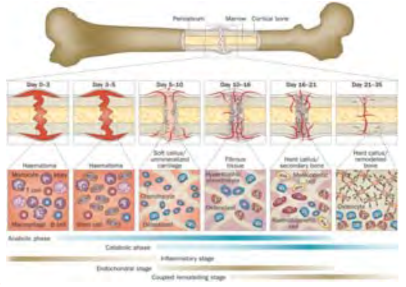
- Each tissue prepares the local environment for the next tissue type – biologically and mechanically
- Appear in order of decreasing strain tolerance
  - Granulation tissue, 100%
  - Cartilage, 10%
  - Bone, 2%
- Important concept
  - Increasing oxygen requirements directly related to decreasing strain tolerance
- ***Low strain environment is needed for capillaries to bridge the defect and bone needs a capillary!***

9

Inter-fragmentary strain theory



Fracture healing: enchondral ossification



www.nature.com

Inflammatory phase

Repair (soft callus) phase

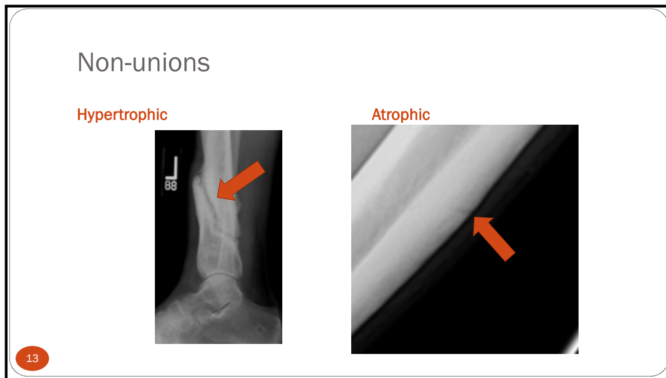
Repair (hard callus) phase

Remodeling phase
conversion from woven to lamellar bone…

Failure of bone healing

- Fracture healing depends on: optimal mechanical and biological environment
- Non-unions, lack of clinical and radiographic progression towards healing
- Hypertrophic
  - Failure of stabilization; need to control motion to <2% strain for bone formation (low strain) and appropriate capillary growth…
- Atrophic
  - Minimal callus; failure of biology (i.e. osteoporosis)

Hand Clin 2013; 29: 473-481.
Curr Opin Rheumatol 2013; 25: 524-531.



Advantages of splinting over casting

- Fast, easy to apply
- Static, prevent motion
- Dynamic, functional assist for controlled motion
- Non-circumferential allows for swelling
- Remove easily to inspect injured site

Suppliescentral.net

16

3m.com

17

Disadvantages of splinting

- Lack of patient compliance
- Excessive motion
- Not good enough for unstable or potentially unstable fractures such as:
  - Status post reduction, segmental or spiral fractures, fracture dislocations…

Hematoma
Internal callus (fibrous tissue and cartilage)
External callus
New blood vessels
Spongy bone trabeculae
Bony callus of spongy bone
Healed fracture
① Hematoma formation
② Fibrocartilaginous callus formation
③ Bony callus formation
④ Bone remodeling

18

Advantages and disadvantages of casting

- More effective immobilization
- More skill/time to apply
- Higher risk of complications if not applied properly

- ***Heat inversely proportional to setting time and directly proportional to number of layers…***
  - Dipping water
    - Tepid, plaster
    - Cold/room temperature, fiberglass

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Splints & Casts: materials and equipment

- Plaster
  - More pliable, slower set time than fiberglass; less heat
- Fiberglass
  - Cost is better than in the past; less mess; lighter than plaster
- Most important variable is water temperature
  - Casting material harden faster with warm water compared to cold water (heat burns, time to setting)

Smnrc.org

20

Supplies

- Adhesive tape
- Bandage scissors
- Basin of water
- Casting gloves (fiberglass)
- Elastic bandage (splints)
- Padding
- Plaster or fiberglass casting material
- Sheets/underpads
- Stockinette

Ncmedical.com

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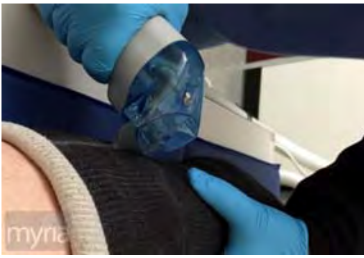
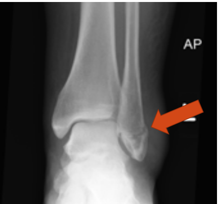
Cast saw



22

Splint: Preparing injured area

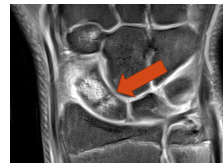
- Stockinette
  - Cover area, 10 cm beyond
  - Avoid too tight, wrinkling over flexion points and bony prominences
  - 2-3 inches wide, upper extremities
  - 4 inches wide, lower extremities
- Padding applied with 50% overlap
  - At least 2-3 layers thick, extend 2-3 inches beyond splint border
  - ***Extra padding over bony prominences (ulnar styloid, heel, olecranon, malleoli)***
- Place joint in position before, during, and after…



23

Splint: Preparation

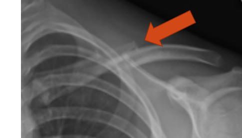
- Lay splint material next to extremity
  - Plan 1-2 cm beyond to account for shrinkage
- 6-10 sheets, upper extremity
- 12-15 sheets, lower extremity
- ***Minimize sheets as more sheets leads to more weight and more heat!***



24

Splint: Application

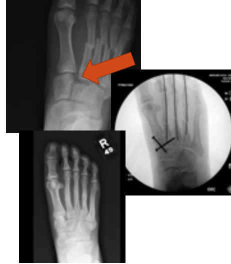
- Dry layered, submerge in water
- Squeeze excess water out
- Apply over padding and mold
- Fold stockinette and padding over edge
- Apply elastic bandage



25

Cast: Application

- Same approach as splinting
- Casting material is circumferential with 50% overlap
- Fold stockinette back before final cast layer



26

Splints & Casts: complications

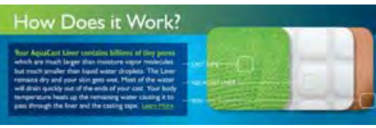
- Compartment syndrome
- Ischemia
- Heat injury
- Pressure sores and skin breakdown (wrinkled, unpadded, underpadded)
- Infection
- Dermatitis
- Joint stiffness
- Neurologic injury
- Cast valving
  - Use cast saw to create a longitudinal linear cut parallel to long axis of the limb
  - Left open with or without a space holder
- ***Useful for acute injury, closed reduction, or immediately after surgical fixation to allow for expected swelling.***

27

World J Orthop 2016; 7 (9): 539-545.

Casts and water

- If water enters cast, can lead to skin maceration, infection, and disruption of the structural integrity of the cast.
- Cast cover
  - Double plastic bags with duct tape (~$10)
  - Store bought cast protector (~$13)
- Water proof padding or cast liners, ***$$$***



Aquacastliner.com

Cast saw burns

Padding

- Highest skin temp: fiberglass with 2 layers of padding
- Lowest skin temp: plaster with 4 layers of padding
- ***Recommend 4 layers of cast padding…***

Decrease saw blade temp

- Using readily available supplies to decrease oscillating saw blade temp versus cooling in air.
- Ambient air, 114.2 seconds
- Oscillating blade with vacuum, 14.6 seconds
- Gauze/cotton cast with:
  - 70% Isopropyl alcohol
  - Ultrasound gel
  - Water
  - ***All reduced to 4.8-10.2 seconds***

J Bone Joint Surg Am 2008; 90: 2626-30.
J Pediatr Orthop 2014; 34 (8): e63-66.

Thrombosis

- "Thromboprophylaxis after knee arthroscopy and lower leg casting"
- 1519 patients casted
- VTE in 10 patients in the treatment group
  - Full period of immobilization
  - Low molecular weight heparin
- VTE in 13 patients in the control group
- No bleeding events
- ***Bottom-line, no significant difference…***

Pfizerinjectables.ca

Commonly used splints and casts

Area of injury	Splint	Cast
Hand/finger	Ulnar/radial gutter, thumb spica, stack	Ulnar/radial gutter, thumb spica
Forearm/wrist	Volar/dorsal forearm, sugar tong (single), thumb spica	Short arm, long arm
Elbow/forearm	Long arm posterior, sugar tong (double)	Long arm
Knee	Posterior knee, immobilizer, variety of stability braces	Long leg
Tibia/fibula	Posterior ankle, CAM boot	Long or short leg
Ankle	Posterior ankle, CAM boot, high-topped walking boot	Short leg
Foot	Posterior ankle, hard soled shoe/post-op shoe, high-topped walking boot	Short leg

Am Fam Physician 2009; 80 (5): 491-499.

31

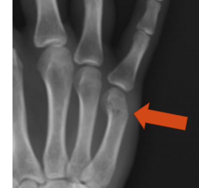
Coding Tips: when should I use a modifier -25?

- If you perform a significant and separately identifiable procedure (essentially a procedure that could represent a "stand alone" visit) on the same day of another service or procedure, use a modifer -25 code.
  - Joint injection on the same day that you perform a joint evaluation…
  - Place a cast or splint on an injured extremity (non-fracture) where you would charge the primary CPT E/M visit code…

32

Fracture Care

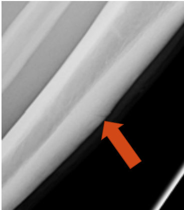
- Fracture codes carry a higher reimbursement than those for routine visits but they provide one-time-only reimbursement…
  - Reimburses a global charge as opposed to individual visit charges.
  - The first cast/splint charge is included in the global fee.
- With fractures, whether you charge global or by visit depends on your level of reimbursement for the global without the initial cast fee vs. the initial visit fee, cast fees, and total number of predicted follow-ups…



33

Coding tips: Are stress fractures best billed as fractures or office visits?

- Many insurance companies refuse to pay for fracture care in cases of stress fracture.



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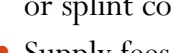
What if an independent problem arises during a f/u fracture care visit?

- Some physicians charge E/M visit by adding a modifier -25 to the cast fee if the visit includes a cast change…
- Other physicians use an E/M code and add modifier -24 if a cast change is not incurred (the visit occurs between scheduled cast changes)

35

Casting and splinting

- Generate a separate billable fee in addition to the visit fee, except for initial fracture care (global charge)
- Except for initial fracture care, physicians should use modifier -25 if casting or splinting is performed in addition to evaluation and management
- Follow-up care may only require cast or splint codes
- Supply fees



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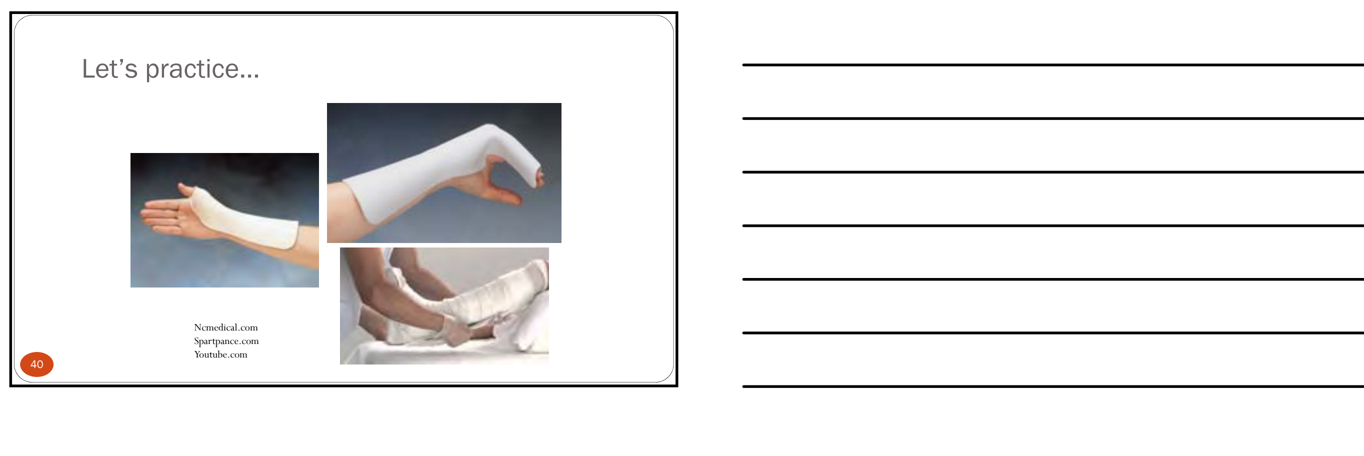
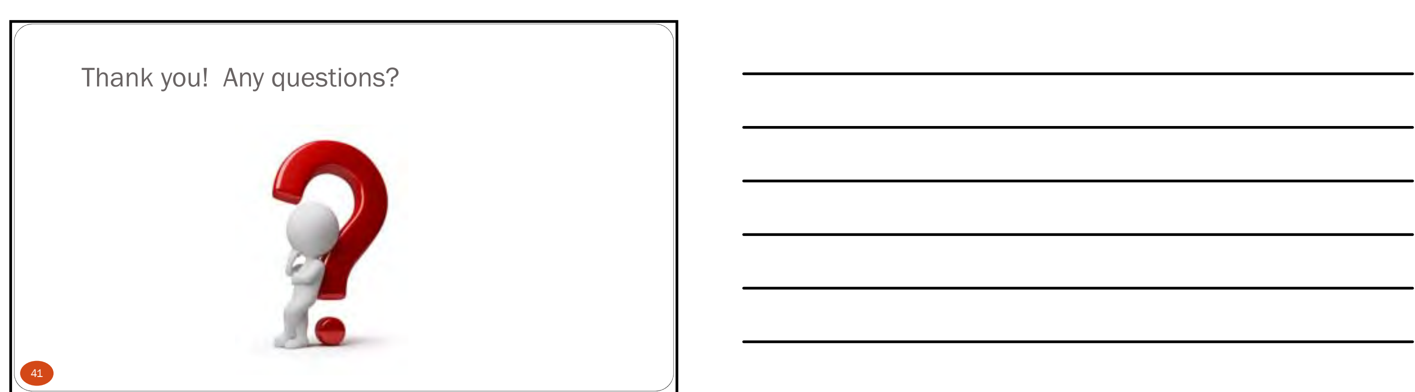
Take Home Points

- Immobilization in a splint or cast can provide protection to an injured bone.
- Splinting is often faster and easier than casting but has limitations in unstable fractures.
- Casting provides better immobilization but has more risk to the skin and should be avoided when swelling is a concern.
- Casts and splints can be billed using a 25 modifier.
- Nice resource:
  - *Am Fam Physician* 2009; 79 (1): 16-22, 23-24.

38


Let's practice…
Ncmedical.com
Spartpance.com
Youtube.com
40


Thank you! Any questions?
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Return to Top

Workshop - ACE’s (Adverse Childhood Event) Trauma Informed Care & Resiliency

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Workshop - ACE's (Adverse Childhood Event) Trauma Informed Care & Resiliency

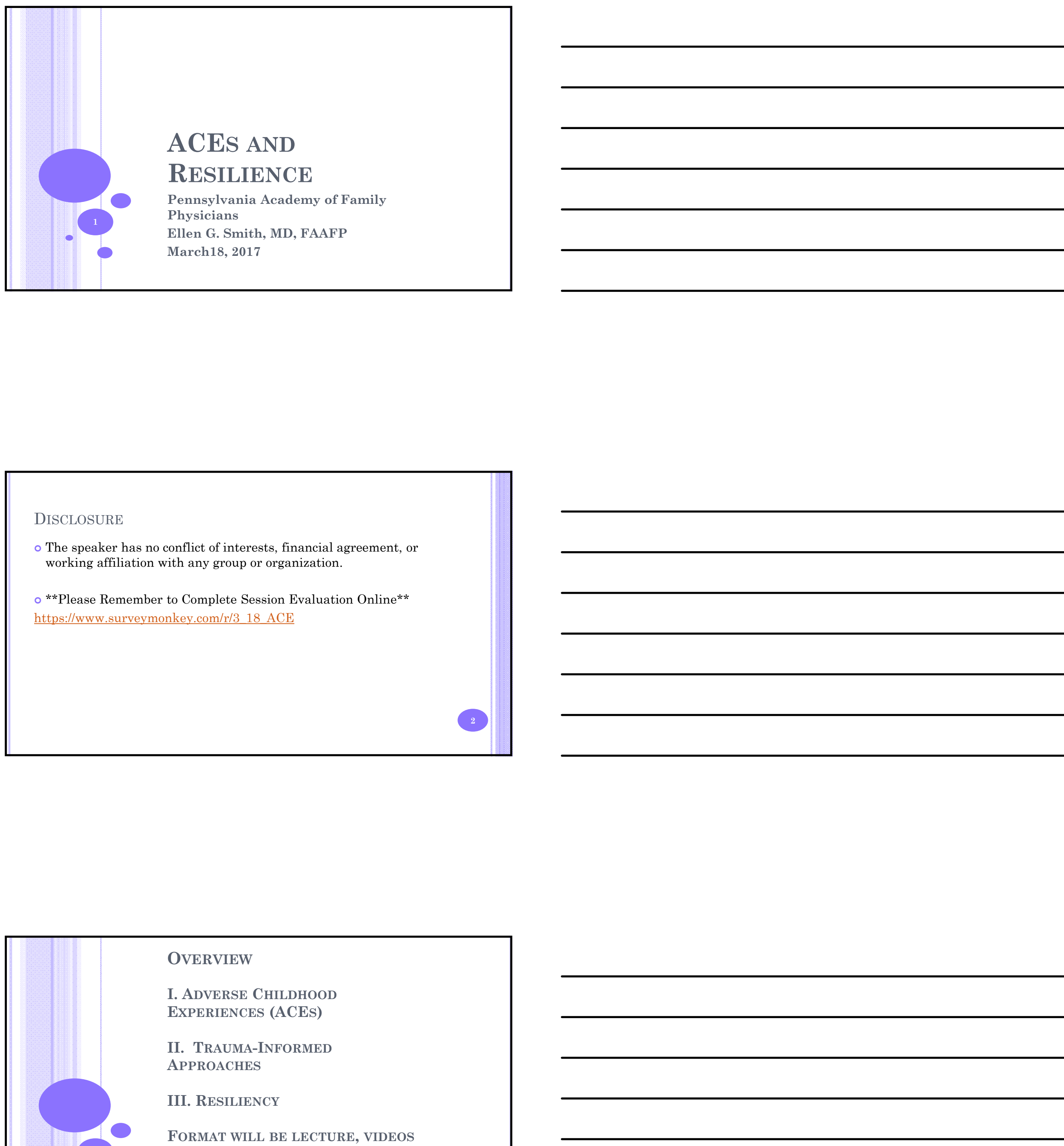
Ellen Smith, MD

Disclosures:

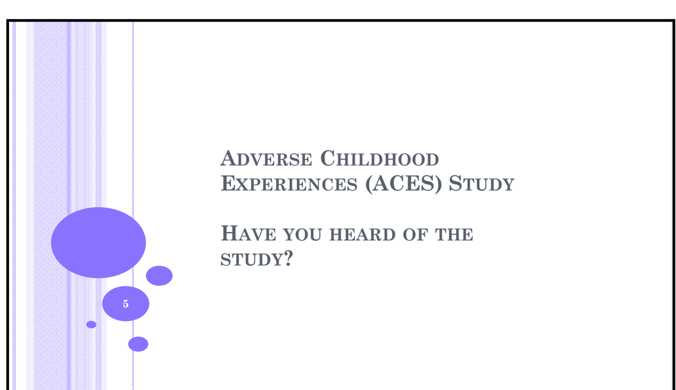
Speaker has no disclosures and there are no conflicts of interest.

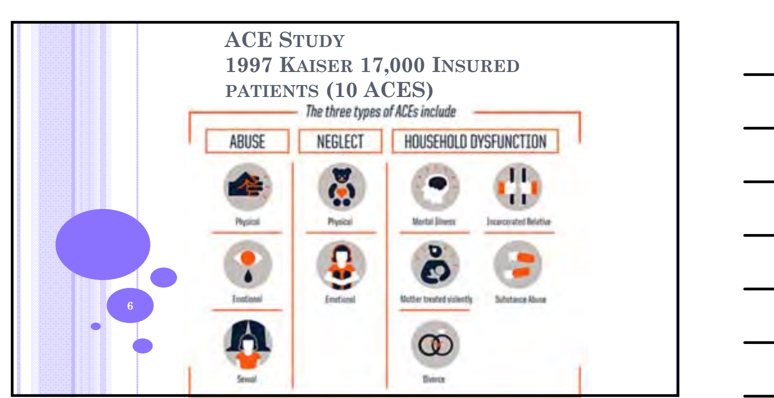
The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

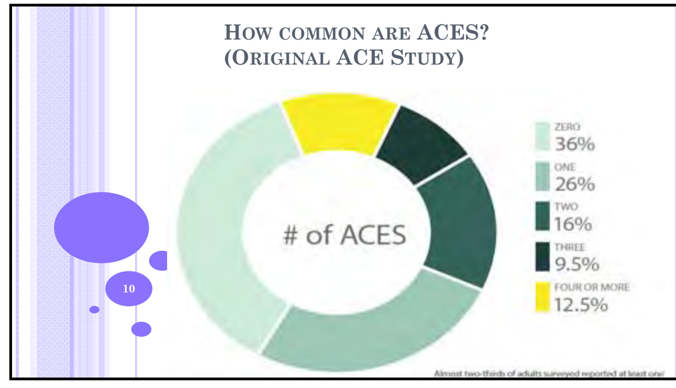

ACEs and Resilience
Pennsylvania Academy of Family Physicians
Ellen G. Smith, MD, FAAFP
March18, 2017
1
Disclosure
The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.
Please Remember to Complete Session Evaluation Online
https://www.surveymonkey.com/r/3_18_ACE
2
Overview
I. Adverse Childhood Experiences (ACEs)
II. Trauma-Informed Approaches
III. Resiliency
Format will be lecture, videos and small group/sharing with your neighbor.
3

At any point in our discussion today, if you feel uncomfortable for any reason, please feel free to get up, step outside, take a break, whatever you need until you feel you can rejoin the group.
Self-Care and Safety are paramount
4


Adverse Childhood Experiences (ACES) Study
Have you heard of the study?
5


ACE Study
1997 Kaiser 17,000 Insured patients (10 ACES)
The three types of ACEs include
ABUSE
NEGLECT
HOUSEHOLD DYSFUNCTION
6

Why are ACES important
Annie and Batman:
https://www.youtube.com/watch?v=oougVJ7YY2A
7
What is your ACE Score?
(You do not have to share it with anyone).
Growing up (prior to age 18) in a household with:
1. physical abuse.
2. emotional abuse.
3. Sexual abuse.
4. Emotional Neglect.
5. physical neglect.
8
What is your ACE Score?
(You do not have to share it with anyone).
Growing up (prior to age 18) in a household with:
6. alcohol or drug abuser
7. incarcerated household member.
8. Someone who is mentally ill.
9. Mother being treated violently.
10. Separated, divorced or absent parents.
9



ACEs in PHL vs. Original Kaiser Sample

	PHL Sample (N=1,784)	Kaiser Sample (N=17,337)	BRFSS, 2010 PA Sample (N=5,646)
Standard ACE Indicators			
Emotional abuse†	33.2%	10.6%	30.8%
Physical abuse*†	35.0%	28.3%	13.2%
Sexual abuse*†	16.2%	20.7%	9.7%
Physical neglect*	19.1%	14.8%	Not measured
Emotional neglect*	7.7%	9.9%	Not measured
Substance using household member*	34.8%	26.9%	20.7%
Mentally ill household member*	24.1%	19.4%	15.1%
Witnessed domestic violence*†	17.9%	12.7%	14.0%
Incarcerated household member*	12.9%	4.7%	4.6%
Urban ACE Indicators			
Witnessed violence	40.5%	Not measured	Not measured
Felt discrimination	34.5%	Not measured	Not measured
Unsafe neighborhood	27.3%	Not measured	Not measured
Experienced Bullying	7.9%	Not measured	Not measured
Lived in foster care	2.5%	Not measured	Not measured

* Asked slightly different than Kaiser; † Asked slightly different than BRFSS

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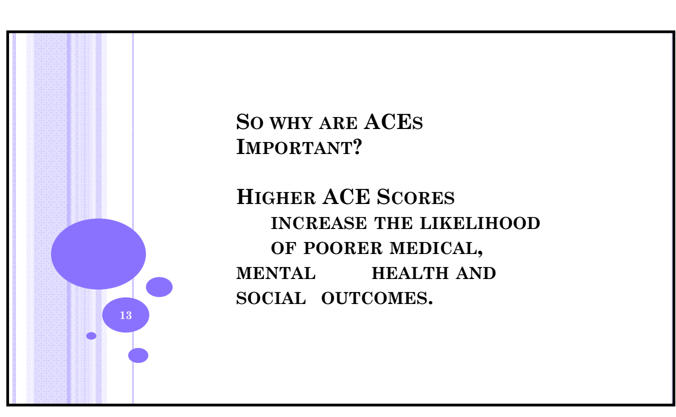
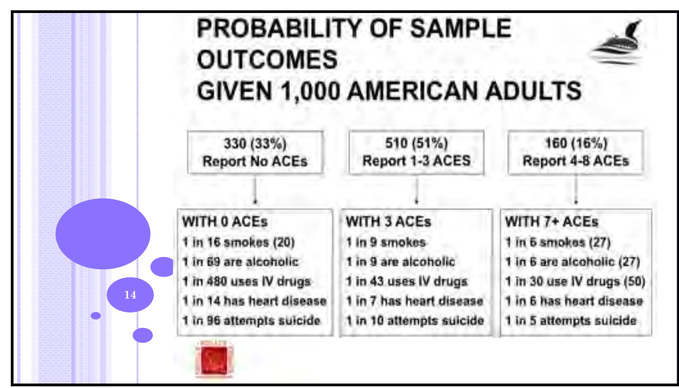
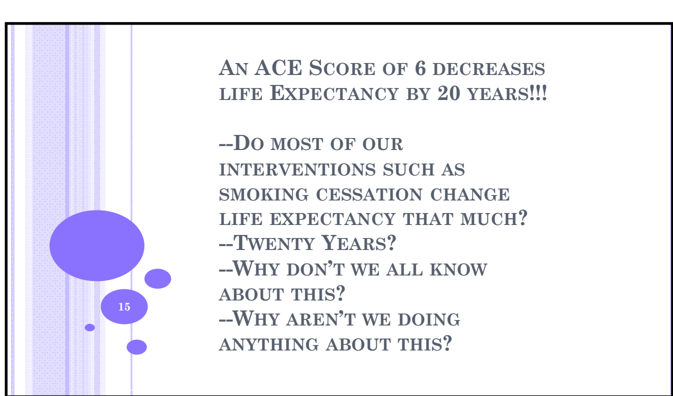
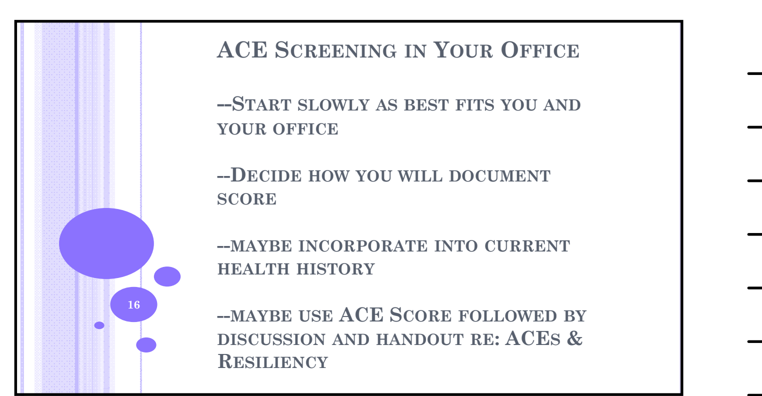



PROBABILITY OF SAMPLE OUTCOMES
GIVEN 1,000 AMERICAN ADULTS
330 (33%) Report No ACEs
510 (51%) Report 1-3 ACES
160 (16%) Report 4-8 ACEs
WITH 0 ACEs
1 in 16 smokes (20)
1 in 69 are alcoholic
1 in 480 uses IV drugs
1 in 14 has heart disease
1 in 96 attempts suicide
WITH 3 ACEs
1 in 9 smokes
1 in 9 are alcoholic
1 in 43 uses IV drugs
1 in 7 has heart disease
1 in 10 attempts suicide
WITH 7+ ACEs
1 in 6 smokes (27)
1 in 6 are alcoholic (27)
1 in 30 use IV drugs (50)
1 in 6 has heart disease
1 in 5 attempts suicide
14


An ACE Score of 6 decreases life expectancy by 20 years!!!
--Do most of our interventions such as smoking cessation change life expectancy that much?
--Twenty Years?
--Why don't we all know about this?
--Why aren't we doing anything about this?
15


ACE Screening in Your Office
--Start slowly as best fits you and your office
--Decide how you will document score
--maybe incorporate into current health history
--maybe use ACE Score followed by discussion and handout re: ACEs & Resiliency
16

ACE and other Screening in Your Office

--Practice on each other as it will be great to share ACEs with your colleagues and staff and then if patients ask the staff they won't look at them like ….

--Start with patients you are comfortable with and when you aren't stressed

--Normalize ACE Score use once it is normalized for you.

17

ACE Scoring

--Plan your responses, most people are amazed at how people appreciate you asking them

--Empathize, allow space and validate their experiences as their own

--"What seems to be difficult about this at this time?"

--Safety Planning for patient, staff and you—in the rare case of a problem.

18

ACE Scoring

--Peer support, Individual and/or group therapy

--Proactively identify referrals that will be beneficial

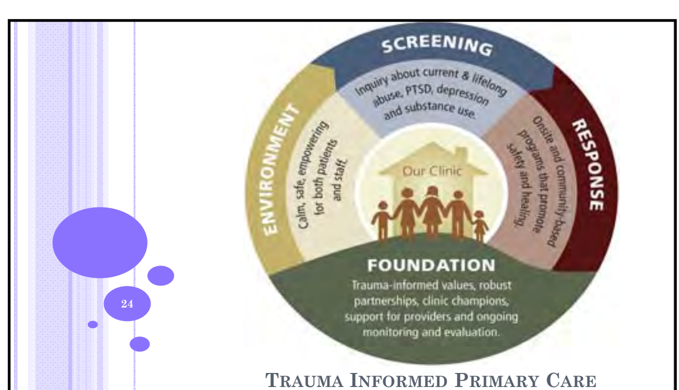
--Give training to staff (see trauma-informed section)

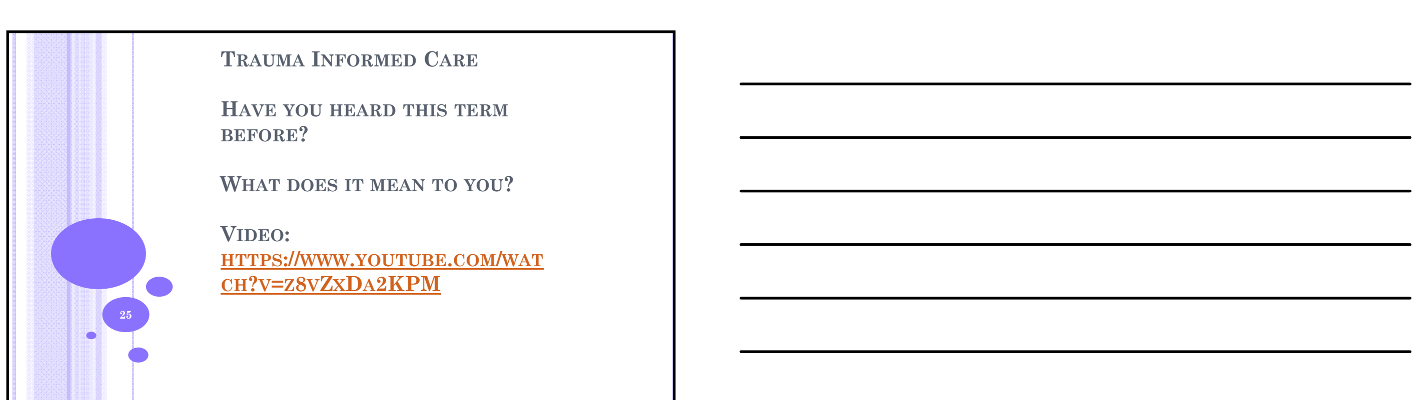
--You may want to develop a handout to Selectively give to patients.

19

"IT CHANGED THE CONVERSATION WHEN ADDICTS SAW THE CONNECTION BETWEEN CHILDHOOD EXPERIENCES (ACES) AND THEIR CURRENT ADDICTION. HAVING SOMEONE LISTEN TO YOUR STORY IS VERY THERAPEUTIC."
--ANN DORNEY, MD, FAMILY PHYSICIAN, SKOWHEGAN, ME
20
AFTER COMPLETING AN ACE SCORE, DR. DORNEY FOLLOWS WITH:
--WHAT THINGS STILL BOTHER YOU?
--THIS IS FOLLOWED BY WORKING TOGETHER WITH THE PATIENT TO DEVELOP APPROPRIATE COPING STRATEGIES TO MINIMIZE THE EFFECTS OF THESE ACES.
21
ANY REFLECTIONS?
22

Let's Take a Break…
23


SCREENING
Inquiry about current & lifelong abuse, PTSD, depression and substance use.
RESPONSE
Onsite and community-based programs that promote safety and healing.
ENVIRONMENT
Calm, safe, empowering for both patients and staff.
Our Clinic
FOUNDATION
Trauma-informed values, robust partnerships, clinic champions, support for providers and ongoing monitoring and evaluation.
Trauma Informed Primary Care
24


Trauma Informed Care
Have you heard this term before?
What does it mean to you?
Video:
https://www.youtube.com/watch?v=z8vZxDa2KPM
25

Trauma informed care

Have you ever approached someone to do an exam and they Responded in a very unexpected fashion?

Ever with doing a neck exam?

Ever with doing a pelvic or breast Exam?

26

Think about a patient who was strangled, sexually abused or physically abused?

How might a neck Exam or Pelvic exam be interpreted by them?

How might these exams be interpreted by you…now?

Do you know which of your patients have been abused?

27

Universal Precautions

We are very familiar with this with infectious agents and we glove regularly for it.

Since we don't know who has had trauma, nor how it is affected them, we need to use universal precautions and assume all may have been traumatized.

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Trauma Informed Care

Don't ask "What's wrong with you", instead ask "What happened to you."

--Be person centered and ask about patients hopes, fears and beliefs
--Focus on the relationship
--Be transparent
--Practice shared decision making

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Trauma Informed Care

Try to avoid:
--Arguing or the "hard sell"
--Criticizing, shaming or blaming
--Scare Tactics
--Ultimatums
--Feeling rushed or distracted

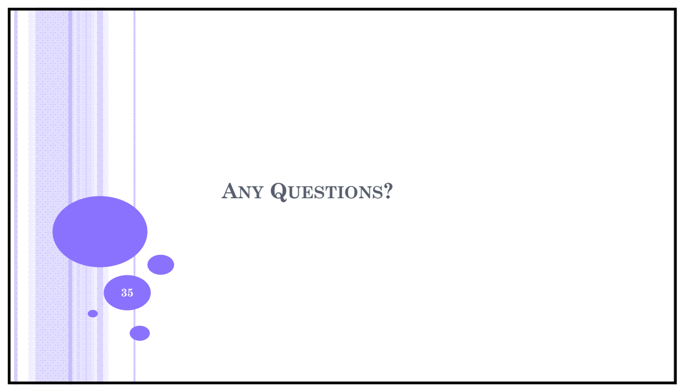
These can be threatening, triggering and/or confrontational.

30

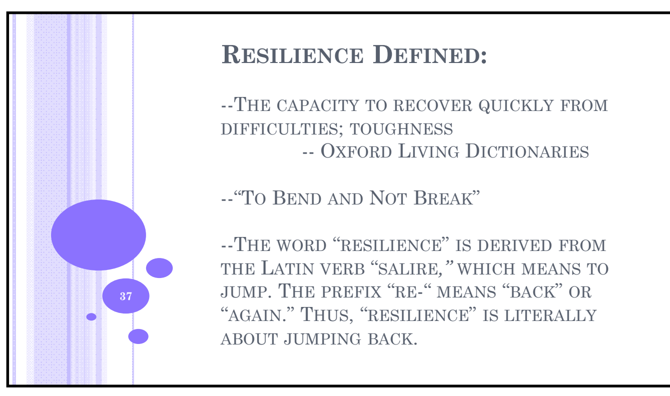
Nine Principles of Trauma Sensitive Practices that are Safe!
--Respect
--Sharing Information
--Rapport
--Respecting Boundaries
--Taking Time
--Sharing control
--Fostering Mutual Learning
--Understanding non-linear Healing
--Demonstrate awareness and Healing of Trauma
--Schachter et al., 2008

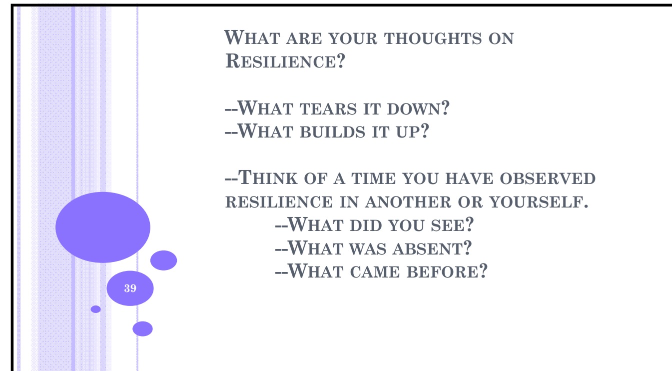
31

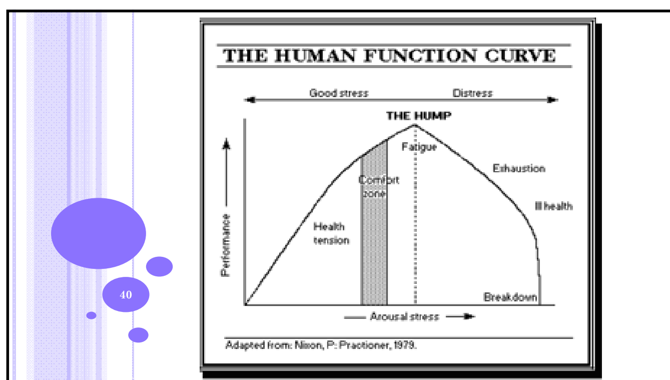
Trauma Informed Care Is not:
--Just being nicer but it may mean being more compassionate
--Excusing/permitting unacceptable behavior but it does focus on accountability.
--Focusing only on the negative, rather it is strength based and skill building
32
Staff and Physician Self-Care
We often don't practice what we preach!
We sometimes traumatize/retraumatize our team so we must be mindful of using the above principles all the time.
Power Differentials can be ripe for traumatization and must be approached mindfully and cautiously.
The HappyMD Website
33
Trauma and The Brain
https://www.youtube.com/watch?v=4-tcKYx24aA
34

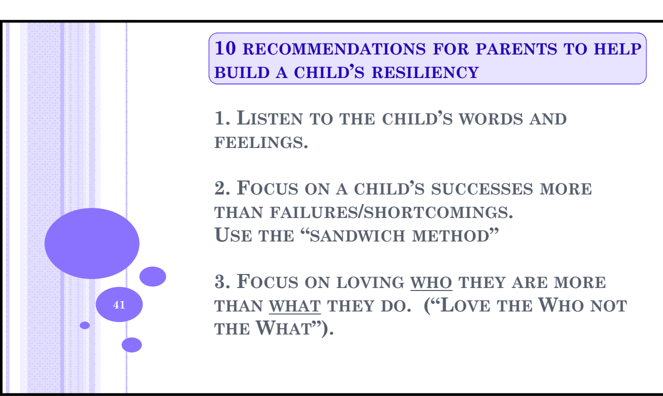

ANY QUESTIONS?
35

ANOTHER WELL NEEDED BREAK….
36


RESILIENCE DEFINED:
--THE CAPACITY TO RECOVER QUICKLY FROM DIFFICULTIES; TOUGHNESS
-- OXFORD LIVING DICTIONARIES
--"TO BEND AND NOT BREAK"
--THE WORD "RESILIENCE" IS DERIVED FROM THE LATIN VERB "SALIRE," WHICH MEANS TO JUMP. THE PREFIX "RE-" MEANS "BACK" OR "AGAIN." THUS, "RESILIENCE" IS LITERALLY ABOUT JUMPING BACK.
37


What are your thoughts on Resilience?
--What tears it down?
--What builds it up?
--Think of a time you have observed resilience in another or yourself.
--What did you see?
--What was absent?
--What came before?
39


THE HUMAN FUNCTION CURVE
Good stress
Distress
THE HUMP
Fatigue
Exhaustion
Comfort zone
Ill health
Health tension
Performance
Breakdown
Arousal stress
Adapted from: Nixon, P: Practioner, 1979.
40


10 recommendations for parents to help build a child's resiliency
1. Listen to the child's words and feelings.
2. Focus on a child's successes more than failures/shortcomings.
Use the "sandwich method"
3. Focus on loving who they are more than what they do. ("Love the Who not the What").
41

10 Recommendations for Parents to Help Build a Child's Resiliency

4. Teach you children (and yourself) to make friends and foster relationships.

5. Teach your children (and yourself) to help others.

6. Teach your children and yourself to be mindful and meditate (or pray) for 10 minutes each day (or one minute if that is all you have).

10 Recommendations for Parents to Help Build a Child's Resiliency

7. Sleep 8 hours a night and have your child sleep longer

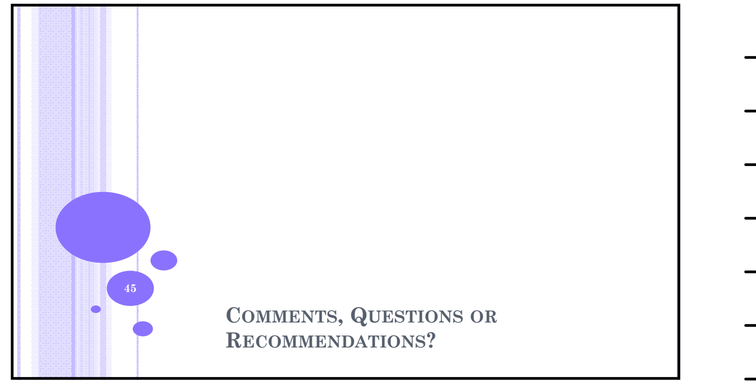
8. Practice being flexible whenever you can.

9. Exercise most days of the week and try to do it together with other family members. Make it fun. Go hiking, walk, play tag or hide and seek…

10 Recommendations for Parents to Help Build a Child's Resiliency

10. Try to focus on the positive aspects of your life and your days, rather than the negative aspects and teach your children to do the same.

Any other Recommendations?


45
COMMENTS, QUESTIONS OR RECOMMENDATIONS?

46
THANK YOU!
PLEASE SPREAD THE WORD ABOUT ACES AND RESILIENCE!

47
REFERENCES:
HTTP://WWW.ACESCONNECTION.COM
ACESTOOHIGH.COM
HTTP://WWW.NCJFCJ.ORG/SITES/DEFAULT/FILES/FINDING%20YOUR%20ACE%20SCORE.PDF
(ACE SCORE FORM)
HTTPS://WWW.CDC.GOV/VIOLENCEPREVENTION/ACESTUDY/

Films you may find useful and want to bring to your town. We are planning to bring them to Harrisburg.

Paper Tigers

Resilience

Portraits of Professional Caregivers: Their Passion Their Pain

All are on Tugg.com where you can see the trailers.
If you show them, be sure to have a debrief session afterwards.

48

49

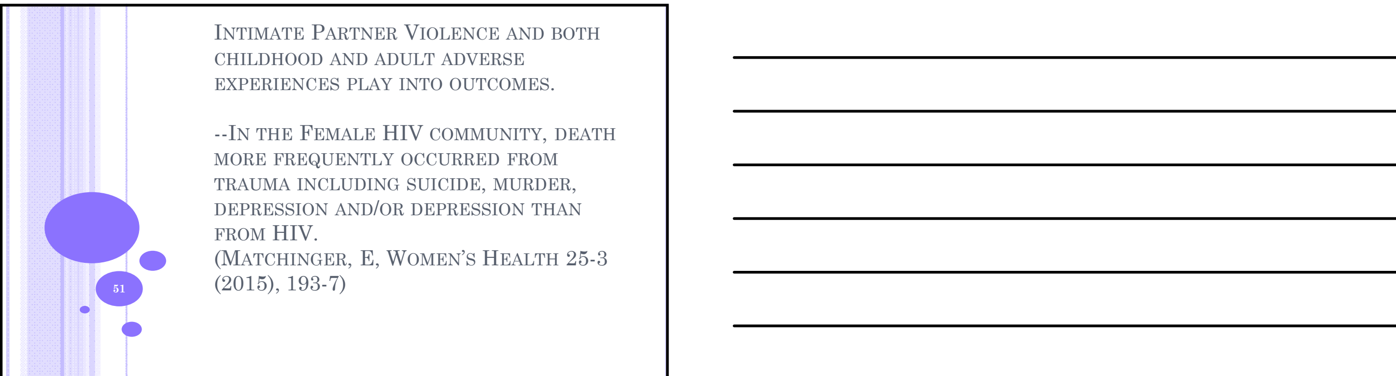
Intimate Partner Violence (IPV)

--United States Preventative Services TASK FORCE (USPSTF)

--Recommendation is to screen all women of child-bearing age

--B Recommendation is The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.

50


Intimate Partner Violence and both childhood and adult adverse experiences play into outcomes.
--In the Female HIV community, death more frequently occurred from trauma including suicide, murder, depression and/or depression than from HIV.
(Matchinger, E, Women's Health 25-3 (2015), 193-7)
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Sudden Cardiac Death in the Athlete: Should We Mandate ECG Screening?

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Sudden Cardiac Death in the Athlete: Should We Mandate ECG Screening?

Matthew Silvis, MD & Cayce Onks, DO, MS, ATC

Disclosures:

Speakers have no disclosures and there are no conflicts of interest.

The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speakere indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

Sudden Cardiac Death in the Athlete: EKG Screening Debate

Matthew Silvis, MD
Cayce Onks, DO, MS ATC
Penn State Health
Milton S Hershey Medical Center
March 18th, 2017

1

Disclosure

- The speakers have no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_18_ECG

2

Learning Objectives

- Explain a general approach to identifying those at risk for sudden cardiac death (SCD) during pre-participation evaluations (PPE's).
- List pros and cons of EKG screening as part of the PPE.

3

Case

- 16 year old African American male football player collapses at practice. Efforts at resuscitation fail. Media discussions center around prevention of sudden cardiac death and the role of EKG screening. You wonder, what is the evidence?

Sudden cardiac death (SCD)

- Sudden death in young athletes
  - Highly visible events with a substantial community impact.
  - *Sudden death is first clinical manifestation of cardiac disease in 60-80% of athletes with SCD*
  - 2.5 times relative risk of SCD in sports vs. age matched, non-athletic population
- Heightened interest in and focus on preventive strategies such as preparticipation cardiovascular screening.

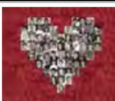
In the news…

The Sudden Cardiac Arrest Prevention Act: Act 59

- "Establishing standards for preventing sudden cardiac arrest and death in student athletes; assigning duties to the Department of Health and the Department of Education; and imposing penalties."
- In effect **now**…

7

The Patriot News



- Two local pediatric cardiologists
  - Every child should have a one time EKG
    - "You can spend $90 on a pair of sneakers, but nobody wants to spend $50 on an EKG."
  - Cautions "false sense of security"
    - Delayed onset for many heart conditions
    - Anomalous coronary has normal EKG
    - Best to have readily available AEDs

Pennsylvania law aims to raise awareness of sudden cardiac arrest
Published: Sunday, July 08, 2012, 6:00 AM

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Monograph

- Pre-participation Physical Evaluation 4th ed.
- Primary goals
  - Detect conditions that may predispose to injury, disability, or *death*.
  - Meet certain legal and insurance requirements.
- Secondary goals
  - Determine general health of athlete, counsel athlete on health related issues, and assess fitness for certain sports.

10-12 million athletes/year in the United States…

9

14 Element AHA recommendations for pre-participation CV screening of athletes

- Personal history
  - Chest pain/discomfort/tightness/pressure related to exertion
  - Unexplained syncope or near syncope
  - Excessive and unexplained dyspnea/fatigue or palpitations associated with exercise
  - Prior recognition of a heart murmur
  - Elevated systemic blood pressure
  - Prior restriction from participation in sports
  - Prior testing for the heart, ordered by a physician
- Family history
  - Premature death, < 50 y/o due to heart disease, >/= 1 relative
  - Disability from heart disease in a close relative < 50 y/o
  - Specific disorders
- Physical examination
  - Heart murmur
  - Femoral pulses to exclude aortic coarctation
  - Physical stigmata of Marfan's syndrome
  - Brachial artery blood pressure, seated

What about screening with vital signs and demographics?

- No prospective studies evaluating VS, PE, anthropometrics, and historical data with the risk for cardiac pathology
- Estimated that only 3% of younger athletes who died of SCD were diagnosed with any pathology before death
- One study looked at 2401 PPE results over 5 years
- 14/2401 in 10-18 y/o age group diagnosed with a dx c/w significant cardiac pathology
- 6/14 c/w a disorder that could lead to SCD
  - *No association with age or weight*
  - *No association with vital signs*

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Curr Sports Med Rep 2010; 9 (6): 338-341.

What about screening EKGs?

Houstonchronicle.com
Sandiegouniontribune.com

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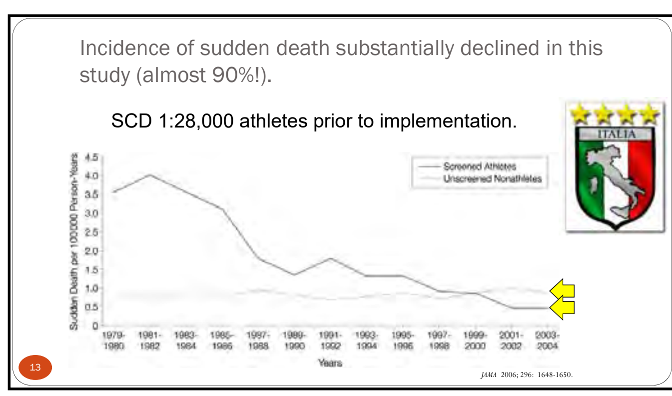

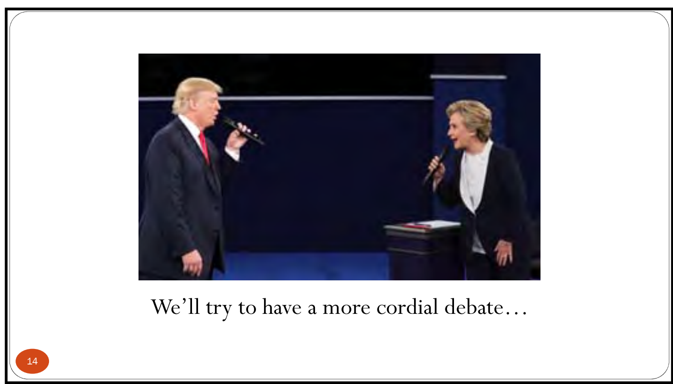

Point/Counterpoint #1

- Do we know the incidence of sudden cardiac death in athletes?

15

SCD: What is the true incidence?

- Traditionally done based on **estimations** that were in the range of 1:200,000 and 1:300,000

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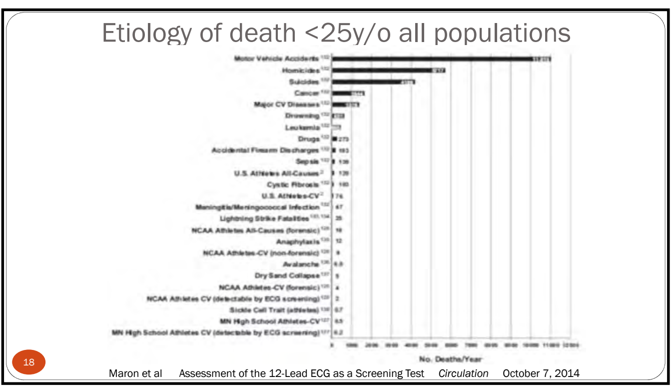

Incidence, Etiology, and Comparative Frequency of Sudden Cardiac Death in NCAA Athletes: A Decade in Review

Kimberly G. Harmon, Irfan M. Asif, Joseph J. Maleszewski, David S. Owens, Jordan M. Prutkin, Jack C. Salerno, Monica L. Zigman, Rachel Ellenbogen, Ashwin Rao, Michael J. Ackerman and Jonathan A. Drezner

Circulation. published online May 14, 2015;
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2015 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

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Table 3. Incidence of sudden cardiac death in NCAA athletes.

Characteristic		Athlete-Years	SCD	Incidence per Athlete-Year	IRR	95% CI	p-value
Overall		4,242,519	79	1 in 53,703		-	-
Sex	Male	2,418,563	64	1 in 37,790	3.22	1.9 – 5.5	>0.0001*
	Female	1,823,899	15	1 in 121,593	1.00	*Reference*	
Division	Division 1	1,663,441	38	1 in 43,775	1.98	1.1 - 3.6	0.0131*
	Division 2	930,434	22	1 in 42,292	2.05	1.1 - 4.0	0.0231*
	Division 3	1,648,128	19	1 in 86,744	1.00	*Reference*	
Race	White	3,075,942	45	1 in 68,354		*Reference*	
	Black	644,715	30	1 in 21,491	3.18	1.9 - 5.2	>0.0001*
	Hispanic	168,763	3	1 in 56,254	1.22	0.2 - 3.8	0.6974
	Other	353,042	1	1 in 353,042	0.19	0.005 - 1.1	0.0491*

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N

Table 4. Incidence of sudden cardiac death in male basketball athletes

Group	Black SCD	Black Athlete-Years	SCD Incidence in Blacks per Athlete-Year	Incidence in Blacks over 4 year career	White SCD	White Athlete-Years	SCD Incidence in Whites per Athlete-Year	Incidence in Whites over 4 year career	Total SCD	Total Athlete-Years	Total SCD Incidence per Athlete-Year	Incidence over 4 year career
Division I male basketball	7	30,660	1 in 4,380	1 in 1,095	3	15,689	1 in 5,230	1 in 1,307	10	51,995	1 in 5,200	1 in 1,300
Division II male basketball	3	24,723	1 in 8,241	1 in 2,060	1	18,016	1 in 18,016	1 in 4,504	4	47,530	1 in 15,843	1 in 3,961
Division III male basketball	4	19,623	1 in 4,906	1 in 1,227	1	46,348	1 in 46,348	1 in 11,5[illegible]	5	71,332	1 in 14,266	1 in 3,567
Overall male basketball	14	74,8[illegible]	1 in 5,348	1 in 1,337	5	79,972	1 in 15,994	1 in 3,999	19	170,5[illegible]	1 in 8,97[illegible]	1 in 2,24[illegible]

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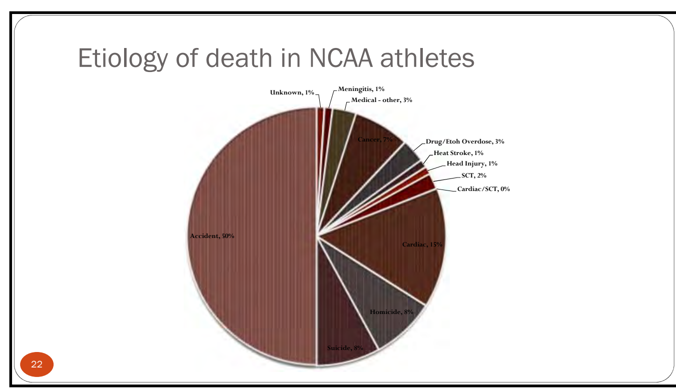
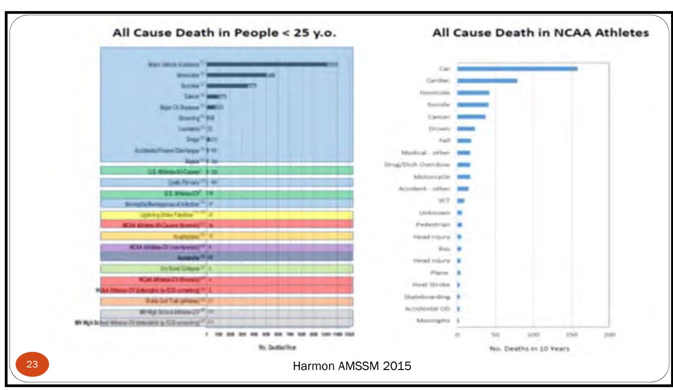

Etiology of death in NCAA athletes
Unknown, 1%
Meningitis, 1%
Medical - other, 3%
Cancer, 7%
Drug/Etoh Overdose, 3%
Heat Stroke, 1%
Head Injury, 1%
SCT, 2%
Cardiac/SCT, 0%
Accident, 50%
Cardiac, 15%
Homicide, 8%
Suicide, 8%
22


All Cause Death in People < 25 y.o.
All Cause Death in NCAA Athletes
Car
Cardiac
Homicide
Suicide
Cancer
Drown
Fall
Medical - other
Drug/Etoh Overdose
Motorcycle
Accident - other
SCT
Unknown
Pedestrian
Head injury
Bus
Head injury
Plane
Heat Stroke
Skateboarding
Accidental OD
Meningitis
0
50
100
150
200
No. Deaths in 10 Years
23
Harmon AMSSM 2015

N
O
24

We don't know the true incidence of SCD in the United States.

- "The key to accurately interpret any study on incidence is to understand the methods used to identify cases, the criteria for case inclusion or exclusion, and what population is being studied."
- Exertional SCD vs SCD occurring any time?
- Age ranges
- Case identification: mandatory reporting, media reports, registries, and insurance claims…
- Should sudden cardiac arrest be included (SCA)? Survival from SCA may drastically increase the overall incidence of SCD.

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Heart 2014; 100: 1227-1234.

Incidence studies in a general populations of athletes.

Author	Year	Country	Exertional or all	SCD or SCD + SCA	Population	Incidence
Van Camp	1996	USA	Exertional	SCD	College and high school	1:300,000
Maron	1996	USA	All	SCD	Athletes	-
Maron	2003	USA	All	SCD	Athletes	-
Corrado	2003	Italy	All	SCD	Athletes and young people	1:47, 600 athlete 1:142,900 young people
Maron	2009	USA	All	SCA + SCD	Athletes	1:163,934
Holst	2010	Denmark	ALL and sports related	SCD	Athletes and young people	1:82,645
Steinvil	2011	Israel	All	SCD	Athletes	1:37,593

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Incidence studies in college athletes.

Author	Year	Country	Exertional or all	SCD or SCD + SCA	Population	Incidence
Drezner	2005	USA	All	SCD	College	1:67,000
Harmon	2011	USA	All	SCD	College	1:43,000
Maron	2014	USA	All	SCD	College	1:83,000 confirmed 1:62,000 presumed

High risk subgroups:
- **Men – 1:33,000**
- **African American – 1:18,000**
- **Basketball – 1:11,000**
- **Division I male basketball players – 1:3000**

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Incidence studies in high school athletes.

Author	Year	Country	Exertional or all	SCD or SCD + SCA	Incidence
Maron	1998	USA	Exertional, sport	SCD	1:217,000 overall
Drezner	2009	USA	SCD/SCA on campus	SCD + SCA	1:23,000 SCA + SCD 1:46,000 SCD
Maron	2013	USA	Exertional	SCD	1:150,000
Roberts	2013	USA	Exertional, sport	SCD	1:416,666 over last decade 1:917,000 previous
Toresdahl	2014	USA	SCD/SCA on campus	SCD + SCA	1:87,719 SCA + SCD 1:57,000 male SCA + SCD
Drezner	2014	USA	All	SCD + SCA	1:153,846 SCD 1:71,428 SCA 1:21,277 male basketball
Harmon	2014	USA	All	SCD + SCA	1:63,988 SCA 1:41,622 male 1:33,815 male basketball

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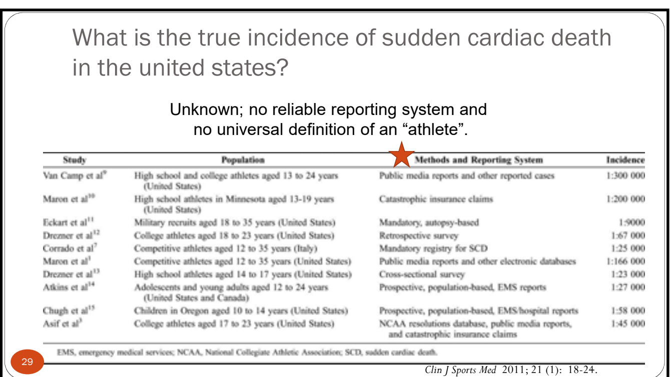

What is the true incidence of sudden cardiac death in the united states?

Unknown; no reliable reporting system and no universal definition of an "athlete".

Study	Population	Methods and Reporting System	Incidence
Van Camp et al[9]	High school and college athletes aged 13 to 24 years (United States)	Public media reports and other reported cases	1:300 000
Maron et al[10]	High school athletes in Minnesota aged 13-19 years (United States)	Catastrophic insurance claims	1:200 000
Eckart et al[11]	Military recruits aged 18 to 35 years (United States)	Mandatory, autopsy-based	1:9000
Drezner et al[12]	College athletes aged 18 to 23 years (United States)	Retrospective survey	1:67 000
Corrado et al[7]	Competitive athletes aged 12 to 35 years (Italy)	Mandatory registry for SCD	1:25 000
Maron et al[1]	Competitive athletes aged 12 to 35 years (United States)	Public media reports and other electronic databases	1:166 000
Drezner et al[13]	High school athletes aged 14 to 17 years (United States)	Cross-sectional survey	1:23 000
Atkins et al[14]	Adolescents and young adults aged 12 to 24 years (United States and Canada)	Prospective, population-based, EMS reports	1:27 000
Chugh et al[15]	Children in Oregon aged 10 to 14 years (United States)	Prospective, population-based, EMS/hospital reports	1:58 000
Asif et al[3]	College athletes aged 17 to 23 years (United States)	NCAA resolutions database, public media reports, and catastrophic insurance claims	1:45 000

EMS, emergency medical services; NCAA, National Collegiate Athletic Association; SCD, sudden cardiac death.

Clin J Sports Med 2011; 21 (1): 18-24.

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Incidence studies in the military and general population.

- Estimates range from 1:22,000 to 1:128,000 depending on the age studied
- Most studies retrospective and based on death certificates, coroner's databases, and autopsies for case identification
- Most comprehensive prospective study spanned 30 years
  - SCA/SCD rate of 1:69,000, 14-24 y/o
  - SCA/SCD rate of 1:22,000, 25-35 y/o
- Comparing risk between athletes and general population
  - Italian study, 2.5 times risk; France study, 4.5 times risk
  - Denmark, 3.3 times lower than general population
- Military studies,1:10,000 (take out basic training, 1:30,000)

Heart 2014; 100: 1227-1234.

30

Numbers matter!

•Numerator?/Denominator?

- Numerator, unclear (range 1:3000 NCAA Division I African American male basketball players to 1:917,000 Minnesota high school athletes)
  - ~1:50,000 for collegiate athletes
  - ~1:50,000-1:80,000 high school athletes
- Denominator
  - 12-25 y/o, male/female – 60 million persons in the U.S.
  - 10-12 million athletes
  - ~10-12 million high school athletes
  - ~500,000 collegiate athletes
  - ~5000 professional athletes

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Point/Counterpoint #2

- Can EKG detect causes of SCD in athletes?

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Does it work in athletes?

The effectiveness of screening history, physical exam, and ECG to detect potentially lethal cardiac disorders and athletics: a systematic review/meta-analysis

Kimberly G Harmon, M.D.,[a, b,*] Monica Zigman, MPH,[a] Jonathan a Drezner, M.D.[a]

K.G. Hrmon et al. / Journal of Electrocardiology 48 (2015) 329–338

Conclusions: the most effective strategy for screening for cardiovascular disease and athletics is ECG. It is 5 times more sensitive than history, 10 times more sensitive than physical exam, has higher positive likelihood ratio, lower negative likelihood ratio and a lower false positive rate. 12-lead ECG interpreted using modern criteria should be considered best practice in screening for cardiovascular disease and athletes while the use of history and physical alone as a screening tool should be reevaluated.

34

What do we find with ECG screening?

- 47,137 athletes
  - 67 Wolf Parkinson White (42%)
  - 11 Long Q-T Syndrome (11%)
  - 11 Hypertrophic Cardiomyopathy (11%)
  - 9 Coronary Artery Disease (6%)
  - 4 Arrhythmogenic right ventricular cardiomyopathy (3%)

Journal of Electrocardiology 48 (2015) 329-338

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DOES ECG SCREENING DECREASE SCD?

The New England Journal of Medicine

SCREENING FOR HYPERTROPHIC CARDIOMYOPATHY INYOUNG ATHLETES

Domenico Corrado, M.D., Cristina Basso, M.D., Maurizio Schiavon, M.D., nd Gaetano Thiene, M.D.

Hypertrophic cardiomyopathy was detected in 22 athletes (0.07%) at preparticipation screening and accounted for 3.5% of the cardiovascular reasons for disqualification. None of the disqualified athletes with hypertrophic cardiomyopathy died during a mean follow-up period of 8.2+5 years.

Conclusions the results show that hypertrophic cardiomyopathy was an uncommon cause of death in these young competitive athletes and suggested that the identification and disqualification of affected athletes at screening before participation in competitive sports may have prevented sudden death. (N Engl J Med 1998;339:364–9)

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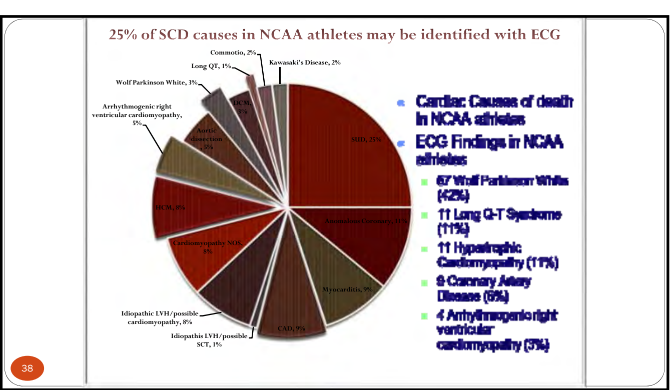
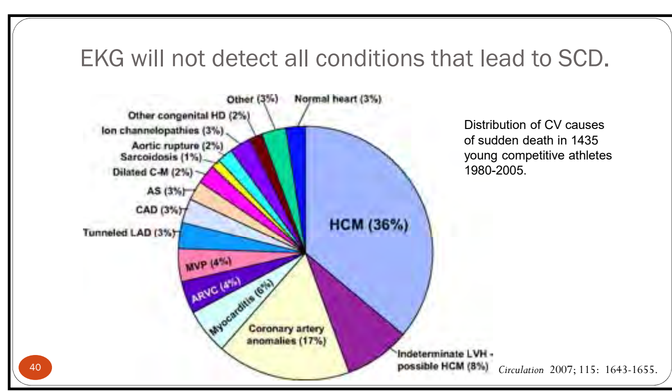
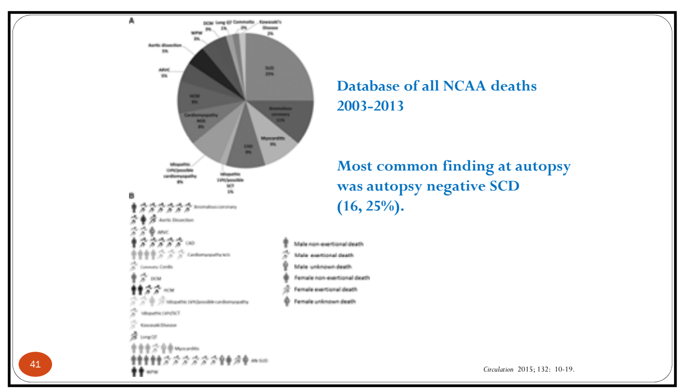
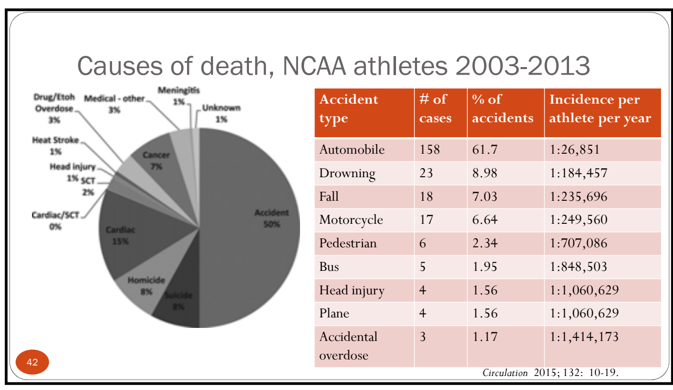
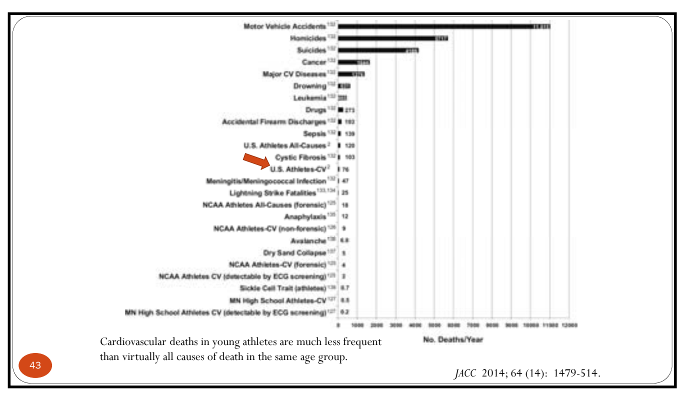








Accident type	# of cases	% of accidents	Incidence per athlete per year
Automobile	158	61.7	1:26,851
Drowning	23	8.98	1:184,457
Fall	18	7.03	1:235,696
Motorcycle	17	6.64	1:249,560
Pedestrian	6	2.34	1:707,086
Bus	5	1.95	1:848,503
Head injury	4	1.56	1:1,060,629
Plane	4	1.56	1:1,060,629
Accidental overdose	3	1.17	1:1,414,173



Cardiovascular deaths in young athletes are much less frequent than virtually all causes of death in the same age group.

JACC 2014; 64 (14): 1479-514.

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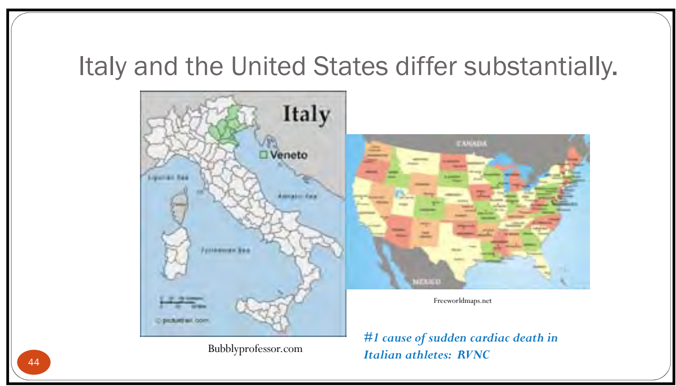
Italy and the United States differ substantially.



Bubblyprofessor.com

Freeworldmaps.net

#1 cause of sudden cardiac death in Italian athletes: RVNC

44

Point/Counterpoint #3

- Should we use EKG screening for primary prevention of SCD in athletes?

45

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Concerns Regarding ECG Screening

- Harm from ECG screening
  - Unnecessary testing or disqulaification
  - Undue anxiety of psychological harm
  - Adverse medical events
- Benefit outweigh the Harm?
  - Cardiac Disease in question poorly understood
  - Not all athletes go on to have SCD
- Poor infrastructure to provide quality screening
  - ECG Interpretation
  - Cardiology Resources

47

Should global ECG screening be implemented?

48

Can ECG screening be put in place with a resource rich environment and adequate planning?

YES!

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Keys to Successful ECG Screening

- Agreement from all parties that it is the right thing to do for your institution
- Agreement on who should be screened
- Training for those interpreting the ECG's
- Adequate Cardiology oversight with predetermined avenues for additional testing (stress exams, echos, ect)

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Current AHA Recommendation December 2015

Circulation

Eligibility and Disqualification Recommendations for Competitive Athletes With Cardiovascular Abnormalities: Task Force 2: Preparticipation Screening for Cardiovascular Disease in Competitive Athletes: A Scientific Statement From the American Heart Association and American College of Cardiology

Barry J. Maron, Benjamin D. Levine, Reginald L. Washington, Aaron L. Baggish, Richard J. Kovacs and Martin S. Maron

on behalf of the American Heart Association Electrocardiography and Arrhythmias Committee of the Council on Clinical Cardiology, Council on Cardiovascular Disease in the Young, Council on Cardiovascular and Stroke Nursing, Council on Functional Genomics and Translational Biology, and the American College of Cardiology

- Screening in addition to H&P in relatively small populations (12-25) **may be considered**

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Reason #1: We don't know the natural history of the disorders that can lead to SCD.

Study	Population	Prevalence, %
Maron et al[4] (2007)	Estimate in competitive athletes aged 12 to 35 years (United States)	0.3
Fuller et al[21]	5617 high school athletes (United States)	0.4
Corrado et al[7]	42 386 athletes aged 12 to 35 years (Italy)	0.2
Wilson et al[22]	2720 athletes and children aged 10 to 17 years (United Kingdom)	0.3
Bessem et al[23]	428 athletes aged 12 to 35 years (the Netherlands)	0.7
Hevia et al[24]	1220 amateur athletes (Spain)	0.16
Baggish[25]	510 college athletes (United States)	0.6

One in three to five hundred athletes or more may have an occult CV disorder…

Clin J Sports Med 2011; 21 (1): 18-24.

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Example - LQTS

- 130 patients remained in competitive athletics, including 20 with ICDs
  - 70 (54%) genotype +/phenotype –
    - None had a sports related event
  - 60 continued in sports contraindicated by Bethesda and ESC
    - 1 had a sports related event with appropriate ICD shock

Newest AHA/ACC guidelines have changed due to this one study, less limiting…

Br J Sports Med 2013; 47: 28-33.
Circulation 2015; 132: e326-329.

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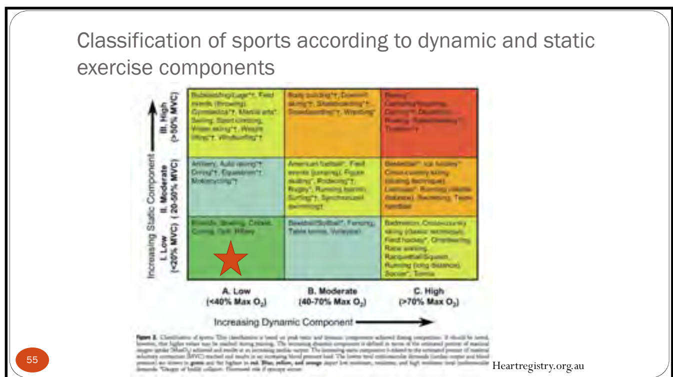
Classification of sports according to dynamic and static exercise components



Heartregistry.org.au

55

Reason #2: Not staying physically active is a problem if unnecessarily restricting athletes…

- Obesity, metabolic disease, CV disease
- Adolescents who participate in vigorous sporting activities are less likely to express negative adolescent health behaviors such as tobacco, EtOH, sex, truancy, and seatbelt use
- Low self esteem
- TV viewing – worse on cognitive tests, more difficulty reading, more attention problems

Curr Sports Med Rep 2014; 13 (2): 94-99.

56

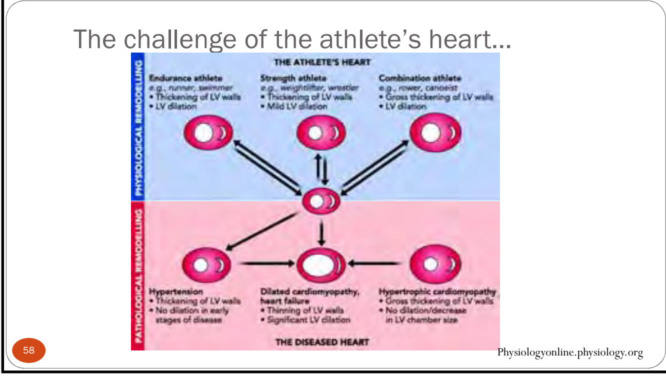
Reason #3: The Seattle criteria have not solved the problem of false + EKG results, yet.

"Comparison of three current sets of electrocardiographic interpretation criteria for use in screening athletes."

Br J Sports Med 2013; 47: 122-124.
Heart 2015; 101: 384-390.

57

The challenge of the athlete's heart…



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Physiologyonline.physiology.org

Reason #4: Targeted assessment, really?

- SCD is not limited to athletes
  - Estimated that 10-15% of 12-25 y/o participate in organized sports
  - Not as much media attention or scrutiny as non-athletes
  - In a study from France, sudden death was 15 times more frequent in non-competitive or recreational athletes
  - 6% events in competitive settings; >90% recreational
- What about only screening male football, track and field, basketball, and soccer athletes?
- This calls into question, do you screen everybody? If so when? What age? Do you repeat the EKG as the child grows?

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Reason #5: Outside of Italy, only Israel has adopted EKG screening of athletes.

-Only 3 countries systematically screen all young athletes for CV disease (U.S., Italy, Israel) regardless of their level of competition, achievement, or expertise.
-Only Israel adopted Italy's screening program, no other European country despite the ESC recommendations.
-Denmark doesn't screen athletes at all due to low level of SCD in their population.

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Reason #6: The logistics can't be ignored if mandating EKG screening of all athletes.

- Practical issues
  - Designated testing centers (20% of the U.S. population is rural)
    - Purchase and maintain equipment
    - Professionals to interpret results
  - Follow-up evaluations could burden the system
  - Electronic storage of data
  - Negotiations with insurance carriers to resolve coverage issues and legal fees
  - Physicians will be needed
    - Pediatric cardiologists in the United States, 1500 total
  - Downstream effect of false + results such as $$$, time, allocation of resources
  - Can't exclude entirely no matter what testing is offered
  - Societal and cultural considerations

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Current Guidelines

- **"Mandatory and universal mass screening with 12-lead ECGs in large general populations of young healthy people 12 to 25 years of age (including on a national basis in the United States) to identify genetic/congenital and other cardiovascular abnormalities is not recommended for athletes and non-athletes alike."**

Circulation 2015; 132: e267-272.

63

Current Guidelines

- **"Screening with 12-lead ECGs (or echocardiograms) in association with comprehensive history-taking and physical examination to identify or raise suspicion of genetic/congenital and other cardiovascular abnormalities may be considered in relatively small cohorts of young healthy people 12-25 years of age, not necessarily limited to competitive athletes (eg, in high schools, colleges/universities or local communities). Close physician involvement and sufficient quality control is mandatory. If undertaken, such initiatives should recognize the known and anticipated limitations of the 12-lead ECG as a population screening test, including the expected frequency of false-positive and false-negative results, as well as the cost required to support these initiatives over time."**

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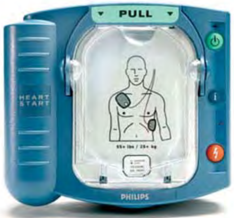
Remember AEDs

- EMS teams take an average 6-12 minutes to get to the scene
  - 90-95% people die in this timeframe
  - 7-10% decrease in survival for every minute down
- If AED applied in first 3-5 minutes, survival ~74%
- **Early recognition, early access to 911, early CPR, early defibrillation, early advanced care…**



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Thank you! Any questions?

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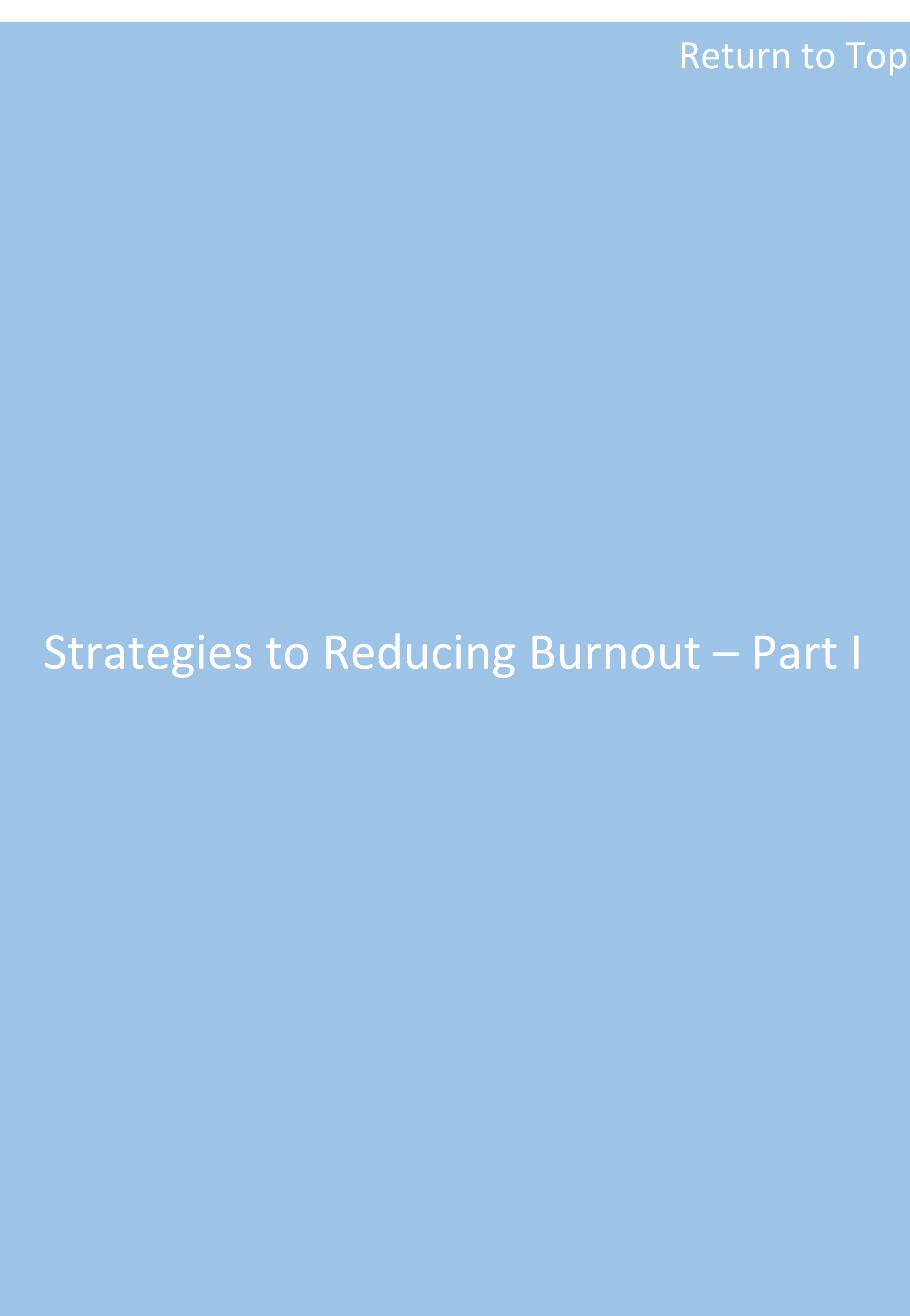

Return to Top
Strategies to Reducing Burnout – Part I

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Strategies to Reducing Burnout – Part I

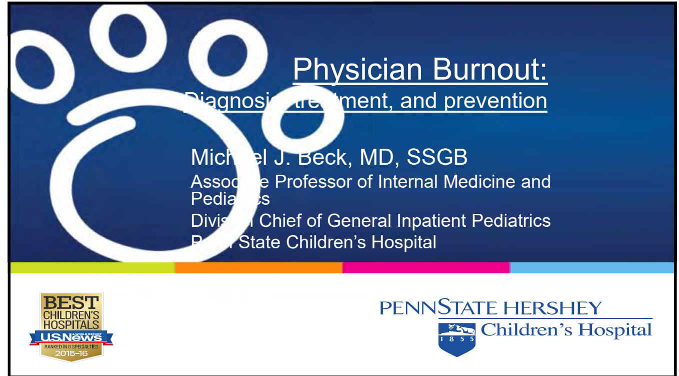
Michael Beck, MD, FAAFP

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.



Disclosure

- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_18_Burnout1

Goals and Objectives

- Define and discuss burnout and engagement
- Review assessment method(s).
- Review organizational strategies to reduce burnout and enhance engagement
- Introduce an organizational toolbox

What is burnout?

- "The state of emotional and physical exhaustion that leads to depersonalization/ cynicism and reduced effectiveness (achievement)"[1]
- Affects personal interactions, work performance and customer/client relationships, productivity [2].
- Contagion effects

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Engagement

- More easily thought of as opposite of burnout

Burnout	Engagement
Exhaustion	Vigor
Depersonalization/Cynicism	Dedication
Lack of Effectiveness or detachment	Absorption

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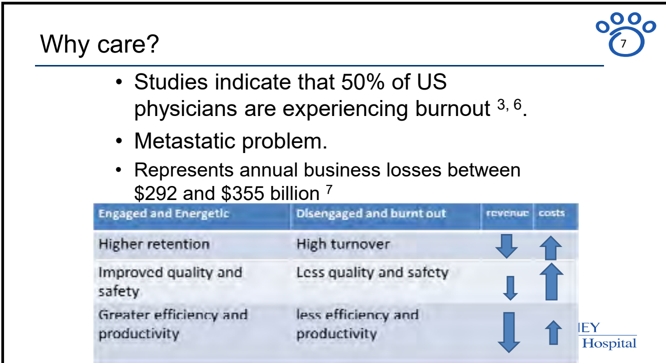
Healthcare Challenges[3]

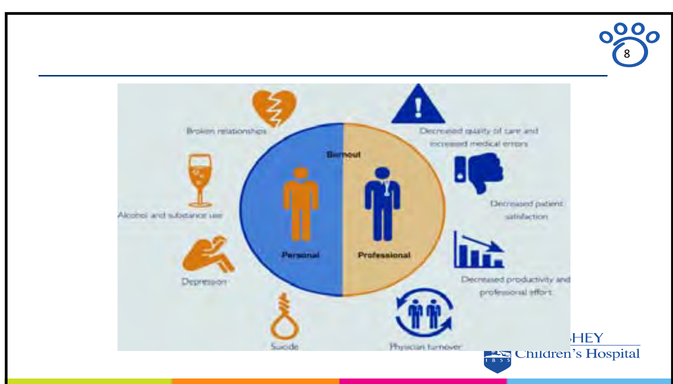
REIMBURSEMENTS

- Increasing price competition.
- Narrowing of insurance networks.
- Greater proportion of patients with non-commercial insurance [4, 5]
- Smaller revenue stream

CHALLENGES/RESPONSES

- "meaningful use" of EHR represents large capital expenditure.
- Increase productivity.
- Improve efficiency
- Improve operating margins
- Improve case margins
- Reduce expenses


Why care?
7
• Studies indicate that 50% of US physicians are experiencing burnout 3, 6.
• Metastatic problem.
• Represents annual business losses between $292 and $355 billion 7
Engaged and Energetic
Disengaged and burnt out
revenue
costs
Higher retention
High turnover
Improved quality and safety
Less quality and safety
Greater efficiency and productivity
less efficiency and productivity
Hospital


8
Broken relationships
Burnout
Alcohol and substance use
Personal
Professional
Depression
Suicide
Physician turnover
Decreased productivity and professional effort
Decreased patient satisfaction
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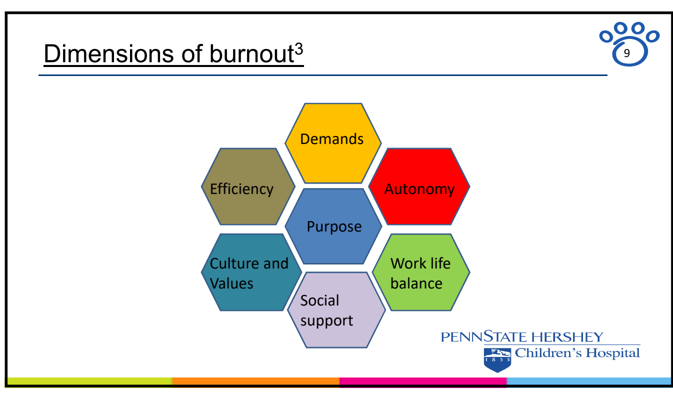
Dimensions of burnout3
9
Demands
Efficiency
Autonomy
Purpose
Culture and Values
Work life balance
Social support
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Dimension	Individual factor	Work unit factor	Organizational factor
Workload/job demands	Specialty, location, response to "incentives"	Productivity expectations, structure, efficiency, support	Productivity targets, salary v productivity Payer mix
Efficiency and resources	Experience, ability to prioritize, personal efficiency and org skills, "No", delegates?	Support staff, scribes, huddles	Integration of care, patient portal, EHR, EMR, How regulations are interpreted
Meaning in work	Self-awareness, focus on interests, doctor-patient relationship	Match talents with interests Opportunities for education, research, leadership	Organizational culture, opportunities for development and advancement
Culture and values	Personal=professional moral compass, commitment	Behavior of work leader, norms and expectations, fairness	Mission, behavior of senior leaders, communication, Fairness

Dimension	Individual factor	Work unit factor	Organizational factor
Control and flexibility	Personality, assertiveness	Degree of flexibility -work schedule -start/end times -vacation -call	Scheduling system Policies Affiliations that restrict referrals Rigid practice guidelines
Social Support and community at work	Personality Length of service Relationship building skills	Collegiality of group Co-localization of group Social gatherings Team structure	Collegiality of organization Physician lounge Strategies to build community Social gatherings
Work life integration	Priorities and values Personal Characteristics: -spouse/partner -children/dependents -heath issues	Call schedule Structure night/weekends Cross coverage Expectations/role models	Vacation policies Sick/medical leave -part-time options -flex scheduling Role models

FAQs

- **What tool(s)?**
- Why measure than one metric?
- Identifiable vs de-identifed?
- When and how often ?
- Reporting mechanism?

Choosing an assessment tool[3]

Dimension	Instrument	Benchmarks with physicians	Comparisons with general population
Achievement/fulfillment -Meaning -Satisfaction	Physician job satisfaction scale Empowerment at work Scale	yes	no
Burnout	Maslach BI, Oldenburg BI Copenhagen BI	Yes - yes	Yes - yes
Engagement	Utrect Work Engagement Scale	-	-
Fatigue	Brief fatigue Scale Epworth Sleepiness Scale	- -	- -
Stress	Perceived Stress Scale	-	yes
QOL: physical, social, emotional, mental, $	Short Form Health Survey Linear Analogue self-assessment	-	-
Composite Well being	Well-being index Mini-Z	Yes	Yes

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FAQs

- What tool(s)?
- **Why measure than one metric?**
- Identifiable vs de-identifed?
- When and how often ?
- Reporting mechanism?

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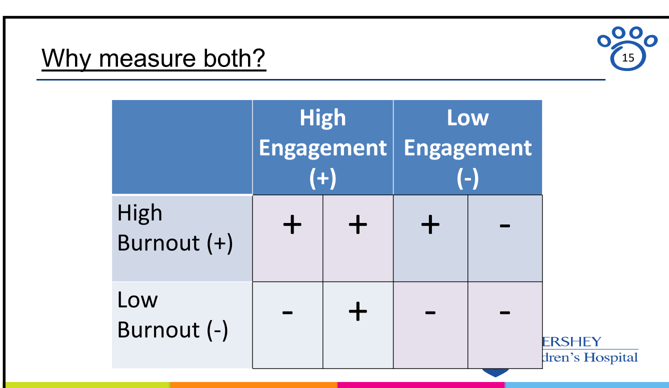
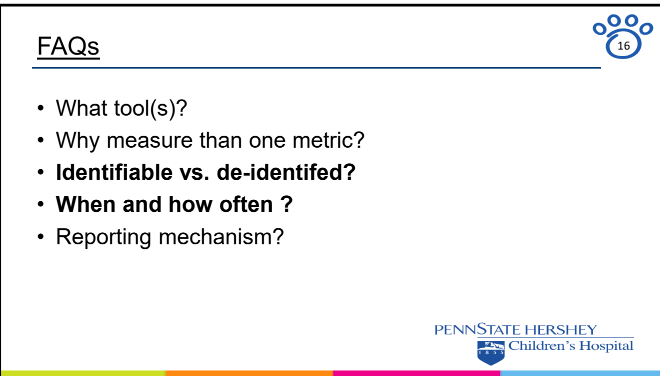
Why measure both?



	High Engagement (+)		Low Engagement (-)	
High Burnout (+)	+	+	+	-
Low Burnout (-)	-	+	-	-

15


FAQs
16
• What tool(s)?
• Why measure than one metric?
• Identifiable vs. de-identifed?
• When and how often ?
• Reporting mechanism?
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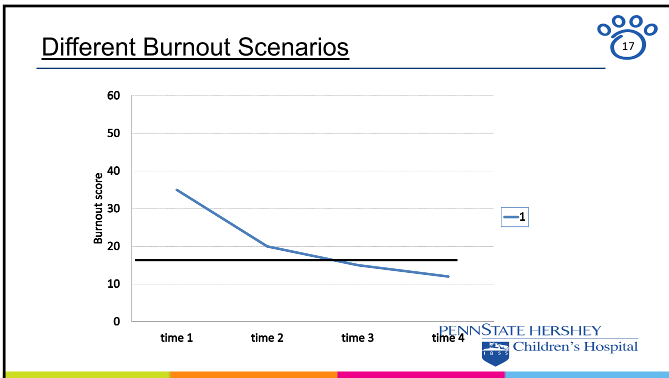
Different Burnout Scenarios
17
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time 4
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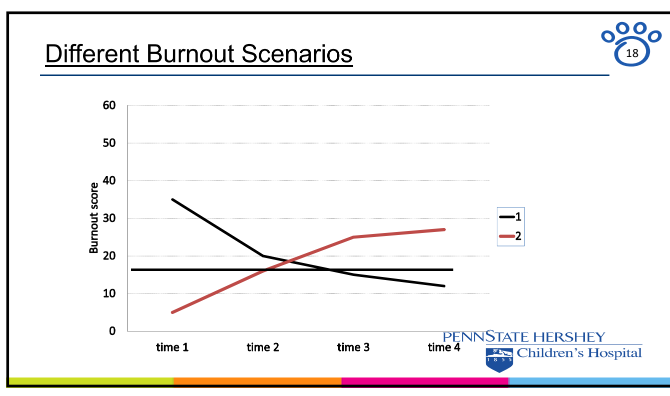
Different Burnout Scenarios
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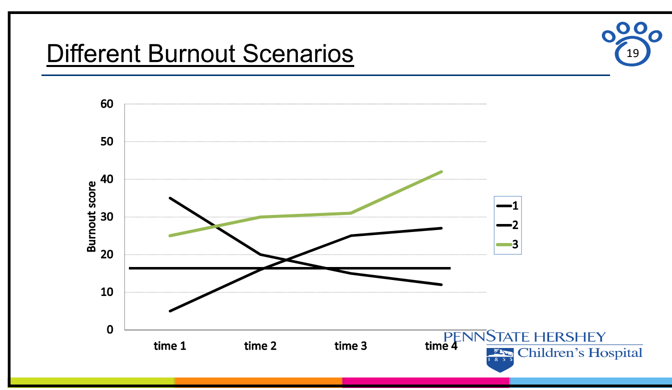
Different Burnout Scenarios
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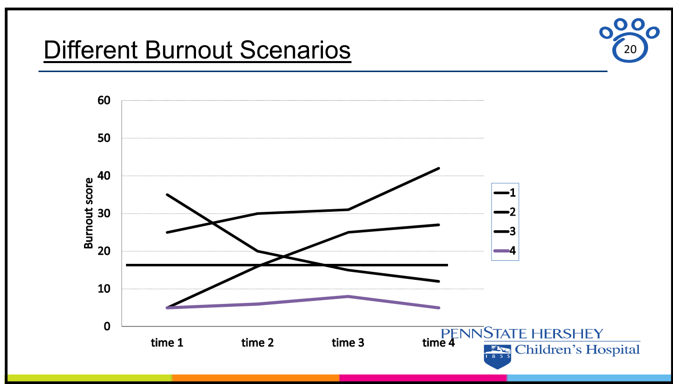
Different Burnout Scenarios
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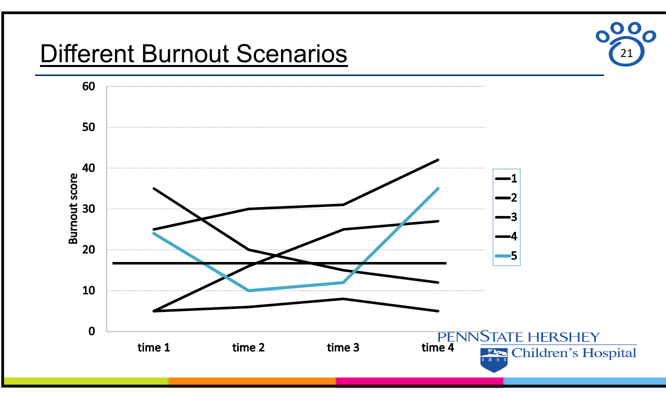
Different Burnout Scenarios
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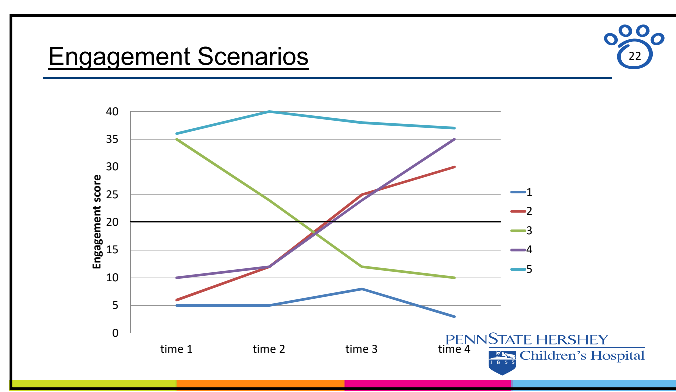

Engagement Scenarios
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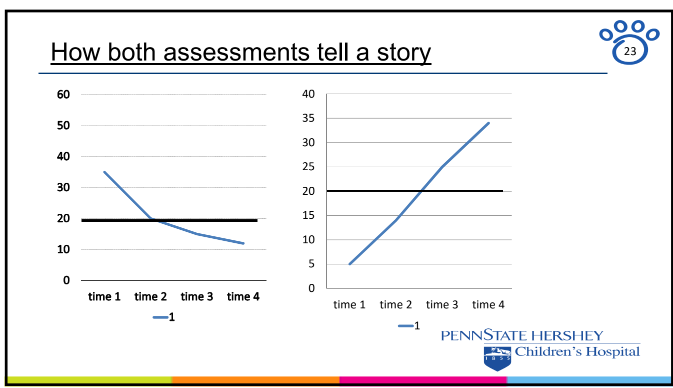

How both assessments tell a story
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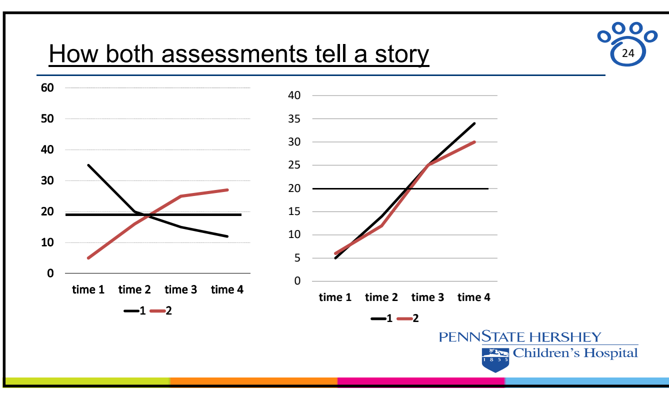

How both assessments tell a story
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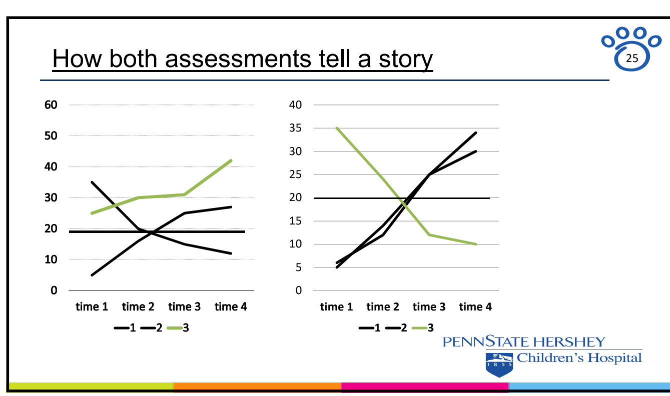

How both assessments tell a story
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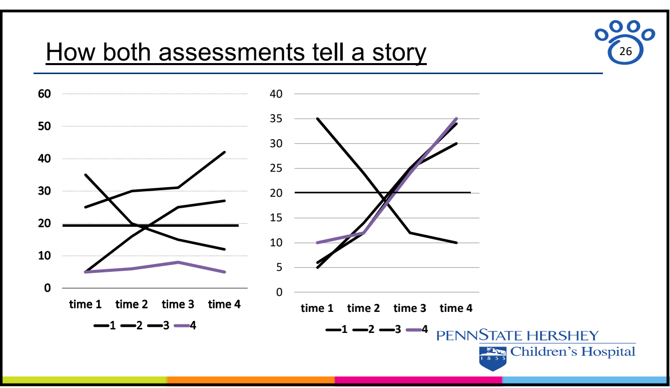

How both assessments tell a story
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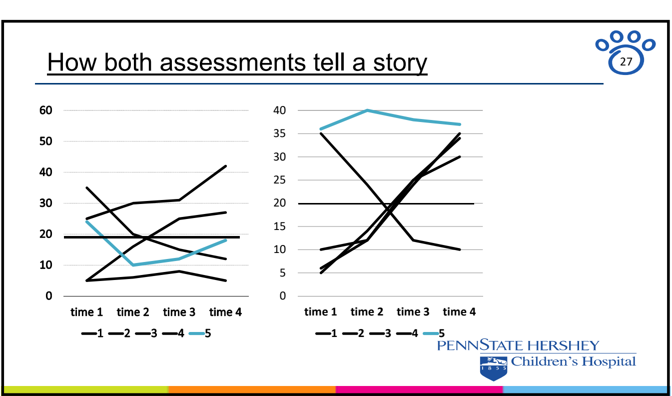

How both assessments tell a story
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time 1 time 2 time 3 time 4
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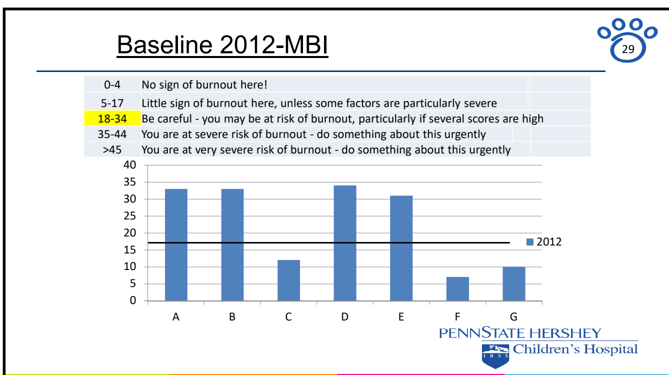
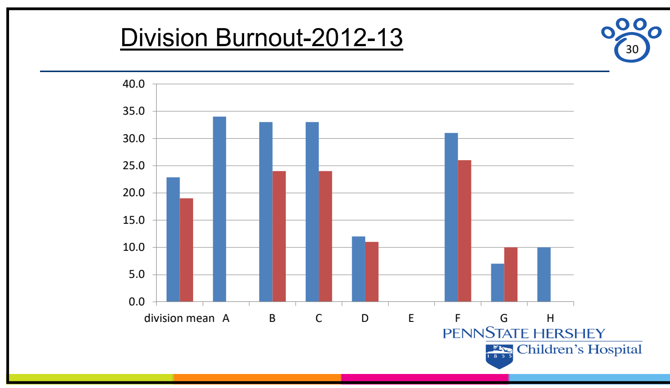
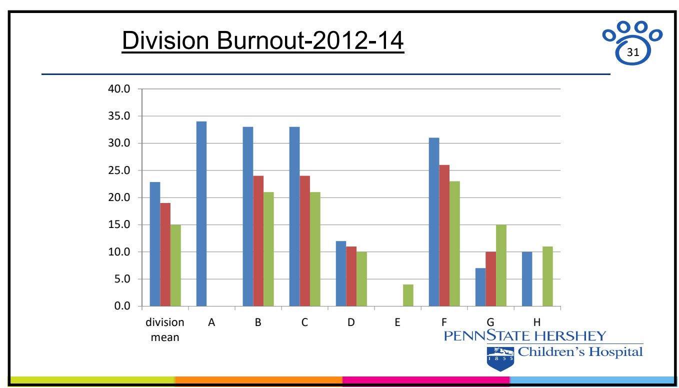
Penn State Children's Hospital Experience: Division of Hospital Medicine

- Journey started November 2012.
- Started with use of MBI.
- Challenges:
  - Move to new CH facility in February 2013, partnered with LGH, and adopted night model.
  - High volume: cold and flu season, Halo effect.






Division Burnout-2012-14
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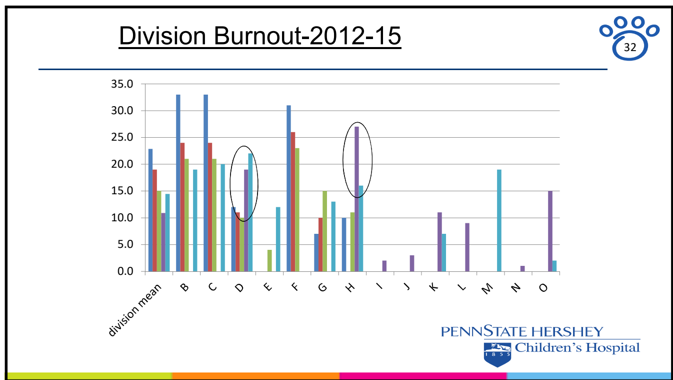
Division Burnout-2012-15
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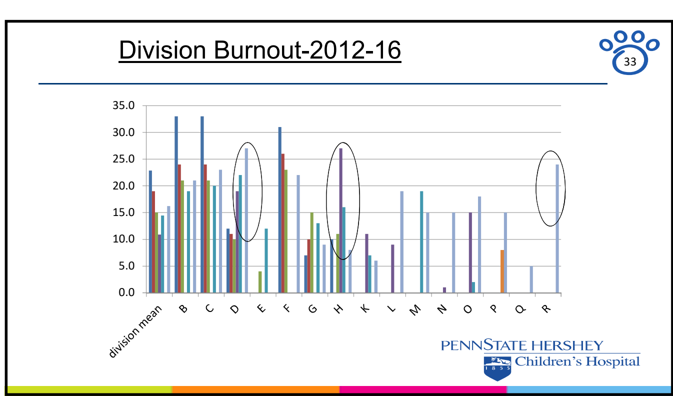
Division Burnout-2012-16
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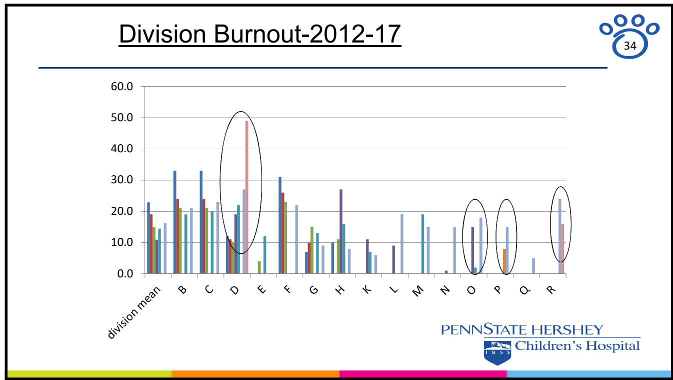
Division Burnout-2012-17



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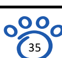
2015-16 Measured Engagement and Work-life balance



- 12 questions from SHM survey were posed to our group, 95-100% are fully or mostly engaged.
- Work-life balance=85%
- National average 2011=45%
  2014=40%

Changes in Burnout and Satisfaction With Work-Life Balance in Physicians and the General US Working Population Between 2011 and 2014. Shanafelt T, MD, Hasan O, MBBS, MPH; Lotte N. Dyrbye, MD, MHPE, et al. Mayo Clin Proc. n December 2015;90(12):1600-1613.

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Nine Organizational Strategies to promote Well-being[3]

1a.Acknowledge the problem(s)
- Leadership must listen , partner with team, build trust.

1b.Assess
- What gets measured gets managed.
- Decide what dimension(s) to start measuring.
- Understand
  - The tool(s) before you implement.
  - *Your sphere of influence*
- Interval
- Reporting mechanism(up, down chain).

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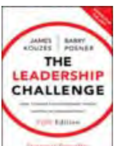
Nine Organizational Strategies to promote Well-being[3]

2. Harness leadership

Recognize your role in being problem and solution.

- Leaders impact burnout and satisfaction [7]
- Selection of leaders.
- If you are a leader:



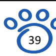
Listen, engage, take leadership courses, learn about your team, conduct annual self-assessments

Nine Organizational Strategies to promote Well-being[3]

3. Develop and Implement Targeted Interventions *know your sphere of influence*

Understand :

- The information obtained from each tool.
- Which of 7 dimensions affected?
- What level you measured?
  - This will determine the scale of the countermeasure you can implement and how it gets reported.



Nine Organizational Strategies to promote Well-being[3]

4. Cultivate Community at work

Know your sphere of influence

- Institute programs that improve peer-peer support and reduce eroding collegiality.
  - Physician lounge or dining room
  - Carve out time to get together during or after work.

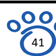
Nine Organizational Strategies to promote Well-being[3]

5. Rewards and Incentives

Know your sphere of influence

- Money?
  - productivity based bonuses?
  - Can you create score cards that incentivize the behavior and pursuit of motivators that are within the organizational mission?

Nine Organizational Strategies to promote Well-being[3]



6. Align Values and Strengthen Culture

Know your sphere of influence

- Review your Mission Statement and values
- Assess your and your groups values
- Review team values and focus on core and respect the divergent.

Divisional Values

42

Family, Respect, Trust, Competent, Honesty

(>55%)

Compassion, Integrity, **Commitment**, **Learning, Teamwork**, Humor, Perseverance, Empathy

(30-54%)

Loyalty, Duty, Credibility, Innovation, Money, Self-direction, passion

(<30%)

Family, Respect, Integrity

Compassion, Competent, **Commitment, Learning, Trust, Teamwork, Honesty**

Humor

PENNSTATE HERSHEY Children's Hospital

Nine Organizational Strategies to promote Well-being[3]

7. Promote Flexibility and Work-life integration.

- Assessment: Engagement survey
  - *Know your sphere of influence*
  - Start time/end time, part-time, weighting nights vs days vs weekends?
  - Part-time? Vacation? Child-care?

"*My work schedule leaves me enough time for my* personal/family *life."*

Nine Organizational Strategies to promote Well-being[3]

8. Provide Resources to Promote Resilience and Self-Care.

- Department or organization will need to invest in local experts in positive psychology, mindfulness, narrative medicine
- Focus on resources for coaching: exercise, sleep, diet, personal finance, preventive medical care, hobbies, relationships.

Nine Organizational Strategies to promote Well-being[3]

9. Facilitate and Fund Organizational Science.

- The Center must lead this charge
  - Invest, research, publish
  - Disseminate new knowledge, benchmarks
- Mayo
- Stanford

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Summary

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- *Do the difficult things while they are easy and do the great things while they are small. A journey of a thousand miles must begin with a single step.*
  – Lao Tse

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The PAFP would like to survey members regarding the Systemic Cause of "burnout." We have listed 11 causes with some space at the end for other causes we have not listed. We would like you to review the list and rate the causes 1 through 6 in descending order with 1 being the category that causes you the most stress/frustration.

You may or may not put down your name and/or PAFP ID#. If you put your name and/or ID # the PAFP may be able to follow-up with you for further feedback and advise.

PAFP would like to use the two sessions on burnout at this conference to lay the ground work for new strategies and additional sessions moving forward.

1. Coding and billing documentation and requirements.
2. EHR design.
3. Unreliable EHR documents.
4. Agenda packed visits dealing with multiple issues in limited time.
5. "Quality" and other performance metrics.
6. Pre-authorizations (pharmacy, lab, imaging).
7. Lack of standardization of forms (FMLA, insurance etc.) with added burden of employer generated FMLA for minor illnesses.
8. Data Management (seemingly more time consuming with the EHR) and the barrage of data not ordered by the family physician for which he/she becomes responsible.
9. Lack of Family Physician input or influence in organizational decisions/undervalued/feeling like a cog in the wheel.
10. Underpaid.
11. Clinical resources reduced while administrative resources expand.
12. Other (please write-in)

    ____

    ____

    ____

    ____

13. Other (please write-in)

    ____

    ____

    ____

    ____

Name: ______________________________ PAFP/AAFP ID#: ______________

(Please Print)

Evaluation of Leadership

Please evaluate your leadership on the following: Place an X in box

"________________"has improved the division's clinic operation

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________"has improved division academics

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________"has professionalism expectations for our division

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________"is committed to helping the division meet clinical goals

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________"is committed to guiding the division to meet department goals

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________" helps me meet professional goals

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

"________________" values work-life balance

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

See Other Side

“_________________”is approachable

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

“_________________”is an advocate for the needs of the division

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

“_________________”seeks input from the division members before he makes a decision

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

“_________________”exhibits the professionalism he expects from me

strongly agree	Agree	Neutral	Disagree	Strongly Disagree

See Other Side

Electronic annex 2.
Maslach Burnout Inventory (MBI)

		Never	A few times a year or less	Monthly or less	A few times a month	Every week	A few times a week	Every day
		0	1	2	3	4	5	6
1	I feel emotionally drained from my work.							
2	I feel drained at the end of the workday.							
3	I feel fatigued when I get up in the morning and have to face another day on the job.							
4	I can easily understand how my patients feel about things.							
5	I feel I treat some of my patients as if they were objects.							
6	Working with patients every day is a strain for me.							
7	I deal very effectively with the problems of my patients.							
8	I feel “burned out” from my work.							
9	I feel I am positively influencing other people’s lives through my work.							
10	I have become more callous toward people since I took this job.							
11	I worry that this job is hardening me emotionally.							
12	I feel very energetic.							
13	I feel frustrated by my job.							
14	I feel I am working too hard on my job.							
15	I do not really care what happens to some of my patients.							
16	Working with patients directly puts too much stress on me.							
17	I can easily create a relaxed atmosphere with my patients.							
18	I feel exhilarated after working closing with my patients.							
19	I have accomplished many worthwhile things in this job.							
20	I feel I am at the end of my rope in my job.							
21	I feel I can deal with emotional problems adequately in my job.							
22	I feel patients blame me for some of their problems.							

Emotional exhaustion subscale. It is made up of 9 questions. It assesses feeling emotionally exhausted from work demands. Maximum score: 54. It covers items 1, 2, 3, 6, 8, 13, 14, 16, and 20. This score is directly proportional to burnout severity. With a maximum score of 54, the higher the score in the subscale, the higher the emotional exhaustion and burnout experienced by the subject.

Depersonalization subscale. It is made up of 5 items: 5, 10, 11, 15, and 22. It assesses the degree of distancing and indifference admitted by the subject. With a maximum score of 30, the higher the score in this subscale the higher the depersonalization and burnout experienced by the subject.

Personal accomplishment subscale. It is made up of 8 items. It assesses feelings of self-efficacy and personal accomplishment at work. Personal accomplishment covers items 4, 7, 9, 12, 17, 18, 19, and 21. With a maximum score of 48, the higher the score in this subscale, the higher the personal accomplishment, because in this case the score is reversely proportional to the level of burnout. That is to say, a lower personal accomplishment score indicates that the subject is more affected by burnout.

Copenhagen Burnout Inventory	Always=100,	Often=75	Sometimes=50	Seldom=25	Never=0	
Please place a "X" in the column that you believe most represents your feeling Name or initials:						
Personal Burnout	Always	Often	Sometimes	Seldom	Never	Average
How often do you feel tired?						
How often are you physically exhausted?						
How often are you emotionally exhausted?						
How often do you think: "I can't take this anymore"?						
How often do you feel worn out?						
How often do you feel weak and susceptible to illness?						
						0.0
Work-related Burnout	Always	Often	Sometimes	Seldom	Never	Average
Is work emotionally exhausting?						
Do you feel burnt out because of work?						
Does your work frustrate you?						
Do you feel worn out at the end of the working day?						
Are you exhausted in the morning at the thought of another day at work?						
Do you feel that every working hour is tiring for you?						
Do you have enough energy for family and friends during leisure time?**(always=0, often=25, sometimes=50, Seldom=75, never=100)**						
						0.0
Patient-related Burnout	Always	Often	Sometimes	Seldom	Never	Average
Do you find it hard to work with patients?						
Do you find it frustrating to work with patients?						
Does it drain your energy to work with patients?						
Do you feel that you give more than you get back when you work with patients?						
Are you tired of working with patients?						
Do you sometimes wonder how long you will be able to continue working with patients?						
						0.0

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“Quick Hits” Panel Part II

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Quick Hit Panel

Amanda Cattoi, MD, Mark Stephens, MD, MS, FAAFP &
Dave Richard, MD

Disclosures:

Speakers have no disclosures and there are no conflicts of interest.

The speakers have attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speakers indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

BOARD REVIEW PEARLS: HORMONAL CONTRACEPTION

Amanda Cattoi, MD
Associate Director, Altoona Family Physicians Residency Program
UPMC Altoona

1

Disclosure

- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.

2

Goals and Objectives

- Review available hormonal contraception options
- Review limitations on contraception choice based on underlying medical issues
- Review choices for postpartum contraception
- Review options and indications for emergency contraception

3

Estrogen containing contraception

- OCPs
  - Differing progesterone components
    - Different androgenic potency
      - Levonorgestrel, norethidrone, norgestrel are more androgenic
      - Norgestimate, desogestrel, drospirenone less so
  - Differing dosages of estrogen
    - Ethinyl estradiol
    - Higher estrogens- help with PCOS, acne, amenorrhea or breakthrough bleeding
    - Low dose- helpful with perimenopause symptoms
  - Monophasic pill as first choice
  - No change with 25 year mortality from all causes
- Patch – 3x higher VTE risk than pills
- Vaginal Ring
- Benefits: relieves dysmenorrhea, improve bone mass, decrease ovarian and endometrial CAs, decrease endometriosis
- Issues: **VTE, MI, CVA**, HTN, migraines, heavy bleeding (too much estrogen), breakthrough bleeding or amenorrhea (too little estrogen), drug interactions

Progesterone only contraception

- Progesterone only pills
- Injection – every 12 weeks
  - No longer limited to 2 years from ACOG recs
  - Supplement calcium and Vitamin D
- Long acting reversible contraception (LARCs)
  - Progestin IUD– 5 years
  - Progestin implant- 3 years
- Less effect on HTN, no risk increase of VTE, CVA, MI
- Better for age > 35 + risk factors; lupus, migraines, VTE history
- Issues: Scheduling with pills, bone loss with injection

Underlying Medical Conditions

Condition	Methods to avoid
DM with complications	Combination OCPs, vaginal ring, patch
Epilepsy	Combination OCPs, progesterone implant, vaginal ring, patch, Progesterone only pills If using combination OCPs, use > 30 mcg estrogen
Bariatric surgery- malabsorption procedures	Combination OCPs, progesterone only pills
History of VTE or PE	Combination OCPs, vaginal ring, patch
Migraines headaches with aura	Combination OCPs, vaginal ring, patch
Poorly controlled hypertension	Combination OCPs, vaginal ring, patch
Rheumatoid arthritis	Depor medroxyprogesterone
Smoking AND over 35 yo	Combination OCPs, vaginal ring, patch
History of stroke	Combination OCPs, vaginal ring, patch
SLE with antiphospholipid antibodies	Combination OCPs, vaginal ring, patch
Obesity	patch

Postpartum contraception

- Avoid estrogen in breastfeeding mothers
  - Depo medroxyprogesterone or progesterone only pills are better options
- Consider risk factors for VTE with estrogens
  - Decreased risk if wait until 6 weeks postpartum
- IUDs can be placed immediately (10 minutes post delivery)
  - Rates of expulsion are increased in immediate postpartum period
  - No increased rate in infection with immediate postpartum placement
  - Improved retention rates after 4-6 weeks postpartum

7

Emergency Contraception

- Goal to inhibit ovulation
- If used after implantation, does not interrupt an established pregnancy
- Indicated if inadequately protected or unprotected intercourse and pregnancy is not desired
- Can be offered up to 120 hours after intercourse
- Can be used despite risk factors that would limit daily hormonal contraception

- Combination OCP
  - Yuzpe regimen- 2 doses 12 hours apart (100 mcg estradiol, 0.5 mg levonorgestrol)
  - Most effective within 72 hours
  - NNT to prevent 1 pregnancy = 50
- Ulipristal – single dose of 30 mg – prescription only
- Levonorgestrel- single dose of 1.5 mg or two doses of 0.75 mg
- Copper IUD – most effective, most expensive
- Levonorgestrel less effective > 75 kg, rates of pregnancy > 80 kg similar to rates without EC use
- After use of ulipristal, if intends to restart hormonal contraception- wait 5 days
  - If a method that would require another appointment (IUD, progesterone injection), same day is an option, but makes the ulipristal less effective

8

Resources

- ACOG Committee on Practice Bulletins- Gynecology. ACOG Practice Bulletin No 73: Use of hormonal contraception in women with coexisting medical conditions. Obstet Gynecol. 2006; 107 (6): 1453-1472.
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Men's Health Update

Mark Stephens, MD MS FAAFP
Professor of Family and Community Medicine
Penn State, University Park

10

Disclosure

- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.

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What Kills Men?

All Males, All Ages	Percent*
1) Heart disease	24.5
2) Cancer	23.4
3) Unintentional injuries	6.4
4) Chronic lower respiratory diseases	5.2
5) Stroke	4.2
6) Diabetes	3.1
7) Suicide	2.5
8) Alzheimer's disease	2.1
9) Influenza and pneumonia	2.0
10) Chronic liver disease	1.9

12

Leading Causes of Death (LCOD) by Age Group, All Males-United States, 2014*

Ages 1-44 by Age Group

Rank	Age 1-4	Age 5-9	Age 10-14	Age 15-19	Age 20-24	Age 25-34	Age 35-44
1	Unintentional injuries 34.3%	Unintentional injuries 34.2%	Unintentional injuries 28.5%	Unintentional injuries 39.5%	Unintentional injuries 42.7%	Unintentional injuries 39.3%	Unintentional injuries 25.3%
2	Birth defects 10.1%	Cancer 17.8%	Suicide 15.5%	Suicide 20.6%	Suicide 18.8%	Suicide 16.0%	Heart disease 16.1%
3	Homicide 9.0%	Birth defects 6.6%	Cancer 13.9%	Homicide 17.6%	Homicide 16.8%	Homicide 10.6%	Suicide 11.5%
4	Cancer 8.4%	Homicide 4.5%	Homicide 5.9%	Cancer 5.2%	Cancer 4.2%	Heart disease 6.9%	Cancer 11.1%
5	Heart disease 3.5%	Chronic lower respiratory diseases 3.4%	Birth defects 5.4%	Heart disease 2.8%	Heart disease 3.0%	Cancer 5.5%	Homicide 4.7%
6	Influenza & pneumonia 2.6%	Heart disease 2.9%	Heart disease 3.8%	Birth defects 1.4%	Birth defects 0.8%	Chronic liver disease 1.3%	Chronic liver disease 3.7%
7	Chronic lower respiratory diseases 1.4%	Influenza & pneumonia 2.1%	Chronic lower respiratory diseases 2.5%	Influenza & pneumonia 0.6% (tie rank 7)	Diabetes 0.6%	Diabetes 1.2%	Diabetes 2.8%

Ages 45+ by Age Group

Rank	Age 45-54	Age 55-64	Age 65+	Age 65-74	Age 75-84	Age 85+	All Ages
1	Heart disease 22.9%	Cancer 30.1%	Heart disease 26.7%	Cancer 32.7%	Cancer 25.8%	Heart disease 30.4	Heart disease 24.5%
2	Cancer 20.7%	Heart disease 24.4%	Cancer 24.3%	Heart disease 24.2%	Heart disease 25.2%	Cancer 15.4%	Cancer 23.4%
3	Unintentional injuries 13.0%	Unintentional injuries 5.7%	Chronic lower respiratory diseases 6.5%	Chronic lower respiratory diseases 6.7%	Chronic lower respiratory diseases 7.3%	Stroke 5.7%	Unintentional injuries 6.4%
4	Suicide 6.0%	Chronic liver disease 4.2%	Stroke 4.9%	Diabetes 3.9%	Stroke 5.1%	Chronic lower respiratory diseases 5.5%	Chronic lower respiratory diseases 5.2%
5	Chronic liver disease 5.4%	Chronic lower respiratory diseases 4.0%	Alzheimer's disease 3.1%	Stroke 3.9%	Diabetes 3.2%	Alzheimer's disease 5.7%	Stroke 4.2%
6	Diabetes 3.6%	Diabetes 3.9%	Diabetes 3.1%	Unintentional injuries 2.8%	Alzheimer's disease 3.0%	Influenza & pneumonia 3.1%	Diabetes 3.1%
7	Stroke 2.8%	Stroke 3.2%	Unintentional injuries 2.7%	Chronic liver disease 1.9%	Unintentional injuries 2.6%	Unintentional injuries 2.8%	Suicide 2.5%

Screening-Hypertension (USPSTF A)

- 18 or older
  - Confirm outside of clinic to confirm diagnosis prior to starting treatment

Screening-Hyperlipidemia (age dependent)

- 35+--regular (USPSTF A)
- 20+ --increased risk (USPSTF B)
  - Tobacco
  - Overweight
  - Diabetes, hypertension
  - h/o ASCAD
  - Family History

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Screening-Colorectal CA (USPSTF A)

- Between 50-75
  - Colonoscopy
  - FOBT

17

Screening-Diabetes (USPSTF B)

- Age 40-74
  - Overweight/obese

18

Screening—HIV (USPSTF A)

- Screen adults 15-65

19

Screening—Overweight/Obesity (USPSTF B)

- BMI—screen all
  - Goal 18.5-25
  - 30+ - obese

20

Screening-Lung CA (USPSTF B)

- Between 55-80
  - 30 pack-year history
  - Smoke now or
  - Quit within 15 years

  - Low dose CT (quit 15 years after cessation)
  - Annual

21

Screenings—AAA (USPSTF B)

- Once between 65-75 if:
  - Smoked 100+ cigarettes in your life

22

Screening-Depression (USPSTF B)

- In the last 2 weeks
  - Felt down, sad, hopeless
  - Had little interest/pleasure in doing things

23

Screening—Hepatitis C (USPSTF B)

- If:
  - Born between 1945-1965
  - Injected drugs-–if actively injecting, regular screening
  - Received blood transfusion prior to 1992

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Prevention—Aspirin

- Adults aged 50 to 59 years with a ≥10% 10-year CVD risk (USPSTF B)
  - Low-dose for the primary prevention of cardiovascular disease (CVD) and colorectal cancer (CRC) in adults aged 50 to 59 years who have a 10% or greater 10-year CVD risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years.
- Adults aged 60 to 69 years with a ≥10% 10-year CVD risk (USPSTF C)
  - The decision to initiate low-dose aspirin use for the primary prevention of CVD and CRC in adults aged 60 to 69 years who have a 10% or greater 10-year CVD risk should be an individual one. Persons who are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years are more likely to benefit. Persons who place a higher value on the potential benefits than the potential harms may choose to initiate low-dose aspirin.

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Prevention—Vitamin D

- If at risk for falls (USPSTF B)
  - Vitamin D supplementation is effective in preventing falls in community-dwelling adults aged 65 years or older who are at increased risk for falls.
- Fracture prevention (USPSTF I)
  - Their is insufficient to assess the balance of the benefits and harms of combined vitamin D and calcium supplementation for the primary prevention of fractures in men.

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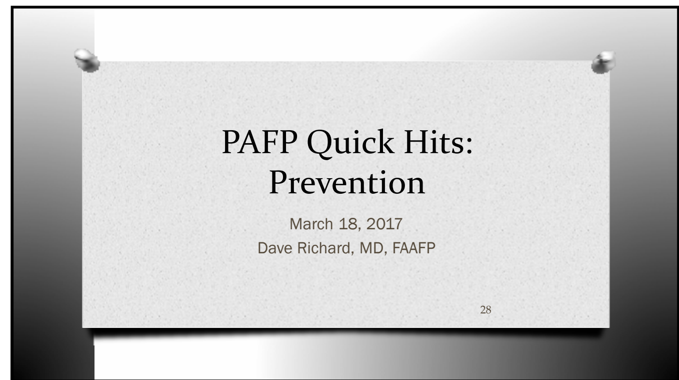
Prevention--Immunizations

- Annual influenza vaccine
- 60+: shingles
- 65+: pneumonia
- Tdap booster

27


PAFP Quick Hits: Prevention
March 18, 2017
Dave Richard, MD, FAAFP
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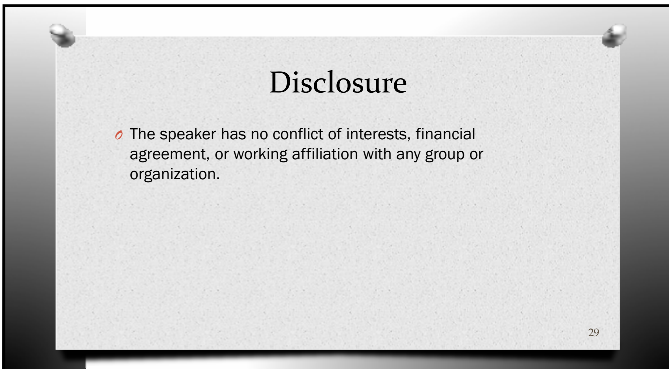
Disclosure
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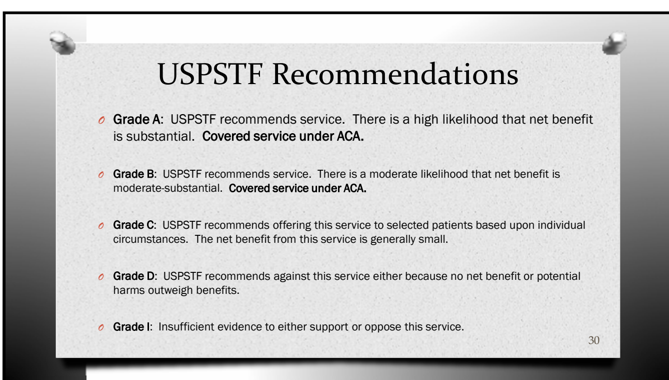
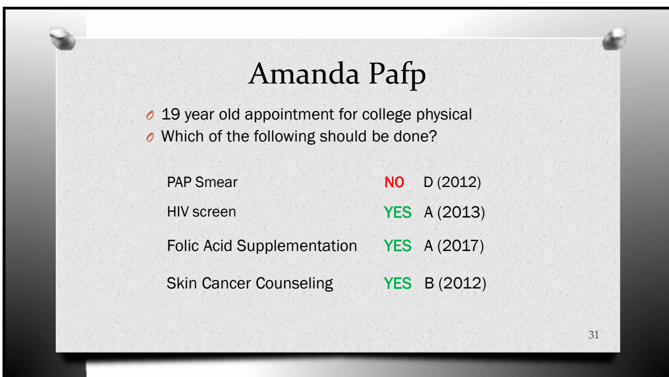
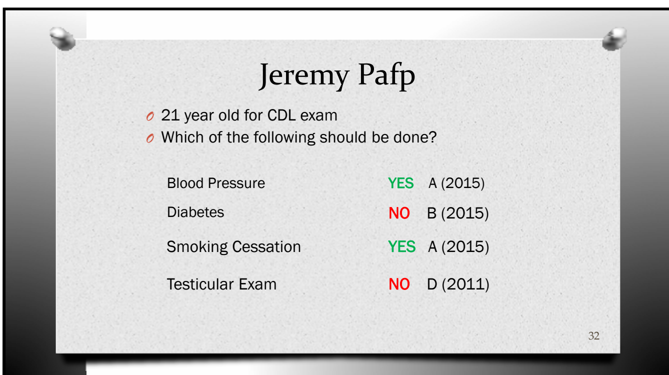
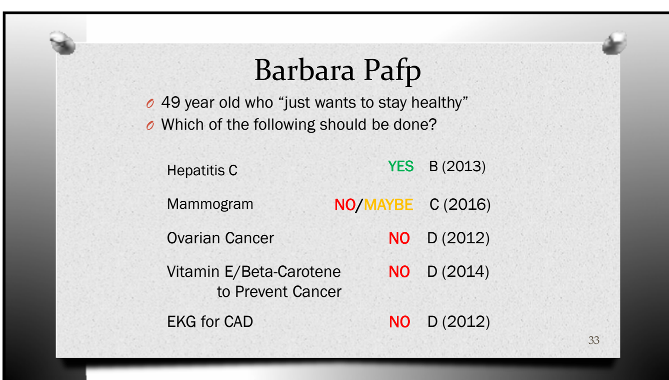
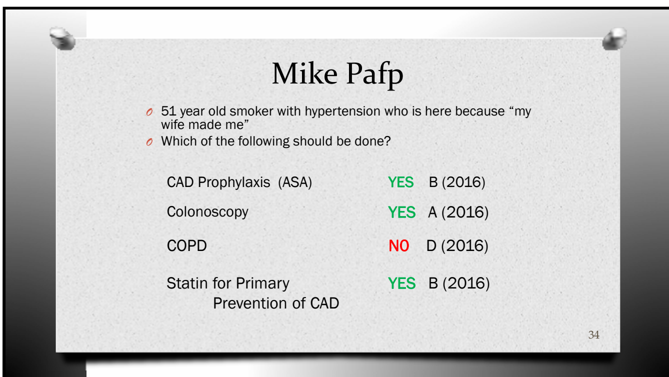
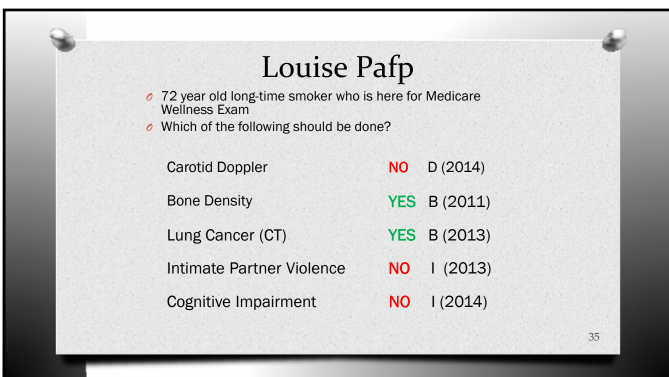

USPSTF Recommendations
Grade A: USPSTF recommends service. There is a high likelihood that net benefit is substantial. Covered service under ACA.
Grade B: USPSTF recommends service. There is a moderate likelihood that net benefit is moderate-substantial. Covered service under ACA.
Grade C: USPSTF recommends offering this service to selected patients based upon individual circumstances. The net benefit from this service is generally small.
Grade D: USPSTF recommends against this service either because no net benefit or potential harms outweigh benefits.
Grade I: Insufficient evidence to either support or oppose this service.
30

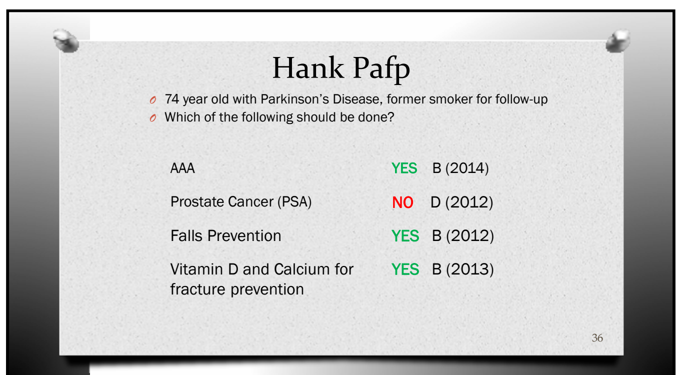

Amanda Pafp
19 year old appointment for college physical
Which of the following should be done?
PAP Smear NO D (2012)
HIV screen YES A (2013)
Folic Acid Supplementation YES A (2017)
Skin Cancer Counseling YES B (2012)
31


Jeremy Pafp
21 year old for CDL exam
Which of the following should be done?
Blood Pressure YES A (2015)
Diabetes NO B (2015)
Smoking Cessation YES A (2015)
Testicular Exam NO D (2011)
32


Barbara Pafp
49 year old who "just wants to stay healthy"
Which of the following should be done?
Hepatitis C YES B (2013)
Mammogram NO/MAYBE C (2016)
Ovarian Cancer NO D (2012)
Vitamin E/Beta-Carotene to Prevent Cancer NO D (2014)
EKG for CAD NO D (2012)
33


Mike Pafp
51 year old smoker with hypertension who is here because "my wife made me"
Which of the following should be done?
CAD Prophylaxis (ASA) YES B (2016)
Colonoscopy YES A (2016)
COPD NO D (2016)
Statin for Primary Prevention of CAD YES B (2016)
34


Louise Pafp
72 year old long-time smoker who is here for Medicare Wellness Exam
Which of the following should be done?
Carotid Doppler NO D (2014)
Bone Density YES B (2011)
Lung Cancer (CT) YES B (2013)
Intimate Partner Violence NO I (2013)
Cognitive Impairment NO I (2014)
35


Hank Pafp
74 year old with Parkinson's Disease, former smoker for follow-up
Which of the following should be done?
AAA YES B (2014)
Prostate Cancer (PSA) NO D (2012)
Falls Prevention YES B (2012)
Vitamin D and Calcium for fracture prevention YES B (2013)
36

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Case by Case…What Would You Do?

Psychiatry

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Case by Case…What Would You Do?
Psychiatry – Pediatrics & Adolescents What Works, What Doesn't, and What to Order

Valentines F. Krecko, MD

Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

Adolescent Depression in Primary Care: A Case Presentation

Valentin Krecko, MD
Child and adolescent psychiatrist
Harrisburg, PA
March 19, 2017

Disclosure

- I have no financial disclosures that would be a potential conflict of interest with this presentation.
- **Please Remember to Complete Session Evaluation Online**

https://www.surveymonkey.com/r/3_19_Cases

Rachelle, age 15

Problem List

- Depressed mood
- Self-injurious behavior
- Suicidal ideation
- Dropping grades
- Social bullying and exclusion
- Parenting issues (inadequate limit-setting; ineffective discipline e.g., arguing, failing to hold R. accountable; overindulgence)
- Excessive use of electronics, esp. social media
- Substance use
- Boyfriend problems
- Sleep hygiene
- Parental disagreement over R's MH problems

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

The Patient Health Questionnaire (PHQ-9) - Overview

The PHQ-9 is a multipurpose instrument for screening, diagnosing, monitoring and measuring the severity of depression

- The PHQ-9 incorporates DSM-IV depression diagnostic criteria with other leading major depressive symptoms into a brief self-report tool.
- The tool rates the frequency of the symptoms which factors into the scoring severity index
- Question 9 on the PHQ-9 screens for the presence and duration of suicide ideation
- A follow up, non-scored question on the PHQ-9 screens and assigns weight to the degree to which depressive problems have affected the patient's level of function

Clinical Utility

The PHQ-9 is brief and useful in clinical practice. The PHQ-9 is completed by the patient in minutes and is rapidly scored by the clinician. The PHQ-9 can also be administered repeatedly, which can reflect improvement or worsening of depression in response to treatment

Scoring

See PHQ-9 Scoring on next page

Psychometric Properties

- The diagnostic validity of the PHQ-9 was established in studies involving 8 primary care and 7 obstetrical clinics.
- PHQ scores ≥ 10 had a sensitivity of 88% and a specificity of 88% for major depression
- PHQ-9 scores of 5, 10, 15, and 20 represents mild, moderate, moderately severe and severe depression.[1]

Patient Self-Evaluation

Major Depressive Disorder (MDD)

5 of the following symptoms present for at least 2 weeks

- Depressed? SIG: E CAPS
- Depressed or irritable mood most of the day, nearly every day
- Sleep: insomnia or hypersomnia nearly every day
- Interests: markedly diminished interest in all, or almost all activities, most of the day, nearly every day
- Guilt: feelings of worthlessness or excessive guilt
- Energy: fatigue or loss of energy nearly every day
- Concentration: diminished ability to think or concentrate

MDD, diagnostic criteria, con't

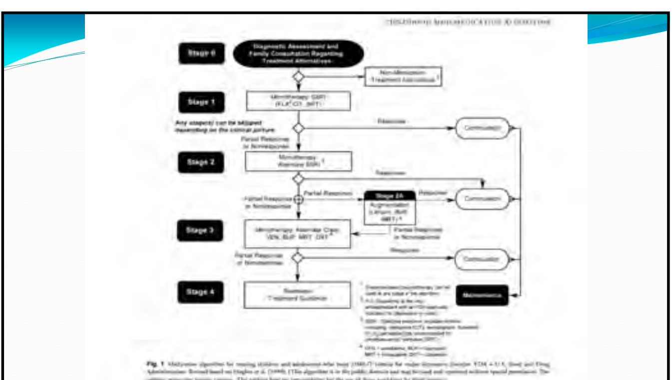
- Appetite: significant weight loss or weight gain, or change in appetite
- Psychomotor: psychomotor agitation or retardation, nearly every day, observable by others
- Suicide: recurrent thoughts of death, suicidal ideation with or without plan, or suicide attempt.

Assessment of Safety

- The Safety Contract: I, _________, promise to keep myself safe. If I feel that I cannot keep myself self, I promise to tell a responsible adult right away.
  ____________(pt. sign and date)
  ____________ (witness sign and date)

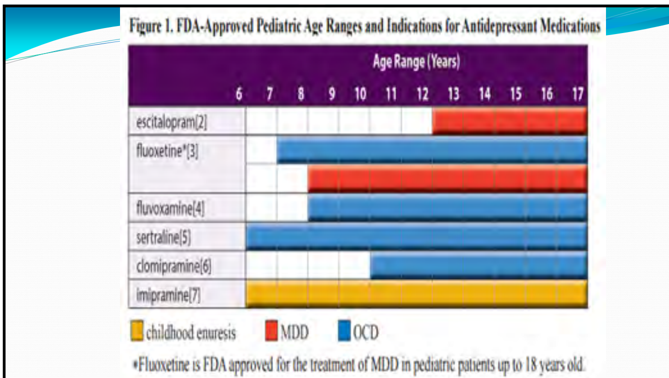
Treatment

- Mild depression– psychotherapy
  - Cognitive behavioral therapy (CBT)
  - Interpersonal psychotherapy
  - Dialectical behavioral therapy (DBT)
    - Effective for depression associated with borderline personality disorder
- Moderate to severe depression: psychotherapy + antidepressant medication
- Not all depression is MDD
- Depression with substance abuse—the chicken and the egg



Selective Serotonin Reuptake Inhibitors (SSRIs)

- FDA approved for depression in children (8-17)
  - fluoxetine (Prozac)
- FDA approved for depression for ages 12-17
  - escitalopram (Lexapro)
- Other first-line treatments (with proven efficacy):
  - sertraline (Zoloft)
  - citalopram (Celexa)



fluoxetine (Prozac), escitalopram (Lexapro), and citalopram (Celexa) have same dosing

- Starting dose: 5 mg qd for 1 week;
  - (for fluoxetine, prescribe the 10 mg tablet, not capsule)
- Increase to 10 mg for 2 weeks; if still room for improvement =>
- Increase to 20 mg
- If positive response, continue for 6 months - 1 year
- If inadequate response after 4 weeks at 20 mg., switch to an alternative SSRI

Management of SSRI side effects

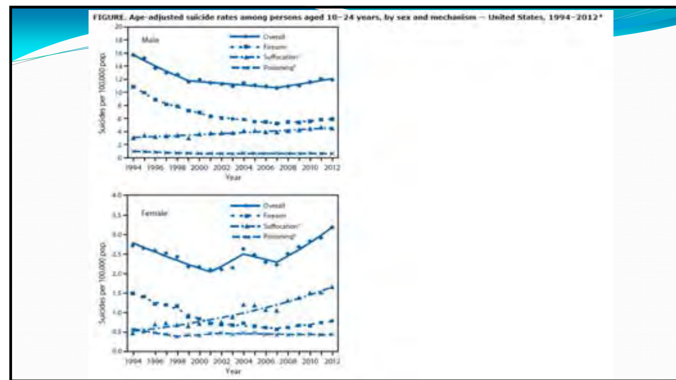
- #1: tiredness– take it at night or in the evening
- #2: insomnia– take it in the morning
- #3: GI upset– take it with food or at hs
- #4: activation (restlessness, hyperactivity)– d/c Rx
- #5: weird stuff– d/c Rx for 1-2 weeks, see if it resolves, if yes, rechallenge.

The Black Box

- Issued by FDA in 2004 after study revealed that 4% of children and adolescents developed suicidal ideation or suicidal behavior during initial treatment (first 1-2 months) with an SSRI (compared to 2% on placebo)
- No completed suicides occurred during the study
- Has been associated with a subsequent decrease in the diagnosis and pharmacologic treatment of depression
- May be associated with an increase in suicide rate

The Black Box (con't)

- Inform parents of warning and give them a medication handout (available for download from National Library of Medicine's Medline Plus)
- I ask parents to touch base (e.g. via telephone) weekly; I try to see patient back after two weeks
- I tell patients that 4 out of 100 people taking this medication feel worse; I ask them to calculate what % don't feel worse. Then I ask them to promise me that they'll tell their parent if they do feel worse.



Consultation and Referral

- Curbside consultation: 717-364-4400 (cell)
- Referral: 717-540-5353 (Commonwealth Affiliates)

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Case by Case…What Would You Do?

Cardiomyopathy

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Case by Case…What Would You Do?
Cardiomyopathy

Roberto P. Hodara Friedman, MD

Disclosures:

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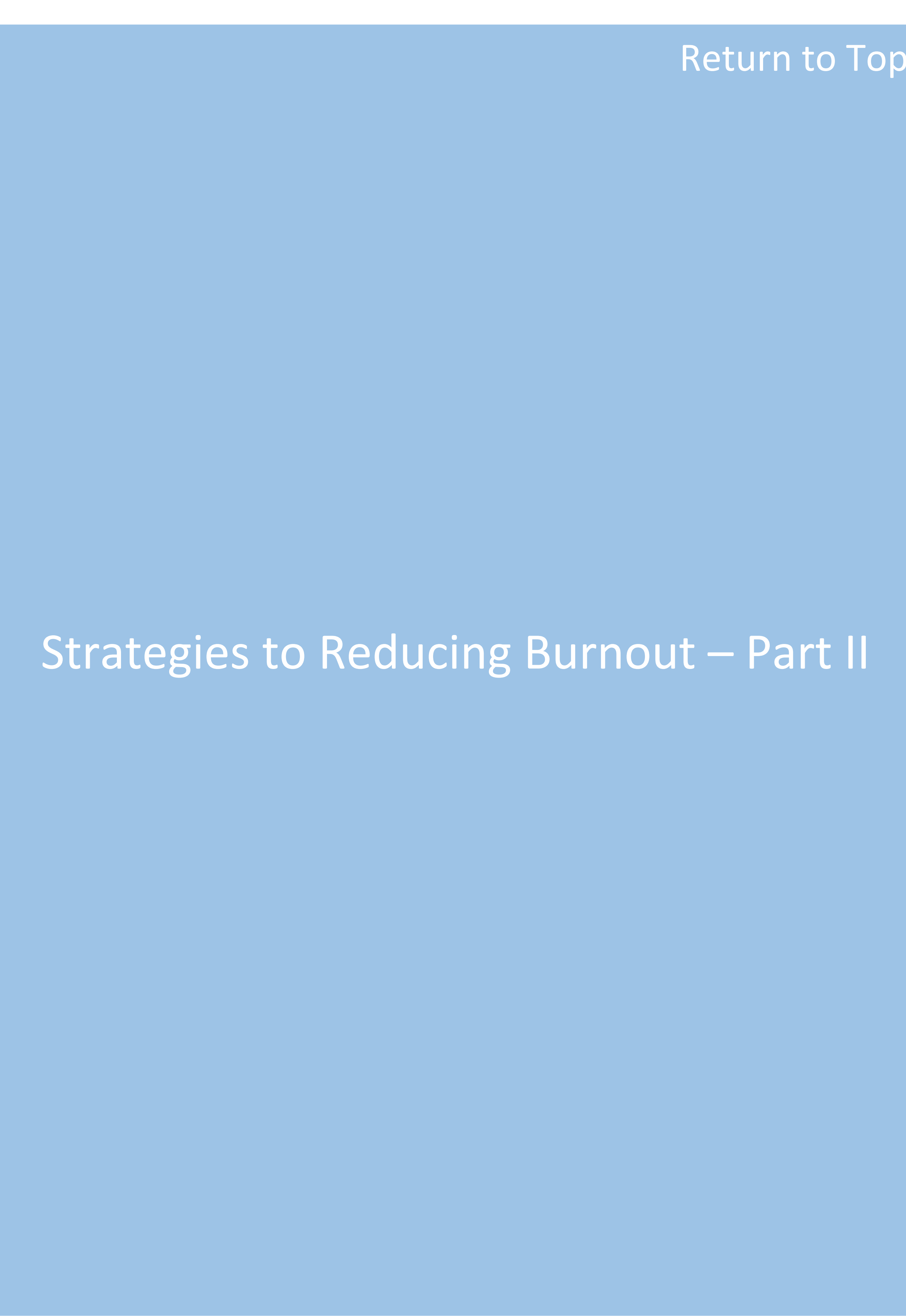

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Strategies to Reducing Burnout – Part II

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Strategies to Reducing Burnout – Part II

Michael Beck, MD, FAAFP

Disclosures:

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The slides are a continuation of "Strategies to Reducing Burnout – Part I."

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Fibromyalgia Myopathies Inflammatory Arthropathies

PAFP CME Conference & Penn State Health…
Primary Care Across the Lifespan
March 17-19, 2017

Fibromyalgia Myopathies Inflammatory Arthropathies

Jeffrey Zlotnick, MD

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Fibromyalgia
Myopathies
Inflammatory Arthropathies

Jeffrey A Zlotnick MD FAAFP
Residency Educational Director of Sports Medicine
Penn State Heath / St Joseph's Family Medicine Residency

Disclosure

- The speaker has no conflict of interests, financial agreement, or working affiliation with any group or organization.
- **Please Remember to Complete Session Evaluation Online**
https://no.surveymonkey.com/r/3_19_Fibro

Fibromyalgia

- Chronic muscle pain, muscle spasms, or tightness
- Moderate or severe fatigue and decreased energy
- Insomnia or waking up feeling tired
- Stiffness upon waking or after staying in one position for too long
- Difficulty remembering, concentrating, and performing simple mental tasks ("fibro fog")
- Abdominal pain, bloating, nausea, and constipation alternating with diarrhea (irritable bowel syndrome)
- Tension or migraine headaches

Epidemiology

- Considered to be Rheumatological but not inflammatory
- Condition effects women 10x more than men
- Estimated to be in 3.5% of population
- More common in families suggesting genetic and environmental factors
- Significant psychological and socio-economic factors associate
  - Depression
  - Divorce
  - Lower income

Pathophysiology

- VERY unclear
  - Used to be thought of as totally psychosomatic
- Central hyper-sensitization
- Hypothalamic-pituitary-adrenal axis dysregulation

Clinical

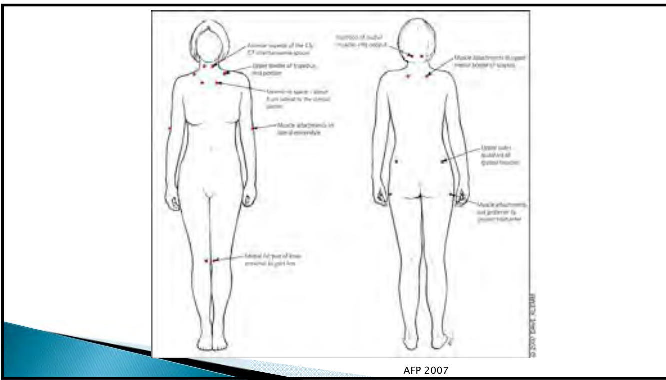
- Pain at multiple sites
  - Across upper trapezius/shoulders
- Low back pain
  - Radiation into buttocks and legs
- Pain described as burning, gnawing, soreness, stiffness, or aching
- Stiffness, mostly in AM
- Sx aggravated by cold and humid weather, poor sleep, and physical or mental stress
- Cognitive difficulties
- Social isolation

Psycho-social

- History of trauma:
  - Childhood abuse
  - Anxiety / Depression
  - Sleep disorder
- Sx triggered by:
  - Emotional stress
  - Medical illness
  - Surgery or trauma

Diagnosis

- Used to be “Diagnosis of Exclusion”
- “Widespread pain involving both sides of the body, above and below the waist as well as the axial skeletal system, for at least three months”
- Presence of 11 tender points among the nine pairs of specified sites



AFP 2007

Exam /Testing

- Apply pressure to trigger point to about 4.0 kg pressure
  - Just enough to start blanching nail
- Not necessary, but may want to R/O other conditions
  - CBC
  - ESR or CRP
  - TSH (+/- T4)
  - CMP
  - Rheum factor
  - ANA
  - ?? Lymes titers

Treatment Non-pharmacologic Strong evidence

- Cardiovascular exercise
- Cognitive behavioral therapy
- Patient education (group format using lectures, written materials, demonstrations)
- Multidisciplinary therapy (e.g., exercise and cognitive behavioral therapy, patient education and exercise)

Treatment Non-pharmacologic Moderate evidence

- Acupuncture
- Balneotherapy
- Biofeedback
- Hypnotherapy
- Strength training

Treatment: Pharmacologic

- Strong Evidence
  - Amitriptyline, 25 to 50 mg at bedtime
  - Cyclobenzaprine (Flexeril), 10 to 30 mg at bedtime
- Moderate Evidence
  - Dual-reuptake inhibitors: duloxetine (Cymbalta), venlafaxine (Effexor)
  - Fluoxetine (Prozac), 20 to 80 mg at bedtime, with or without a tricyclic antidepressant
  - Pregabalin (Lyrica)
  - Tramadol (Ultram), 200 to 300 mg daily, with or without acetaminophen

"No" Evidence

Pharmacologic
- Corticosteroids
- Melatonin
  - ?? Help with sleep
- Nonsteroidal anti-inflammatory drugs
  - May be useful as an analgesic
- Opioids
  - Useful, but addictive and dangerous
- Thyroid hormone

Non-Pharmacologic
- Flexibility exercise
- Tender (trigger) point injections

(Personal opinion: not convinced these NP therapies don't help)

Differential Diagnosis

- Myofascial pain syndrome
  - Localized painful, tender areas in the muscles
  - No systemic manifestations
- Chronic fatigue syndrome
  - Subclinical inflammatory process
  - Low-grade fever, lymph gland enlargement, and acute onset of the illness
- Hypothyroidism
  - Profound fatigue, muscle weakness, and generalized malaise
  - Feeling cold, weight gain, hair loss (less common)

Polymyagia Rheumatica/ Giant Cell Arteritis

PMR
- Mostly older adults
- Proximal muscles
  - Causes significant disability

GCA
- Most common type of vasculitis in adults
- Affects medium and large arteries
  - Can result in blindness

Tend to occur together!!

Clinical

- Age >60
- Muscles and joints of the shoulder, neck, and hip girdles
  - Shoulders are affected in 95% of cases
- Symptoms develop over weeks to months, worsening at night and with movement
- </= 50% of will display distal, transient, asymmetrical arthritis, primarily in the knee or wrist
- Low-grade fever, fatigue, malaise, and weight loss occur in 30% - 50%

Lab Diagnosis

- NO specific clinical test!!
- ESR of 40 mm per hour or more is seen in up to 91% of patients with PMR
- ESR 80-100 mm/hour suspicious for concomitant giant cell arteritis
- ESR >100 mm/hour significant for concomitant giant cell arteritis and/or underlying malignancy
- Normal ESR is found in 6% to 20%
- C-reactive protein (CRP) is more sensitive, and is less affected by age and other factors
  - ESR predicts relapse more reliably

Sx suggestive of GCA

- Abrupt-onset headache
- Jaw or tongue claudication
- Limb claudication or suggestion of large vessel involvement
- Prominence, beading, or diminished pulse of the temporal artery
- Temporal tenderness
- Upper cranial nerve palsies
- Visual disturbances

Treatment PMR

- PO prednisone: 15 mg/day for three weeks, then 12.5 mg/day for three weeks, then 10 mg/day for 4-6weeks, then decrease by 1 mg every 4-8 weeks
  - Expect one to two years of treatment
- Follow-up visits
  - At 1-3 weeks; 6 weeks; then 3, 6, 9 and 12 months, with extra visits as needed
- Bone protection
  - High risk of fracture (≥ 65 years or prior fracture): bisphosphonate, calcium, and vitamin D
  - Without high fracture risk: calcium and vitamin D
  - DEXA scan at onset of treatment, bisphosphonate if T-score is -1.5 or lower

Treatment GCA

- Uncomplicated (no jaw or tongue claudication or visual changes)
  - Prednisolone, 40-60 mg/day (but not < 0.75 mg/kg)
- Complicated
  - Evolving visual loss or history of amaurosis fugax: intravenous methylprednisolone (Solu-Medrol), 500 mg to 1 g per day for three days, then oral prednisolone, 60 mg per day
- Established visual loss: prednisolone, 60 mg per day

Continued….

- Taper (after 4 weeks of treatment and resolution of symptoms and normalization of ESR/CRP level)
  - Decrease by 10 mg every two weeks until 20 mg is reached, then decrease by 2.5 mg every two to four weeks until 10 mg is reached, then decrease by 1 mg every one to two months
- Antiplatelet therapy
  - Low-dose aspirin, 81 mg/day
- GI protection with PPI's

Temporal Artery Biopsy

- *Don't wait for results of labs or biopsy   Treat based on clinical findings!!*
- Negative biopsy result does not preclude the diagnosis
  - Seen in 8-20% of cases
  - Skip lesions, inadequate sample
- Risks
  - Hemorrhage, scalp necrosis, and infection
  - Rare
- Prognostic value
  - Higher degrees of pathology findings are associated with increasing neuro-ophthalmic complications

Polymyositis/Dermatomyositis

- Signs
  - Sudden or gradual weakness in the muscles
  - Falling and difficulty getting up from a fall
  - General feelings of tiredness
  - Chronic dry cough
- Symptoms
  - Marked weakness in the muscles closest to the center of the body, like the forearms, thighs, hips, shoulders, neck and back
  - Sometimes, weakness in the fingers and toes
  - Thickening of the skin on the hands
  - >20 and affects more women than men

Polymyositis/Dermatomysitis

- Signs
  - Appearance of a rash on the eyelids, cheeks, nose, back, upper chest, elbows, knees and knuckles
  - Scaly, dry or rough skin
  - General tiredness
  - Inflamed or swollen area around fingernails
- Symptoms
  - Painful and/or itchy rash caused by inflammation of blood vessels under the skin and in the muscles
  - Difficulty swallowing (dysphagia), a feeling of choking
  - Hardened lumps or sheets of calcium, called calcinosis, under the skin
  - Changes in voice (dysphonia)

Diagnosis

- Elevated levels of muscle enzymes
- Biopsy muscles: inflammation, damage, and abnormal proteins
  - Skin also biopsied w/ changes
- EMG detects changes in muscles' electrical patterns and muscles are affected
- Certain myositis-specific and myositis-associated antibodies

Treatment

- Prednisone
  - 0.75-1.0mg/kg/day and taper slowly
  - Avoidance of GI complications and bone preservation similar to PMR/GCA
- Use of creatine as an adjunctive therapy supported by Cochrane review

RA: Rheumatoid Arthritis

- Most common inflammatory arthropathy
  - 1% incidence world wide
- Can occur at any age
  - Peaks between 30 and 50 years
- 35% have work disability after 10 years
- Initially more common in women 2:1
  - Evens out as pt's age over 50

RA: Etiology

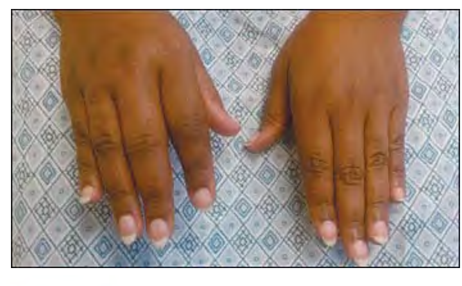
- Etiology multifactoral
- 50% of RA risk attributable to genetic factors.
  - Familial clustering and monozygotic twin studies
- Smoking is a major environmental trigger for RA, especially in those with a genetic predisposition
- Infections may unmask an autoimmune response
  - No specific pathogen identified

Pathophysiology

- Proliferation of synovial cells in joints
- Pannus formation may lead to underlying cartilage destruction and bony erosions
- Overproduction of pro-inflammatory cytokines, including tumor necrosis factor (TNF) and interleukin-6, drives the destructive process

Diagnosis

- Typically present with pain and stiffness in multiple joints
  - Wrists, proximal interphalangeal joints, and metacarpophalangeal joints are most commonly involved
- Morning stiffness lasting > one hour
  - C/W inflammatory etiology
- Boggy swelling due to synovitis
  - Subtle synovial thickening ?palpable on exam
- Systemic symptoms
  - Fatigue
  - Weight loss
  - Low-grade fever



AFP 2011

Classification criteria for RA (score-based algorithm: add score of categories A through D

A score of ≥ 6 out of 10 is needed for classification of a patient as having definite RA

Joint involvement

- One large joint 0
- Two to 10 large joints 1
- One to three small joints (+/-) involvement of
- large joints) 2
- Four to 10 small joints (+/- involvement of large joints) 3
- > 10 joints (at least one small joint) 5

Serology

At least one test result is needed for classification

- Negative RF and negative ACPA 0
  - Anti-citrullinated protein antibody
- Low positive RF or low positive ACPA 2
- High positive RF or high positive ACPA 3

Acute phase reactants

At least one test result is needed for classification

- Normal CRP and normal ESR 0
- Abnormal CRP or abnormal ESR 1

Duration of symptoms

- < six weeks 0
- ≥ six weeks 1

Testing

- Rheumatoid Factor (RF) + in 60-70%
  - Not specific (ie; Hep C)
  - Higher values indicate worse prognosis
- Anticyclic Citrullinated Peptide Ab's (anti-CCP) + in 70%+
  - More specific
- ESR / CRP indicate level of inflammation
  - Normal in 40%

Other Labs

- Results may influence treatment options
- Pt's w/ renal insufficiency or significant thrombocytopenia likely would not be prescribed a NSAID
- Mild anemia of chronic disease occurs in 33-60%
  - GI blood loss should be considered in patients taking corticosteroids or NSAIDs
- Methotrexate is contraindicated in patients with hepatic disease, and in patients with significant renal impairment
- Biologic therapy, such as a TNF inhibitor
  - Screen for TB and Hep B

Initial Treatment DMARDS

- Methotrexate
  - Inhibits dihydrofolate reductase
  - Liver effects, teratogenesis, hair loss, oral ulcers
- Leflunomide (Arava)
  - Inhibits pyrimidine synthesis
  - Liver effects, gastrointestinal effects, teratogenesis
- Hydroxychloroquine (Plaquenil)
  - Antimalarial, blocks toll-like receptors
  - Rare ocular toxicity
- Sulfasalazine (Azulfidine)
  - Folate depletion, other mechanisms unknown
  - Anemia in G6PD deficiency, gastrointestinal effects
- Minocycline (Minocin)
  - Antimicrobial, other mechanisms unknown
  - Drug-induced lupus erythematosus, Clostridium difficile colitis

Others

- Gold sodium thiomalate
  - Inhibits antigen processing, decreases cytokines (TNF, interleukin-6)
  - Skin, heme, renal effects
- Penicillamine (Cuprimine)
  - Chelates metal, other mechanisms unknown
  - Heme, renal effects
- Cyclophosphamide
  - Nitrogen mustard alkylating agent, cross-links DNA
  - Infertility, cancer, hemorrhagic cystitis
- Cyclosporine (Sandimmune)
  - Calcineurin inhibitor, decreases interleukin-2
  - Hypertension, renal effects, hirsutism

Anti-Biologics

- Anti-TNF
- Others
- Best left to specialists!

Treatment

- Combination therapy with two or more DMARDs is more effective than monotherapy;
  - However, adverse effects also greater
- TNF inhibitors are the first-line biologic therapy
- NSAIDs MAY help control pain
  - Contraindications and side effects
- Corticosteroids helpful for flares
  - Intra-articular or IM
  - Use short term
  - DM and immune system dysfunction

Complementary Treatments

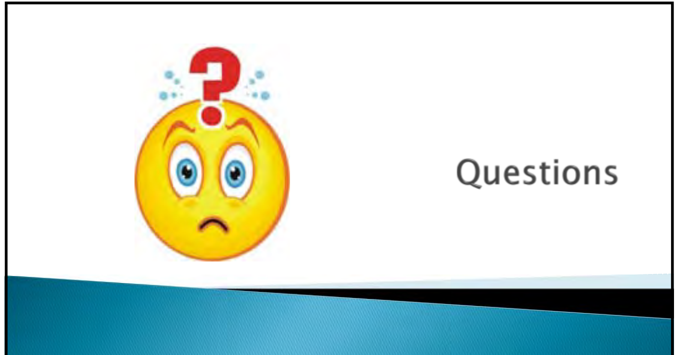
- Support physical exercise to improve quality of life and muscle strength in patients
- Tai chi has been shown to improve ankle range of motion
- Vegetarian and Mediterranean diets
  - No convincing evidence of benefit
- Gamma-linolenic acid (evening primrose or black currant seed oil) and Tripterygium wilfordii (thunder god vine) have potential benefits (Cochrane review)

Complications

- Depression
  - Affects up to 40 percent of patients with RA, can also be caused by corticosteroid use
- Infection
  - May be caused by RA itself or use of immunosuppressants
- Malignancy/Lymphoma
  - Risk is double in persons with RA, independent of immunosuppressant use
- Lung cancer
  - Caused by smoking, underlying interstitial lung disease
- Skin cancer
  - Risk may be increased with immunosuppressant use

Prognosis

- Patients with RA live 3 to 12 years < the general population
  - Mainly due to accelerated cardiovascular disease
- Remission is obtainable in 10 to 50%
  - Males
  - Nonsmokers
  - Persons younger than 40 years
  - Late-onset disease (>65 y/o)



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Coronary Artery Calcium Scoring (CAC or CCS) for CVD Risk Assessment/Prediction

PAFP CME Conference & Penn State Health… Primary Care Across the Lifespan March 17-19, 2017

Coronary Artery Calcium Scoring (CAC or CCS) for CVD Risk Assessment/Prediction

Roberto Hodara Friedman, MD

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*****HANDOUTS ARE NOT AVAILABLE ONLINE FOR THIS SESSION*****

PAFP'S PROCEDURES IN DERMATOLOGY

&

Member Appreciation Day

Choose between two dates and locations…

Saturday, August 5
9 am – 4 pm Sheraton Bucks County Hotel

or

Saturday, August 19
9 am – 4 pm DoubleTree Monroeville

Immediately Followed by a PAFP Member Appreciation Event.
Details and Registration Coming Soon.
Watch Your Inbox and www.PAFP.Com!

PAFP 2017 – 2018 CME Schedule

UPCOMING PAFP CME EVENTS

- **Saturday, August 5, 2017**
  - Procedures and Clinical Dermatology Day
    Member Appreciation Event Immediately Following, Location TBA
    - Hilton DoubleTree, Monroeville, PA

- **Saturday, August 19, 2017**
  - Procedures and Clinical Dermatology Day
    Member Appreciation Event Immediately Following, Location TBA
    - Sheraton Bucks County, Langhorne, PA

- **Friday, November 17 – Sunday, November 19, 2017**
  - Reading CME Conference
    - Hilton DoubleTree, Reading, PA

- **Friday, March 2 – Sunday, March 4, 2018**
  - Philadelphia CME Conference
    - Hilton Philadelphia at Penn's Landing, Philadelphia, PA

- **Friday, November 2 – Sunday, November 4, 2018**
  - Nemacolin CME Conference
    - Nemacolin Woodlands Resort, Farmington, PA