Diagnosing and Treating Adult ADHD

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- I do not have any disclosures

Objectives

- Epidemiology / Neurobiology
- Clinical features
  - Diagnosis
  - Screening tools
- Treatment
- Treatment challenges

Epidemiology

- One of the most common disorders of childhood
- 30% persist into adulthood
- Prevalence of 4.4% among 18 to 44 year olds[1]
  - 1.6: 1 male to female ratio
- Genetics
  - First degree relatives of people with ADHD have a 3-5 fold increased risk

1) Am J Psychiatry. 2006;163(4):716
2) Military Psychology, Aug 15 , 2016

Neurobiology

- Dysfunction of brain circuits which use catecholamines
  - Hypoactive dopamine and norepinephrine in frontal subcortical circuits
  - Modulation of emotion and cognition through behavior and movement
  - Vigilance, perceptual-motor speed, working memory, verbal learning, processing speed, and response inhibition

J Clin Psychopharmacol. 2008 Jun;28(3 Suppl 2):S39-45

Clinical Features

Clinical Features

- Adult ADHD evaluations are difficult!!
- There's usually a lot of background noise
- Presentation in adults does not usually match up neatly with DSM criteria
  - Diagnostic criteria were developed for children
  - "you don't grow out of ADHD, you just get better at coping with it"
- Secondary gain is a significant consideration

Clinical Features

- ADHD is not an all or nothing condition.
- People with ADHD can pay attention, exercise self-control, and complete tasks
  - faced with a deadline, has a highly rewarding and interesting task to complete, or is under close scrutiny their performance may be quite good
- The key in diagnosing ADHD is determining whether symptoms are typically present and are more pronounced when there is less external structure and demand

Clinical Features

- ADHD
  - Predominantly inattentive presentation
  - Predominantly impulsive/hyperactive presentation
  - Combined presentation
- In adults
  - Symptoms of inattention are more common
  - Hyperactivity and impulsivity in adults present differently than in kids

Clinical Features

- Case: John is a 21-year old college student referred for ADHD evaluation. He reports a history of ADHD diagnosed at age 8, never treated. He's currently struggling to maintain a passing GPA in college, and describes procrastination, poor attention, and distractibility; he tends to "say what's on (his) mind" quite a bit, and this gets him into trouble at work and at school.

Clinical Features

- Case: John has a history of depression and daily marijuana use. His medical history is notable for untreated sleep apnea (moderate, with an AHI of 18) and knee pain. Current medications include an MVI and prn Vicodin. He lives with his girlfriend of 6 months and her 4 children, ages 1 through 8, two of whom have special needs. Housing is unstable.

Clinical Features

- Key features
  - Hyperactivity
  - Impulsivity
  - Inattention
  - Executive dysfunction
  - Emotional dysregulation

Clinical Features

- Hyperactivity
  - Fidgety
  - Trouble remaining seated
  - "On the go" / uncomfortable being still
  - Runs or climbs in inappropriate situations
  - Unable to engage in activities quietly
  - Talks excessively
- Impulsivity:
  - Difficulty waiting turn
  - Blurts out answers, completes sentences
  - Interrupts or intrudes on others

Clinical Features

CHILDREN ⇨ **ADULTS**

Hyperactivity ⇨ **Restlessness**
- Can't sit still, always on the go
- Climbs or runs at inappropriate times

- Easily distracted, fidgety, impatient
- Mood swings, relationship trouble

Physical Impulsivity ⇨ **Verbal Impulsivity**
- Does things that result in injuries

- Says the "wrong thing" or speaks out of turn
- Interrupts, completes other's sentences

Clinical Features

- Inattention: trouble staying focused on tasks
  - Overlooks details or work is inaccurate
  - Trouble sustaining attention (lengthy readings, conversations, etc)
  - Does not seem to listen when spoken to
  - Starts task but gets easily side-tracked
  - Difficulty with organization
  - Avoids activities requiring sustained attention
  - Loses important things
  - Easily distracted
  - Forgetful in daily activities

Clinical Features

CHILDREN ⇔ **ADULTS**

Inattention ⇔ **Inattention**
- Can't pay close attention in class or complete schoolwork
- Forgetful: chores, errands, schoolwork
- Loses things: pencils, paper, homework

- Has difficulty concentrating at work and finishing tasks
- Forgetful: returning calls, paying bills, keeping appointments
- Loses things: wallet, keys, cell phone

Clinical Features

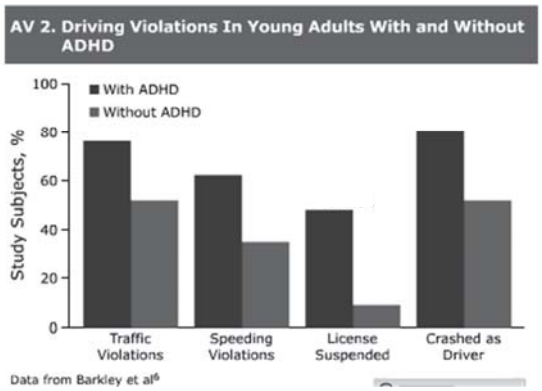
- Executive dysfunction: the ability to conceptualize all facets of an activity and translate that into appropriate and effective behavior
  - Struggle with time management and have poorly organized lives
- Emotional dysregulation: mood lability, anger outbursts, low frustration tolerance

Clinical Features

- Adults with untreated ADHD are
  - More than twice as likely to have been arrested
  - Twice as likely to have been divorced
  - More than twice as likely to have dropped out of high school
  - Twice as likely to have held 6 or more jobs in the past 10 years

"Survey of adults reveals life-long consequences of ADHD," news release, Porter Novelli, May 6, 2004.

Clinical Features



Diagnosis

Diagnosis

- DSM-5
  - Symptom criteria have not changed
  - 5 or more of 9 inattentive symptoms, and/or 5 or more of 9 hyperactive / impulsive symptoms
    - Interfere with social, academic, or occupational function
  - Symptoms present prior to age 12 (rather than age 7, in DSM-IV) and in 2 or more settings

Diagnosis

- Assessment of specific symptoms, including onset, severity, frequency, and situational specificity
- A functional assessment that covers school history, employment history, and performance
- A persistent pattern of inattention or hyperactivity/impulsivity that are present in more than one setting, and interferes with functioning

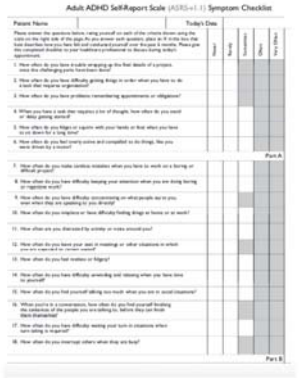
Diagnosis

- Past psychiatric and medical history
- Family history
- Social history
- Collateral history is incredibly helpful
  - Sometimes I ask for old medical records, and also report cards!

Diagnosis

- Screening instruments
  - Adult ADHD self-report scale
    - Current symptom check list based on frequency
      - 5 item Likert scale from “never” to “very often”
      - (symptom burden and symptom profile)
    - 18 items pulled from DSM-IV
    - Shown to be effective in PC settings[1]
    - Free and available online

Diagnosis


Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name: Today's Date:

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an 'X' in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.

	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					
Part A					
7. How often do you make careless mistakes when you have to work on a boring or difficult project?					
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?					
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?					
10. How often do you misplace or have difficulty finding things at home or at work?					
11. How often are you distracted by activity or noise around you?					
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?					
13. How often do you feel restless or fidgety?					
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?					
15. How often do you find yourself talking too much when you are in social situations?					
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?					
17. How often do you have difficulty waiting your turn in situations when turn taking is required?					
18. How often do you interrupt others when they are busy?					
Part B					

Diagnosis

- Wender Utah Rating Scale
  - Helps to establish the diagnosis in childhood
  - 61 questions, answered by the adult patient recalling their childhood behavior
  - Free and available online
- In depth neuropsychological testing is not a universally accepted part of the ADHD evaluation

Diagnosis

- Can these tests be feigned?
  - YES
  - 70 college students
    - Randomized to honest normals and fakers
    - ADHD screen and brief psychological testing
    - Compared data to archived data of 72 persons with ADHD
  - Fakers could not be discerned from ADHD
    - But, they did tend to have more exaggerated symptoms
- They're just screening tools and don't account for other medical conditions or comorbidities

Harrison et al. Archives of Clinical Neuropsychology (2007)

Diagnosis

- Highly comorbid with other psychiatric disorders, which can make the diagnosis difficult
  - Mood disorders, OR 2.7 to 7.5
  - Anxiety disorders, OR 1.5 to 5.5
  - Substance use disorders, OR 1.5 to 7.9
- Confound the diagnosis because of symptom overlap and complicate treatment
  - The more ADHD symptoms the more comorbidities

Am J Psychiatry. 2006;163(4):716.

Diagnosis

- Rule out psychiatric conditions which may be causing or contributing to ADHD symptoms
  - Depression: poor concentration, indecision, poor motivation
  - PTSD: poor concentration, irritability, reckless bx
  - Anxiety: poor concentration, restlessness
  - Mania: distractibility, impulsivity, talkativeness
  - SUDs: wide range of symptoms
- Treat comorbid psychiatric conditions

Diagnosis

- What about marijuana?
  - Undoubtedly causes symptoms similar to ADHD
    - Sustained attention
    - Learning
    - Psychomotor speed
  - Highly comorbid – the presence of one does not exclude the other
  - If the use of MJ is heavy and felt to be the primary cause of symptoms, focus should be on reduction of MJ use

JAMA. 1996;275:521-527

Diagnosis

- Some medical conditions can contribute to inattentive symptoms
  - Chronic pain
  - Obstructive sleep apnea and other sleep disorders
  - Thyroid disease
  - Central nervous system disorders
    - Traumatic brain injury
    - Seizure disorders
  - Medications

Diagnosis

- Workup
  - Basic labs: TSH, metabolic panel, CBC, UDS
  - Cardiac workup pre-stimulant prescription
    - Monitor blood pressure and pulse
    - Cardiac history and exam in all patients
    - EKG in patients older than 40, or with a history of cardiac disease, or family history of structural heart disease or sudden cardiac death
    - Reports of sudden cardiac death
      - No increase risk found in large retrospective cohort study

JAMA. 2011;306(24):2673.

Treatment

Treatment

- Case: John reports adherence to PAP therapy. Mood symptoms are controlled. Marijuana use is about once weekly to help with knee pain. This is confirmed with his girlfriend, who can corroborate the symptoms of inattention and poor performance at school. Further collateral history from his mother reveals a childhood history of ADHD. Cardiac exam and labs are benign, with the exception of UDS positive for THC. Weight is 75kg.

Treatment

- Goal is to reduce ADHD symptoms and improve function
- Pharmacotherapy
  - Stimulants
  - Non-stimulants
- Cognitive therapy and environmental changes

Treatment

- It can take time for circumstances to play out so that the patient sees the difference in how she responds to challenging situations
  - Symptoms: weeks
  - Function: months, sometimes years

Treatment

- Stimulants are the gold standard for therapy
  - High efficacy in numerous RCTs since the 1960s
  - Improvement in up to 75% of patients, with large effect size in clinical response

Pliszka 2007

Treatment

- Stimulants: methylphenidate and amphetamines
  - Work by increasing levels of dopamine and norepinephrine
  - Randomization trials have shown that stimulants outperform placebo (and non-stimulant medications), especially in short-term trials
  - Multiple formulations and delivery systems

N Engl J Med. 2013 Nov;369(20):1935-44.

Treatment

- Methylphenidate
  - Multiple brand names available Concerta, Focalin, Focalin XR, Metadate CD, Metadate ER, Methylin, Methylin ER, Quillivant XR, Ritalin, Ritalin LA, Ritalin-SR, Aptensio XR, Daytrana (patch)
  - Available in short and long-acting formulations

Treatment

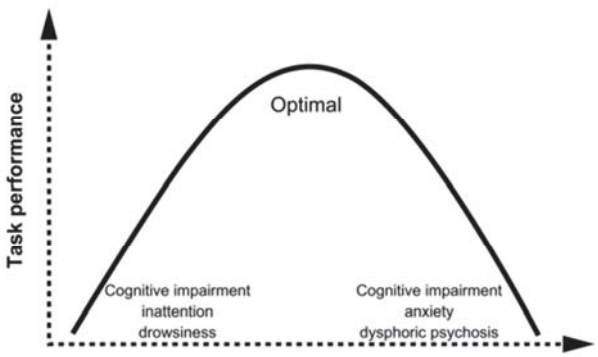
- Amphetamines
  - Dextroamphetamine "Dexedrine"
  - Mixed amphetamine salts (amphetamine/dextroamphetamine) "Adderall"
  - Lisdexamfetamine "Vyvanse"
  - Available in short and long-acting formulations

Treatment

- Get familiar with one or two stimulants in each category (long and short acting)
  - No head-to-head trials comparing stimulants
- General rule of thumb:
  - 1mg/kg body weight of MPH
  - 0.5mg/kg body weight of amphetamine preparations
  - Average optimal daily dose for adults may be higher

Spencer T, Biederman J, Wilens T, et al. *Biol Psychiatry*. 2005;57:456-463
Spencer T, Biederman J, Wilens T, et al. *Arch Gen Psychiatry*. 2001;58:775-782.

Treatment



Blier P, Briley M - Neuropsychiatr Dis Treat (2011)

Treatment

- Adverse effects:
  - Dry mouth
  - Insomnia
  - Irritability
  - Reduced appetite / weight loss
  - Headaches
  - Elevation in blood pressure and pulse
  - Psychosis
  - Pregnancy: class C

Treatment

- Reasons to avoid stimulants
  - Uncontrolled hypertension
  - Serious arrhythmias
  - Symptomatic heart disease or congenital heart defect
  - Recent cardiovascular event
  - Pregnancy
  - Active drug use or unstable period of sobriety

Treatment

- Stimulant treatment agreement can be useful
  - Controlled substances (Schedule II)
  - Outline guidelines for use
    - Taken at dose and frequency prescribed
    - The script can come from only one healthcare provider
    - No early refills
    - Medication cannot be given away or sold
    - Random urine drug screens

Treatment

- Case: Treatment is initiated with methylphenidate 5mg q.am and q.noon. The dose is increased to 10mg q.am and q.noon after 1 week. He is then seen for follow up 2 weeks later.

Treatment

- Start with a fast acting formulation
  - More dosing flexibility
  - 3-6 hour duration
  - Onset of action usually within an hour
  - Bid dosing, separate doses by 4 hours
  - Can then convert to a long-acting formulation for once-a-day dosing if needed

Treatment

- Case: At the follow up visit, BP and pulse are wnl. John reports some improvement in attention and concentration, with ability to study for longer periods of time, but feels there is room for improvement. He's not having any adverse effects on MP. The dose is titrated to 15mg q.am and q.noon, with the option to go up to 20mg q.am and q.noon after one week.

Treatment

- Issue of up/down effect too significant: switch to once-daily long acting
  - Most have an initial peak within an hour, followed by a second peak effect 4-6 hours later
    - Total duration of effect of up to 12 hours
  - If effect of long acting formulation doesn't last long enough, add a low dose of a fast acting stimulant in the afternoon

Treatment

- Forgetful of afternoon dose: try long acting
- Issue of lack of response: try another stimulant
  - 41% of people responded equally to MPH and amphetamine, and 44% responded preferentially to one or the other – response rate may be as high as 85% if both are tried
- Issue of poor tolerability: try another stimulant

Arnold, LE. **Methylphenidate vs. amphetamine: comparative review.** *J Atten Disord*. 2000;3:200–211

Treatment

- Case: John returns to clinic and reports positive symptom response but poor tolerability to the higher dose of methylphenidate because of headache and poor appetite. BP and pulse are wnl.
  - Option to switch to a different stimulant
    - Adderall (mixed amphetamine salts): reduce dose by 50%
    - Dextroamphetamine: 75% of Adderall dose ("mixed" amphetamines are 3:1 ratio of Dextro- vs Levo-enantiomer)

Treatment

- Issue of misuse, substance use, or diversion: try a non-stimulant (lower response rate)
  - Atomoxetine (Strattera) – must be taken daily, takes several weeks for effect; cardiac workup; LFTs
    - Can increase BP and P
  - Bupropion – must be taken daily, takes several weeks for effect
  - TCA or venlafaxine
  - Alpha-2 agonists
    - Clonidine
    - Guanfacine

  } Better for hyperactive symptoms
  Consider if comorbid tics

Treatment

- Practical strategies and instruction to solve three of the most common ADHD problems: time management, organization, and planning
  - Maintain a daily schedule
    - Use a calendar, planner
  - To-do list
  - Limit distraction
  - Schedule attention-demanding tasks
  - Break down difficult tasks
  - Dedicated quiet study space

Summary

- A highly heritable condition
- Starts in childhood and persists in to adulthood
- Diagnosis is made based on clinical presentation
- Treatment with stimulants, though second line medications are available

End

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CV Journal Club

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Division Head of Cardiology
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Conflicts of Interest

No financial conflicts of interest

Objectives

- Assess role of antiplatelet tx for Primary Prevention
- Assess role of antiplatelet therapy in patients with CAD and Atrial Fibrillation
- Assess role of revascularization and OMT in SIHD.

Clinical Case #1

71 year old man with hypertension, hyperlipidemia with BMI of 30 asks whether he should take antiplatelet therapy for primary prevention.

Medications include hydrochlorothiazide, lisinopril and simvastatin.

Physical Exam is notable for BMI of 30, BP of 128/76 with normal CV exam with HDL of 46 and LDL of 86 and eGFR >60.

Options for Primary Prevention

A. No antiplatelet
B. Aspirin 81 mg daily
C. Clopidogrel 75 mg daily
D. Ticagrelor 90 mg po bid
E. Aspirin 81 mg plus clopidogrel 75 mg daily

Effect of ASA on CV Events and Bleeding in Healthy Elderly

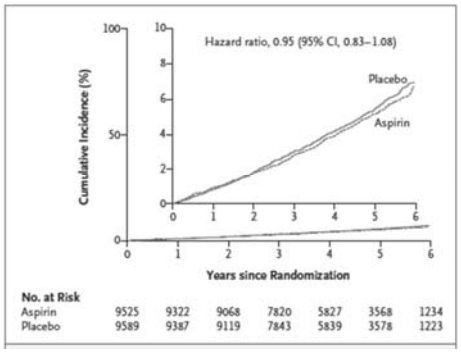
Aspree Investigators NEJM 2019

1. Objective: assess role of low dose aspirin for primary prevention in persons 70 or older.
2. Methodology: prospective randomized double blind trial of patients free of overt CHD, cerebrovascular disease, atrial fibrillation, dementia or high risk of bleeding
3. Primary composite endpt of death, dementia, physical disability
4. Secondary endpt: hemorrhage, MI, fatal CHD, fatal or nonfatal CVA or HF hospitalization

Demographics

Variable	Aspirin (N=9525)	Placebo (N=9589)
	no. (%)	
Male sex	4152 (44)	4179 (44)
Age ≥74 yr	4806 (50)	4766 (50)
Black race†	451 (5)	450 (5)
Obese‡	2820 (30)	2857 (30)
Smoking		
Current	352 (4)	383 (4)
Former	3909 (41)	3890 (41)
Never	5264 (55)	5316 (55)
Diabetes§	1027 (11)	1030 (11)
Hypertension¶	7065 (74)	7148 (75)
Dyslipidemia‖	6159 (65)	6308 (66)
Chronic kidney disease**	2456 (26)	2464 (26)
Number of cardiovascular risk factors††		
0 or 1	2935 (31)	2885 (30)
2	3968 (42)	4049 (42)
3 or 4	2622 (28)	2655 (28)
Previous regular aspirin use‡‡	1053 (11)	1041 (11)
Statin use at trial entry§§	3244 (34)	3226 (34)
Use of nonsteroidal antiinflammatory drug at trial entry	1371 (14)	1342 (14)
Use of H_2-receptor blocker at trial entry	189 (2)	183 (2)
Use of proton-pump inhibitor at trial entry	2340 (25)	2374 (25)

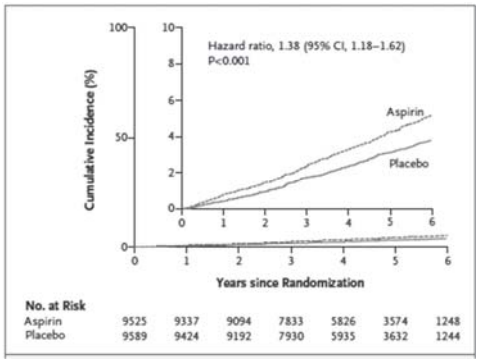
Cumulative Incidence of CV Events



Cardiovascular Events

End Point	Overall (N=19,114)	Aspirin (N=9525)		Placebo (N=9589)		Hazard Ratio (95% CI)
	no. of participants with event	no. of participants with event	rate per 1000 person-yr	no. of participants with event	rate per 1000 person-yr	
Cardiovascular disease†	922	448	10.7	474	11.3	0.95 (0.83–1.08)
Major adverse cardiovascular event‡	701	329	7.8	372	8.8	0.89 (0.77–1.03)
Fatal cardiovascular disease§	159	78	1.8	81	1.9	0.97 (0.71–1.33)
Hospitalization for heart failure	171	88	2.1	83	1.9	1.07 (0.79–1.44)
Fatal or nonfatal myocardial infarction	355	171	4.0	184	4.3	0.93 (0.76–1.15)
Fatal or nonfatal ischemic stroke¶	315	148	3.5	167	3.9	0.89 (0.71–1.11)

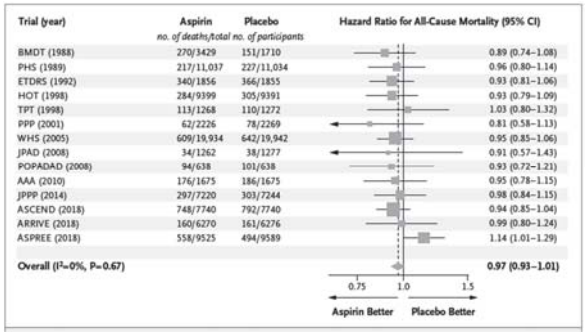
Cumulative Incidence of Hemorrhagic Events



Hemorrhagic Complications

End Point	Overall (N=19,114)	Aspirin (N=9525)		Placebo (N=9589)		Hazard Ratio (95% CI)	P Value
	no. of participants with event	no. of participants with event	rate per 1000 person-yr	no. of participants with event	rate per 1000 person-yr		
Major hemorrhage†	626	361	8.6	265	6.2	1.38 (1.18–1.62)	<0.001
Intracranial bleeding							
Any	179	107	2.5	72	1.7	1.50 (1.11–2.02)	—
Hemorrhagic stroke	77	43	1.0	34	0.8	1.27 (0.81–2.00)	—
Subdural or extradural hemorrhage	61	39	0.9	22	0.5	1.79 (1.06–3.02)	—
Subarachnoid hemorrhage‡	32	18	0.4	14	0.3	1.30 (0.64–2.60)	—
Extracranial bleeding							
Upper gastrointestinal bleeding	137	89	2.1	48	1.1	1.87 (1.32–2.66)	—
Lower gastrointestinal bleeding	127	73	1.7	54	1.3	1.36 (0.96–1.94)	—
Bleeding at another site§	189	101	2.4	88	2.1	1.16 (0.87–1.54)	—
Fatal bleeding							
Fatal major hemorrhage¶	52	28	0.7	24	0.6	1.18 (0.68–2.03)	—
Fatal hemorrhagic stroke	26	13	0.3	13	0.3	1.01 (0.47–2.17)	—

Meta Analysis of 14 Primary Prevention Trials



Options for Primary Prevention for Case 1

A. <u>No antiplatelet</u>

B. Aspirin 81 mg daily

C. Clopidogrel 75 mg daily

D. Aspirin 81 mg plus clopidogrel 75 mg daily

Conclusions: Aspirin for Primary Prevention

1. Aspirin for primary prevention should be used selectively in patients high clinical risk of ischemic events with low risk of bleeding as the benefit is likely at best mild while the rates of increased bleeding are moderate.
2. Clinical trials in diabetics and in patients over the age of 70 have been negative with regards to efficacy and have demonstrated increased risk of bleeding.
3. DAPT in SIHD or at risk patients is not superior to single antiplatelet tx as assessed in Charisma
4. Providers should focus on additional modifiable risk factors such as nutrition, hypertension and dyslipidemia.

Clinical Case 2

72 year old woman with stable ischemic heart disease, permanent atrial fibrillation and elevated CHADSVASC score of 3 on a non-vitamin K antagonist develops exertional angina. A stress test is abnormal with high risk features. Coronary angiography demonstrates severe proximal LAD disease and she is treated with a drug eluting stent.

Discharge Medications

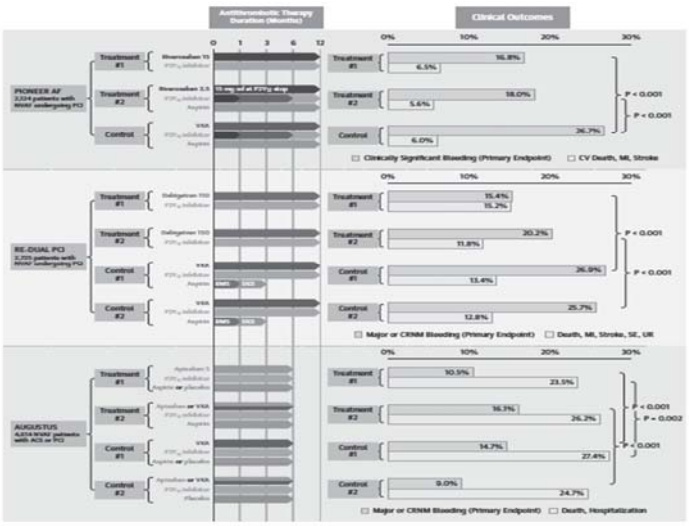
A. Aspirin 81 mg daily and P2Y12 inhibitor

B. Warfarin and clopidogrel 75 mg daily

C. Rivaroxiban 15 mg daily plus clopidogrel 75 mg daily

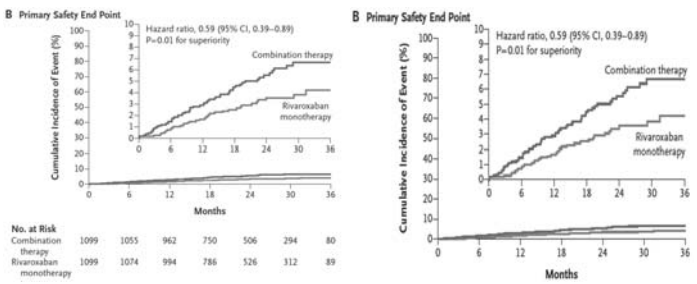
D. Dabigatran 150 mg bid plus clopidogrel 75 mg daily

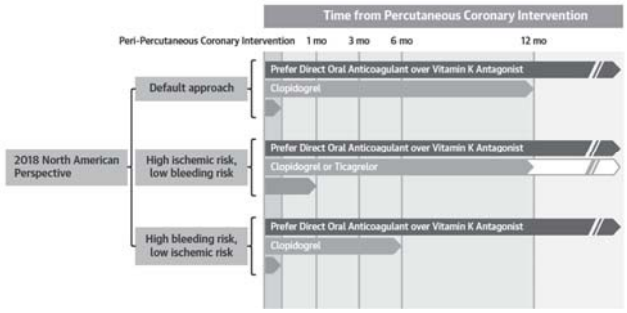
E. Apixaban 5 mg po bid plus clopidogrel 75 mg daily



AFIRE

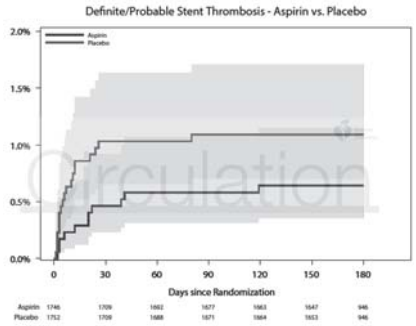
NEJM 2019





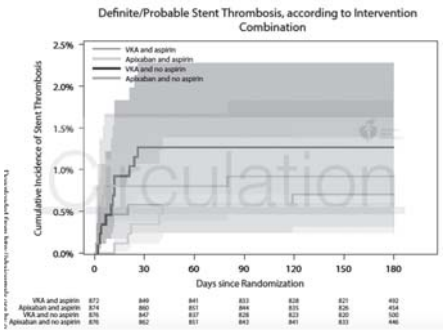
Stent Thrombosis in Afib Patients: Augustus

Lopes et al Circulation



Stent Thrombosis in Afib Patients: Augustus

Lopes et al Circulation



Discharge Medications

A. Aspirin 81 mg daily and P2Y12 inhibitor
B. Warfarin and clopidogrel 75 mg daily
C. Rivaroxiban 15 mg daily plus clopidogrel 75 mg daily
D. Dabigatran 150 mg bid plus clopidogrel 75 mg daily
E. Apixaban 5 mg po bid plus clopidogrel 75 mg daily

Atrial Fibrillation Recommendations

1. Double therapy is preferred to triple therapy to reduce hemorrhagic complications without a signal of harm with regards to stent thrombosis.
2. Non-vitamin K antagonists are preferred to warfarin and should be used at doses which are effective to reduce systemic thromboemboli.
3. Patients on double therapy all start on triple therapy for a period of at least periprocedurally to one month.
4. Reasonable to stop antiplatelet tx at one year.

Case # 3

67 year old man with HTN, DM, and hyperlipidemia complains of worsening angina consistent with CCS 3 angina.

Medications include aspirin, high intensity statin, amlodipine, metformin and SGLT 2 inhibitor

Stress imaging study was notable for normal LV systolic function and high risk features secondary to ischemic burden

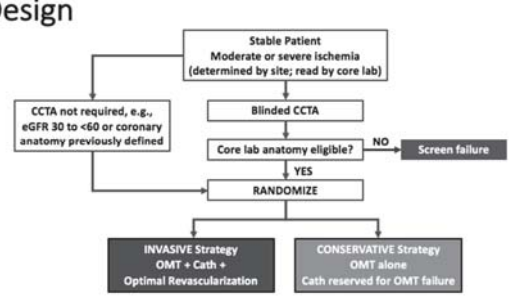
Options

1. Optimize medical therapy with addition of beta blocker
2. Optimize medical therapy with addition of beta blocker and proceed with coronary angiography and possible revascularization.

Ischemia Trial

AHA 2019

Study Design



Study Endpoints

Endpoints

Primary Endpoint:

- Time to CV death, MI, hospitalization for unstable angina, heart failure or resuscitated cardiac arrest

Major Secondary Endpoints:

- Time to CV death or MI
- Quality of Life (separate presentation)

Other Endpoints include:

- All-Cause Death
- Net clinical benefit (stroke added to primary endpoint)
- Components of primary endpoint

Inclusion Criteria

Clinical and Stress Test Eligibility Criteria

Inclusion Criteria

- Age ≥21 years
- Moderate or severe ischemia*
  - Nuclear ≥10% LV ischemia (summed difference score ≥7)
  - Echo ≥3 segments stress-induced moderate or severe hypokinesis, or akinesis
  - CMR
    - Perfusion: ≥12% myocardium ischemic, and/or
    - Wall motion: ≥3/16 segments with stress-induced severe hypokinesis or akinesis
  - Exercise Tolerance Testing (ETT) ≥1.5mm ST depression in ≥2 leads or ≥2mm ST depression in single lead at <7 METS, with angina

Major Exclusion Criteria

- NYHA Class III-IV HF
- Unacceptable angina despite medical therapy
- EF < 35%
- ACS within 2 months
- PCI or CABG within 1 year
- eGFR <30 mL/min or on dialysis

CCTA Eligibility Criteria

Inclusion Criteria

- ≥50% stenosis in a major epicardial vessel (stress imaging participants)
- ≥70% stenosis in a proximal or mid vessel (ETT participants)

Major Exclusion Criteria

- ≥50% stenosis in unprotected left main

*Ischemia eligibility determined by sites. All stress tests interpreted at core labs.

Baseline Characteristics

Characteristic	Total	INV	CON
Clinical			
Age at Enrollment (yrs.)			
Median	64 (58, 70)	64 (58, 70)	64 (58, 70)
Female Sex (%)	23	23	22
Hypertension (%)	73	73	73
Diabetes (%)	42	41	42
Prior Myocardial Infarction (%)	19	19	19
Ejection Fraction, Median (%) (n=4637)	60 (55, 65)	60 (55, 65)	60 (55, 65)
Systolic Blood Pressure, Median (mmHg)	130 (120, 142)	130 (120, 142)	130 (120, 142)
Diastolic Blood Pressure, Median (mmHg)	77 (70, 81)	77 (70, 81)	77 (70, 81)
LDL Cholesterol, Median (mg/dL)	83 (63, 111)	83 (63, 111)	83 (63, 109.5)
History of Angina	90%	90%	89%
Angina Began or Became More Frequent Over the Past 3 Months	29%	29%	29%
Stress Test Modality			
Stress Imaging (%)	75	75	76
Exercise Tolerance Test (ETT) (%)	25	25	24

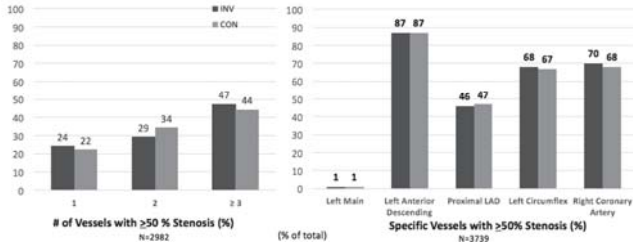
Median values reported with 25th and 75th percentiles

Qualifying Stress Test

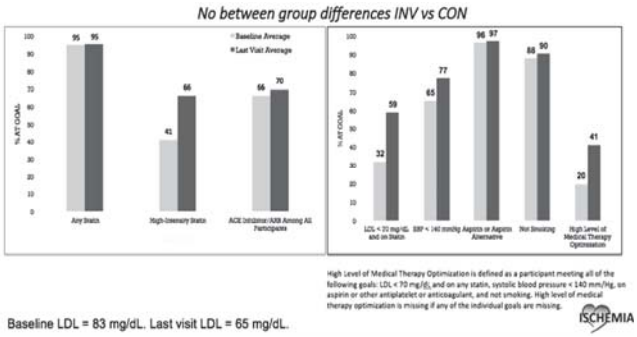
Characteristic	Total	INV	CON
Baseline Inducible Ischemia*			
Severe	54%	53%	55%
Moderate	33%	34%	32%
Mild/None	12%	12%	12%
Uninterpretable	1%	1%	1%

*Only severe qualified by ETT

Baseline Coronary Artery Anatomy by CCTA

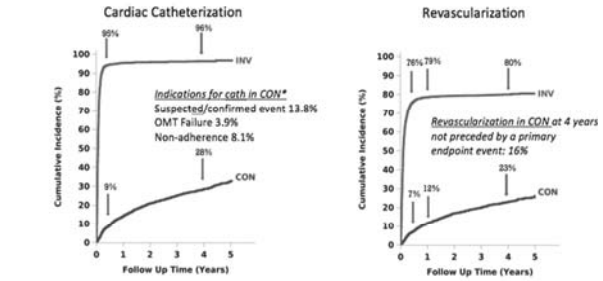


Risk Factor Management: Baseline vs Last Visit



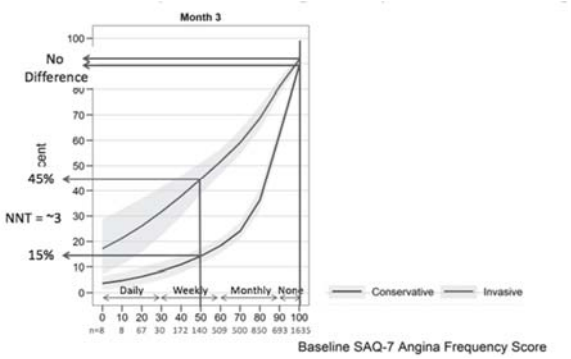
Baseline LDL = 83 mg/dL. Last visit LDL = 65 mg/dL.

Cardiac Catheterization and Revascularization

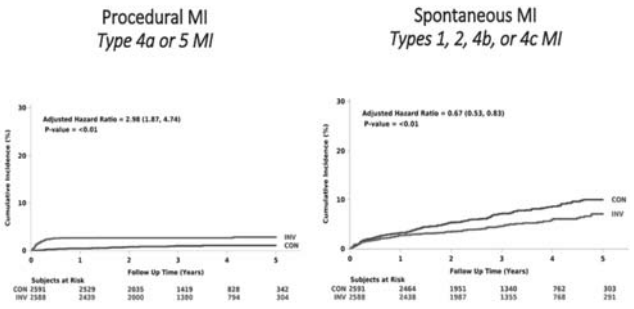


*Indications for Cath are percentages of CON patients whereas cumulative event rate shown at 4 years reflects censoring and the rate at that time point.

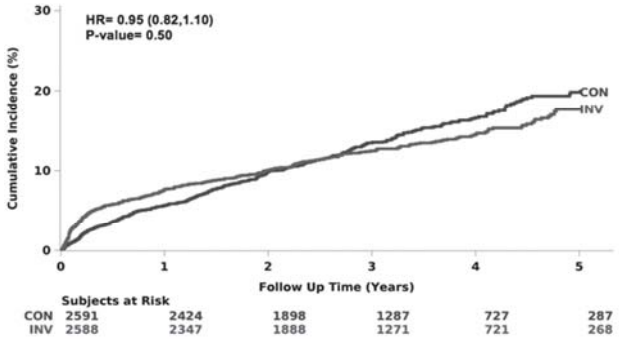
Probablity of No Angina by Baseline Angina

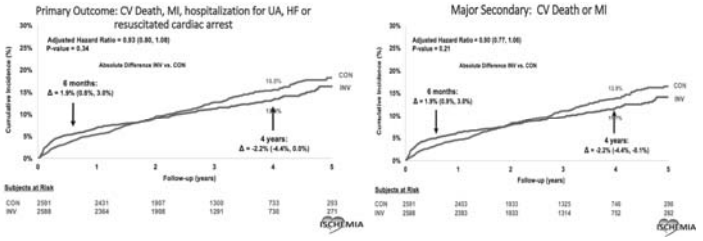


Myocardial Infarction Type



Net Clinical Benefit: CV Death, MI, UA, HF, RCA, Stroke





Summary

- The curves cross for the primary endpoint and the major secondary endpoint at approximately 2 years from randomization
  - ~2 in 100 *higher* estimated rate with INV at 6 months
  - ~2 in 100 *lower* estimated rate with INV at 4 years
- Procedural MIs were increased with an invasive strategy
- Spontaneous MIs were reduced with an invasive strategy
- Low all-cause mortality in both groups despite high-risk clinical characteristics, high-risk ischemia and extensive CAD
- No heterogeneity of treatment effect, including by type of stress test, severity of ischemia or extent of CAD
- Very low rates of procedure-related stroke and death

Options

1. Optimize medical therapy with addition of beta blocker
2. Optimize medical therapy with addition of beta blocker and proceed with coronary angiography and possible revascularization.

Conclusioins

For primary prevention, aspirin should be used selectively rather than as a default.

Patients with Afib with recent ACS or treated with PCI, double therapy is recommended for one year. At one year, it is not unreasonable to stop the antiplatelet agent.

For patients with SIHD with moderate to high risk ischemia, revascularization is effective at relieving symptoms but only reduces spontaneous MI at 4 years by 2%.

Additional References

The Dapagliflozin in Patients With Heart Failure and Reduced Ejection Fraction (DAPA-HF) trial NEJM 2019 38:1995-2008.

Dapgliflozin and CV Outcomes in Type 2 DM. NEJM 2019 380:347-57.

Thank You!

Melanoma detection:
Different tools for different populations

Sancy Leachman, MD, PhD
Internal Medicine Review - Plenary
2/5/2020

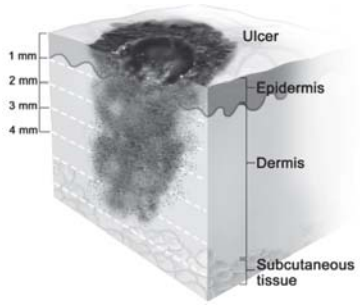
No Relevant Conflicts of Interest
MoleMapper (iPhone App) free & open source
Non-topic related COI:

- Myriad Genetic Laboratories (early access)
- Castle BioSciences (early access)
- Palvella Therapeutics (advisory board)
- DermDetect (Business Associate Agreement)
- Merck (advisory board)
- Orlucent (advisory board

Today's Objectives

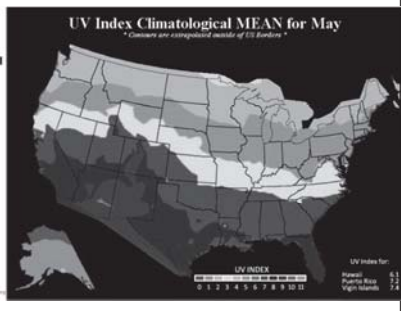
- **Melanoma Treatment**:
- **USPSTF Screening Recommendation Revisited**
- **Risk Assessment:**
- **Preview of visual identification training:**

Melanoma



Knight Cancer Institute

Melanoma in Oregon



EPA and American Cancer Society

Lifetime risk of developing melanoma in the U.S.

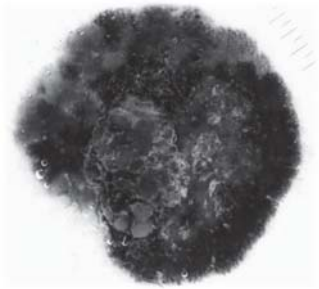
Year	Lifetime Risk
2010	1:53
2017	**1:28**

Reasons

More biopsies
Longer life expectancy
Increased awareness
More UV-C
Poor sun sense

Glazer AM, et al. JAMA Dermatol. 2017;15:225-226

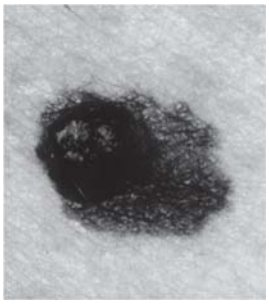
Case 1: Melanoma 30 years ago



Case 1: JW

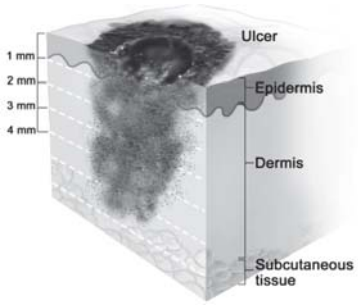
1989

- Noticed a changing mole on the left upper arm
- Skin cancer risk factors:
  - Red hair
  - Fair skin
  - Multiple childhood sunburns
- Biopsy showed melanoma



National Cancer Institute

Case 1: JW



Knight Cancer Institute

Case 1: JW

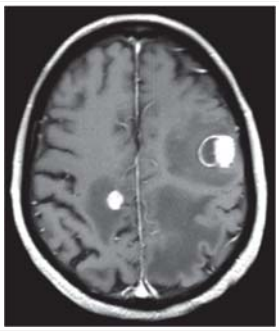
1999

- Hysterectomy for fibroids in the uterus

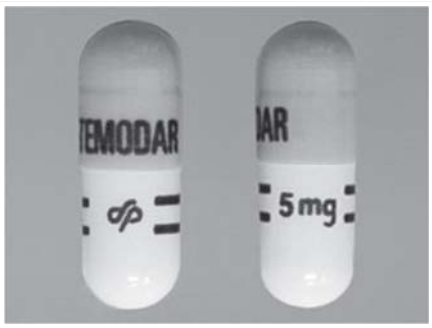
2000

- Intractable headaches
- No relief with 2 courses of antibiotics
- Brain MRI

Case 1: JW

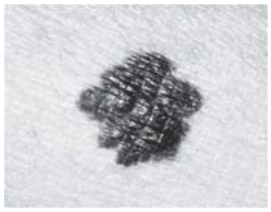


Case 1: JW



Case 2: LJ

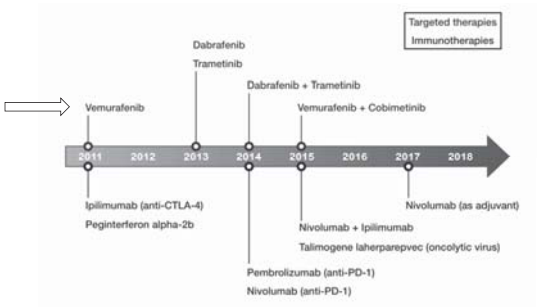
- 2012: Left thigh melanoma, treated with wide local excision
- 2017: Presented with severe headaches
- Found to have widely metastatic disease



Case 2: LJ

- Surgery and radiation
- Started combination therapy with two immunotherapy drugs
- Course complicated by colitis requiring steroids and infliximab
- Resumed nivolumab
- Minimal disease at 2 years

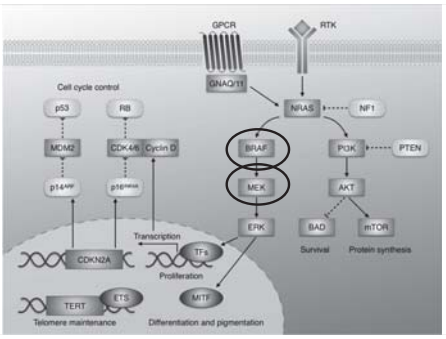
Revolution in melanoma therapy



Guterres, Adam & Herlyn, Meenhard & Villanueva, Jessie. (2018). Melanoma. 10.1002/9780470015902.a0001894.pub3.

Personalizing cancer therapy

BRAF Inhibitors
- Vemurafenib (Zelboraf)
- Dabrafenib (Tafinlar)
- Encorafenib (Braftovi)



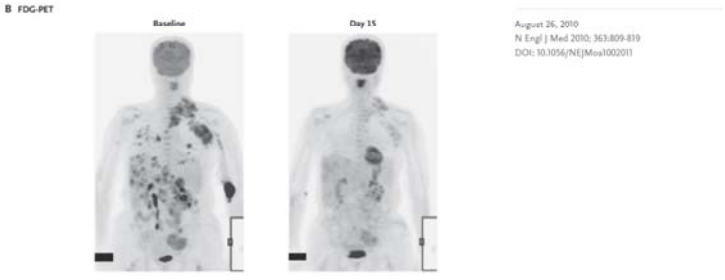
MEK Inhibitors
- Trametinib (Mekinist)
- Cobimetinib (Cotellic)
- Benimetinib (Mektovi)

Guterres, Adam & Herlyn, Meenhard & Villanueva, Jessie. (2018). Melanoma. 10.1002/9780470015902.a0001894.pub3.

ORIGINAL ARTICLE

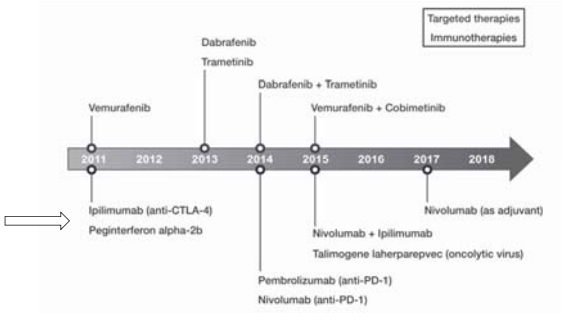
Inhibition of Mutated, Activated BRAF in Metastatic Melanoma

Keith T. Flaherty, M.D., Igor Puzanov, M.D., Kevin B. Kim, M.D., Antoni Ribas, M.D., Grant A. McArthur, M.B., B.S., Ph.D., Jeffrey A. Sosman, M.D., Peter J. O'Dwyer, M.D., Richard J. Lee, M.D., Ph.D., Joseph F. Grippo, Ph.D., Keith Nolop, M.D., and Paul B. Chapman, M.D.



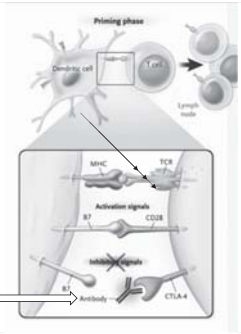
August 26, 2010
N Engl J Med 2010; 363:809-819
DOI: 10.1056/NEJMoa1002011

Revolution in melanoma therapy



Guterres, Adam & Herlyn, Meenhard & Villanueva, Jessie. (2018). Melanoma. 10.1002/9780470015902.a0001894.pub3.

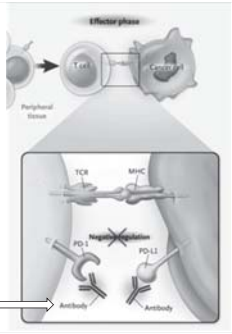
Harnessing the immune system



Ipilimumab (Yervoy)

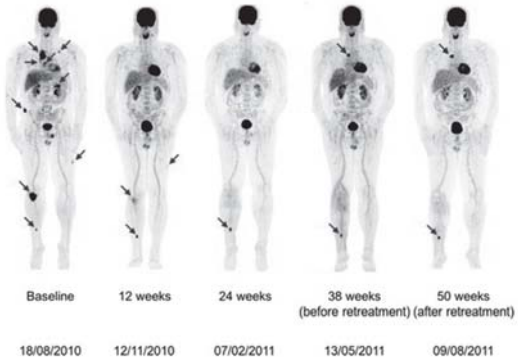
Franklin, C., et al. "Immunotherapy in melanoma: recent advances and future directions." *European Journal of Surgical Oncology (EJSO)* 43.3 (2017): 604-611.

Harnessing the immune system

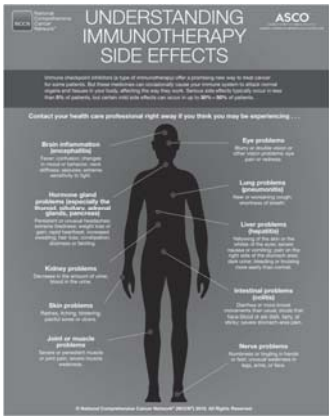


Nivolumab (Opdivo)
Pembrolizumab (Keytruda)

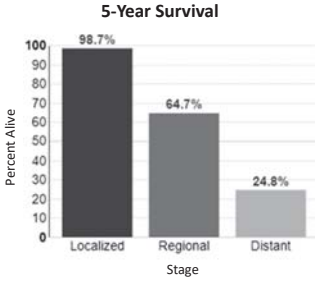
Franklin, C., et al. "Immunotherapy in melanoma: recent advances and future directions." *European Journal of Surgical Oncology (EJSO)* 43.3 (2017): 604-611.



Wilgenhof, Sofie, et al. "Patterns of response in patients with pretreated metastatic melanoma who received ipilimumab 3 mg/kg in a European expanded access program: five illustrative case reports." Cancer investigation 30.10 (2012): 712-720.



Early detection works for melanoma



SEER 18 2008-2014, All Races, Both Sexes by SEER Summary Stage 2000

Patient Knowledge & Skin Awareness Reduces Delay in Diagnosis

- 255 cases, newly diagnosed melanomas
- From population-based case control (1987-89)
- Personal interviews
- Skin awareness and delay: Adjusted OR 0.30 (0.12-0.71)
- Knowledge & Delay: OR 0.43-0.81

"Awareness of skin changes was associated with a reduced Breslow depth for stage I melanomas."

"Individuals who are aware of skin changes and abnormalities appear to be less likely to delay seeking medical attention for melanoma."

"Knowledge of melanoma signs and symptoms may also contribute to a decreased delay in melanoma diagnosis."

Oliveria SA, Christos PJ, Halpern AC, Fine JA, Barnhill RL, Berwick M. J Clin Epidemiol. 1999 Nov;52(11):1111-6.
Patient knowledge, awareness, and delay in seeking medical attention for malignant melanoma.

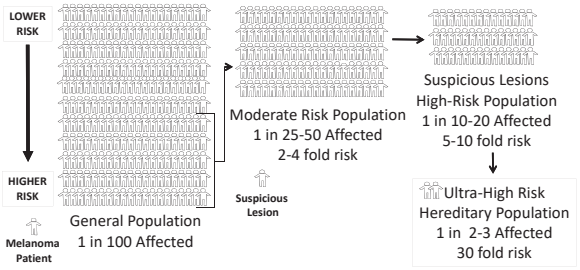
USPSTF Statement on Skin Cancer Screening

Published Statement for Screening ***Asymptomatic*** Adults 2016:
"Current evidence is insufficient to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adults."

BUT IT ALSO STATES….

*"This recommendation applies to asymptomatic adults who **do not have a history of premalignant or malignant skin lesions**. Patients who present with a **suspicious skin lesion** or who are already **under surveillance because of a high risk** of skin cancer, such as those with a familial syndrome (e.g., familial atypical mole and melanoma syndrome), are outside the scope of this recommendation statement."*

Risk Stratified Screening



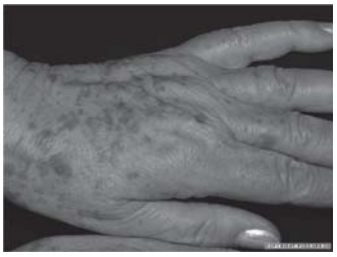
Risk Assessment Guidelines

- See handout

Patients age 21-75 – Administer Risk-Assessment Survey for New Patients			
	Some Risk (0-3)	Moderate Risk (4-8)	High Risk (9-12)
Melanoma risk factors:	• Blue or green eyes vs. dark • Indoor tanning use vs. never • Fitzpatrick skin type 1, 2, or 3 vs 4 • History of sunburn vs. no • High density freckles vs. low • 16-60 nevi	• Family history of melanoma in one or more first-degree relative • Red hair vs. dark • Total common nevi 61-80 vs <15 • History of AK vs no • Indoor tanning in women aged 30-39	• Indoor tanning in women aged <30 vs never used • Total common nevi 80 or more • Personal history of melanoma • Transplant recipient
Recommendations			
Education	• Warning signs and self- exams	• Warning signs and self-exams • Provider Skin Exam	• Warning signs and self-exams • Provider Skin Exam • NCCN Guidelines
Self-exams	Monthly	Monthly	Monthly
Medical Provider Exam	See a doctor if you have any concerns, consider a full-body skin check every other year by a medical provider	See any medical provider for a full-body skin check every year or if you identified a suspicious lesion	Full body skin check at least annually by a dermatologist

Case #1

Ms. Smith is a 55 year old woman who has heard an educational advertisement that suggested anything abnormal on her skin should be evaluated by her provider. **She has several spots on her hands that she feels are suspicious and would like to know if any of them look worrisome to you**.



Case #1: Doorway Risk Assessment

You evaluate her hands and reassure her that the solar lentigines are benign. However, you also notice that she has:

- Fair complexion (very light skin, red hair, green eyes)
- Numerous freckles
- Many visible moles on her face, neck, and arms
- Sun-damaged skin

Case #1: Clinical History

You ask her a few questions to complete the risk assessment

Populations at risk for developing melanoma
Adults aged 35-75 years with one or more of the following risk factors should be screened at least annually with a total body skin examination:

• **Personal history:**
  ○ **History of melanoma, actinic keratosis/es, basal cell carcinoma, or squamous cell carcinoma**
  ○ **CDKN2A (or other high-penetrance gene*) mutation carrier**
  ○ **Immunocompromise**
  ○ **History of blistering sunburns**
  ○ **History of indoor tanning bed use**
• **Family history:**
  ○ **Melanoma in one or more family members**
  ○ **Family history suggestive of a hereditary predisposition to melanoma**
• **Physical features:**
  ○ **Fair skin (Fitzpatrick I-III)****
  ○ **Blonde or red hair**
  ○ **>40 total nevi**
  ○ **≥2 atypical nevi†**
  ○ **Many freckles**
  ○ **Severely sun-damaged skin**

Case #1: Clinical History

- She admits to using a tanning bed several times a month for about 5 years when she was in her 20s and having a few blistering sunburns as a child
- No personal history of skin cancer
- No family history of melanoma
- She has never had a skin exam before and is otherwise healthy

Case #1: Management

After reassuring her that the lesions on her hands are benign, what would you do next?

A) Perform an opportunistic exam (face, neck, arms, etc.)
B) Recommend a skin cancer screening exam during the current visit or with you at another time
C) Recommend that she ask a dermatologist about regular screenings
D) Recommend that she track her moles at home and let you know if she sees something new or changing

Options for skin examination

Rapid total body skin examination:
- 5 minutes or less
- Start with the scalp/face, then work your way down
- Do it in the same order every time

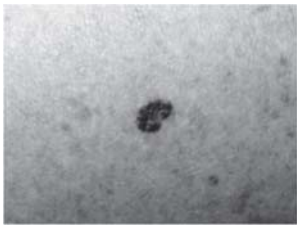
Thorough skin examination +/- dermoscopy:
- Necessary for patients with numerous nevi
- Consider referral to derm

Opportunistic exam:
- Exam areas of skin that are readily available without having the patient change into a gown

Case #1: Exam Findings

During Ms. Smith's full body skin exam it is noted that she has:

- 3 actinic keratoses on her face
- Suspicious nevus on her back
- Several benign-appearing nevi



Case #1: Documentation

Assessment/plan:

- **Neoplasm of unspecified behavior (D49.2)**
  - Biopsy (11102-11107)
- **Actinic keratosis(es) L57.0**
  - Destruction of premalignant lesions (17000)
- **Sun damaged skin (code L57.8), including solar lentigines (L81.4)**
- **Multiple pigmented nevi (D22.7)**
- **History of tanning bed use (Z91.89)**
- **Skin cancer risk assessment:**
  - Discussed with patient increased risk factors for skin cancer (red hair, fair skin, dense freckling, sun-damaged skin, history of indoor tanning bed use).
  - Recommend annual routine skin cancer screening.

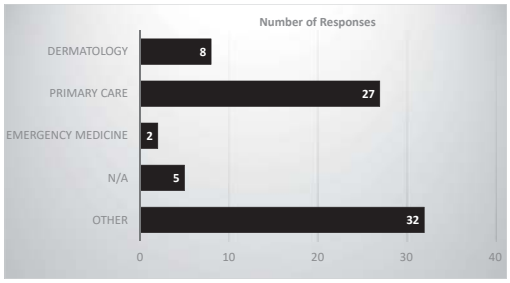
Quick Reference Guide Online in the Toolkit


Skin Cancer Screening Reference Guide

Screening Recommendations

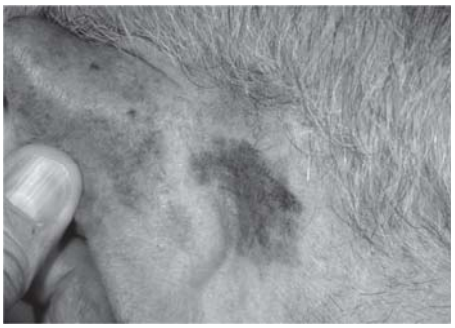
Diagnosis Codes

Specialties Participating

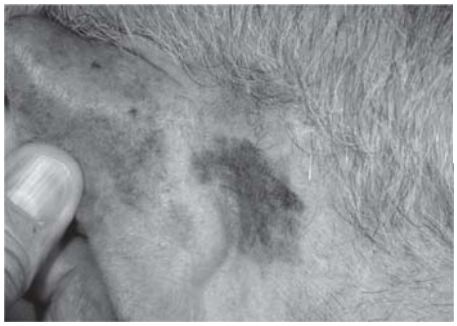


Other reported specialties include: Orthopedics, General Surgery, Anesthesia, Radiation Oncology, Psychiatry, Podiatry, & Otolaryngology

Question 82 Pre/Post test

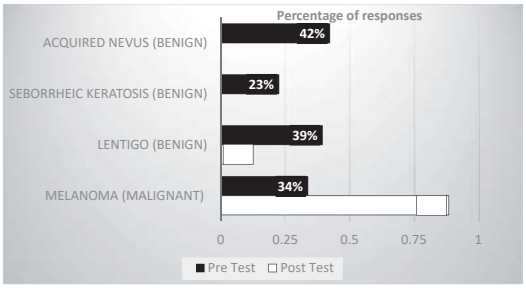


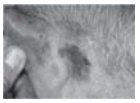
Question 82 Pre/Post test



Melanoma

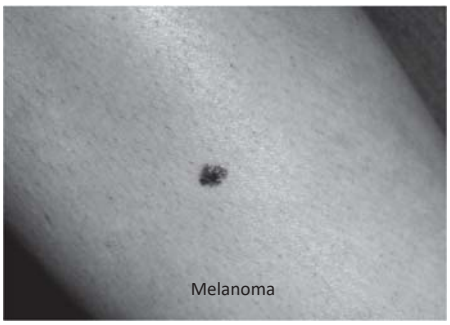
Question 82 Pre/Post test





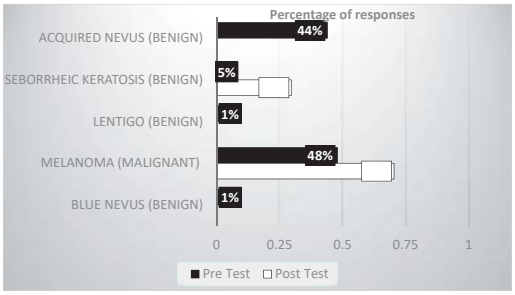
Question 58 Pre/Post test

Question 58 Pre/Post test



Melanoma

Question 58 Pre/Post test



Breakout

- Image identification practice
- Biopsy guidelines
- Interpreting path results

Melanoma Early Detection Toolkit

1. CME Training (Online or In-Person)
2. Patient education materials and tools (Order Form)
3. Melanoma Risk Evaluation Tool (in progress)

www.startseeingmelanoma.com → "For Medical Professionals"

Nephrology Update 2020

Raghav Wusirika, MD
Associate Professor of Medicine, Division of Nephrology and Hypertension
March 6th , 2020

Outline

- Diabetic Nephropathy- Credence Trial: Canagliflozin
- Hyperkalemia- Sodium Zirconium Cyclosilicate
- Anemia – Roxadustat: HIF hydroxylase inhibitor
- Executive Order to increase home dialysis

Diabetic Nephropathy

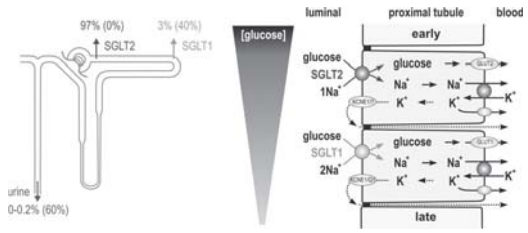
- Leading cause of CKD and ESRD worldwide
- Early manifestation is most commonly low grade proteinuria with normal eGFR

Diabetic Nephropathy

- Timeline of breakthroughs in treating the most common glomerular disease

SGLT2

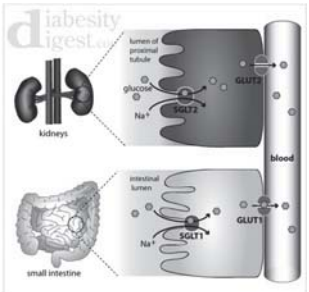
- SGLT2 (high capacity, low affinity) in the early proximal tubule resorbs ~90% of the filtered glucose in euglycemia
- SGLT1 (high affinity, low capacity) absorbs the other ~10%



Volker Vallon *Molecular determinants of renal glucose reabsorption.* Focus on "Glucose transport by human renal Na+/d-glucose cotransporters SGLT1 and SGLT2" American Journal of Physiology - Cell Physiology Published 28 December 2010 Vol. 300 no. 1, C6-C8

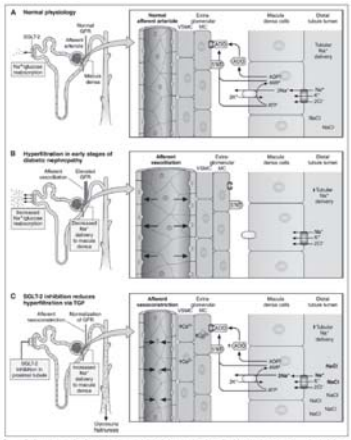
SGLT1

- SGLT1 is also present in the small intestines
  - Need selective inhibitors of SGLT2 to prevent intestinal glucose malabsorption and severe diarrhea



Scheen AJ. Pharmacokinetic and pharmacodynamic profile of empagliflozin, a sodium glucose co-transporter 2 inhibitor.Clin Pharmacokinet. 2014 Mar;53(3):213-25.

Possible Mechanism of Renal Benefits in Diabetic Nephropathy – Similar to ACEI



Heerspink HJ, Perkins BA, Fitchett DH, Husain M, Cherney DZ. Sodium Glucose Cotransporter 2 Inhibitors in the Treatment of Diabetes Mellitus: Cardiovascular and Kidney Effects, Potential Mechanisms, and Clinical Applications. Circulation. 2016 Sep 6;134(10):752-72.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 13, 2019 VOL. 380 NO. 24

Canagliflozin and Renal Outcomes in Type 2 Diabetes and Nephropathy

V. Perkovic, M.J. Jardine, B. Neal, S. Bompoint, H.J.L. Heerspink, D.M. Charytan, R. Edwards, R. Agarwal, G. Bakris, S. Bull, C.P. Cannon, G. Capuano, P.-L. Chu, D. de Zeeuw, T. Greene, A. Levin, C. Pollock, D.C. Wheeler, Y. Yavin, H. Zhang, B. Zinman, G. Meininger, B.M. Brenner, and K.W. Mahaffey, for the CREDENCE Trial Investigators*

ABSTRACT

CREDENCE

- Prior to CREDENCE, the only evidence of benefit from SGLT2 inhibitors for diabetic nephropathy came from a secondary analysis of Empaglifozin use in patients with DM and CHF (EMPA-REG OUTCOME trial 2016)
- CREDENCE was the first trial to look at a primary renal endpoint for SGLT2 inhibitors

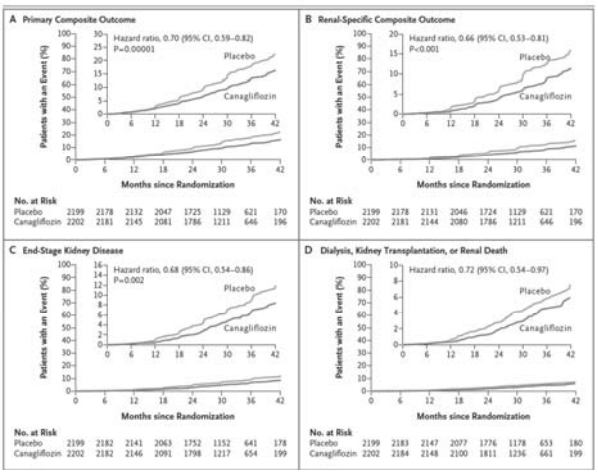
CREDENCE

- Double blind randomized controlled trial comparing canagliflozin 100 mg daily to placebo in 4401 patients
- Inclusion criteria
  - Type 2 DM
  - HgbA1c of 6.5 to 12
  - eGFR of 30-90 ml/min
  - Urinary albuminuria of 300 to 5000 mg/day
  - Already on a stable dose of an ACEI/ARB

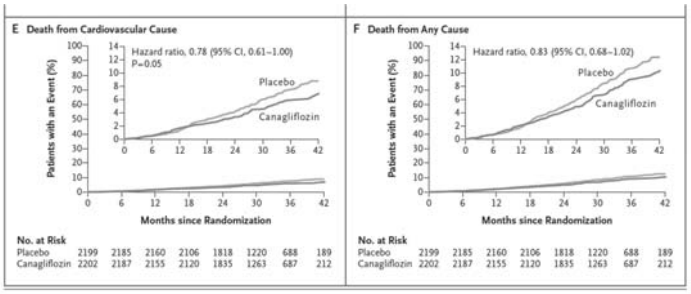
CREDENCE

- Primary outcome was a composite of ESRD, doubling of serum Cr, or death from renal or cardiovascular disease
- Patients were followed fro a median of 2.62 years

CREDENCE



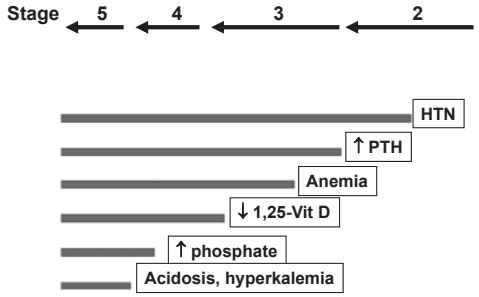
CREDENCE



CREDENCE

- Canagliflozin had a NNT of 22 for the composite end point
- This was in patients already on stable ACEI therapy
- Major side effects are polyuria and genital infections
- SGLT2 inhibitors should likely be considered in all patients with Diabetic Nephropathy

Hyperkalemia



Hyperkalemia

- Treatment of chronic or recurrent hyperkalemia in patients with CKD has been difficult and Kayexelate has been used frequently

Kayexelate

- Kayexalate-
  - Trades potassium for Na in the GI tract and excreted in the stool
  - No studies to prove it's efficacy
  - It has a known risk of bowel necrosis when given to patient's with an ileus

McGowan CE, Saha S, Chu G, Resnick MB, Moss SF. Intestinal Necrosis due to Sodium Polystyrene Sulfonate (Kayexelate). Southern medical journal. 2009;102(5):493-497.

Kayexelate

- Only study to date show no effect in ESRD patients
- No good data and clear known risk

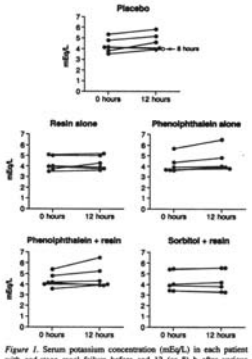


Figure 1. Serum potassium concentration (mEq/L) in each patient with end-stage renal failure before and 12 (or 8) h after various treatments.

Gruy-Kapral C, Emmett M, Santa Ana CA, Porter JL, Fordtran JS, Fine KD. Effect of single dose resin-cathartic therapy on serum potassium concentration in patients with end-stage renal disease. *J Am Soc Nephrol.* 1998;9(10):1924–1930.

Patriomer (Veltassa)

- Patriomer(Veltassa) is a nonabsorbed polymer suspension that binds potassium in the GI tract
- Similar in effect to Kayexelate but no significant diarrhea as a side effect
- Does inhibit absorption of many medications including amlodipine, Bactrim, Cipro, lithium, levothyroxine, etc.
- Effective but expensive at ~$30 per dose

Zirconium Cyclosilicate(Lokelma)

- Zirconium is another binding resin which exchanges Na for K in the GI tract
- More specific for K than kayexelate or patriomer which also bind Ca, Mg
- Dosed as 5gm-15g once to twice daily

Fishbane S, Ford M, Fukagawa M, et al. A Phase 3b, Randomized, Double-Blind, Placebo-Controlled Study of Sodium Zirconium Cyclosilicate for Reducing the Incidence of Predialysis Hyperkalemia. *J Am Soc Nephrol.* 2019;30(9):1723–1733. doi:10.1681/ASN.2019050450

CLINICAL RESEARCH www.jasn.org

A Phase 3b, Randomized, Double-Blind, Placebo-Controlled Study of Sodium Zirconium Cyclosilicate for Reducing the Incidence of Predialysis Hyperkalemia

Steven Fishbane,[1] Martin Ford,[2] Masafumi Fukagawa,[3] Kieran McCafferty,[4] Anjay Rastogi,[5] Bruce Spinowitz,[6] Konstantin Staroselskiy,[7] Konstantin Vishnevskiy,[8] Vera Lisovskaja,[9] Ayman Al-Shurbaji,[10] Nicolas Guzman,[11] and Sunil Bhandari[12]

Due to the number of contributing authors, the affiliations are listed at the end of this article.

ABSTRACT

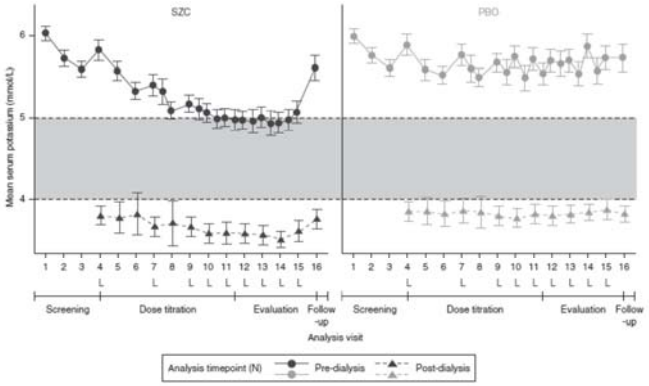
Background Patients with ESRD have minimal renal potassium excretion and, despite hemodialysis, often have persistent predialysis hyperkalemia. The DIALIZE study (NCT03303521) evaluated sodium zirconium cyclosilicate (SZC) in the management of hyperkalemia in hemodialysis patients.

Methods In the DIALIZE study, a double-blind, placebo-controlled, phase 3b multicenter study, we randomized adults with ESRD who were managed by three-times weekly hemodialysis and had predialysis hyperkalemia to receive placebo or SZC 5 g once daily on non-dialysis days, and titrated towards maintaining normokalemia over 4 weeks, in 5 g increments to a maximum of 15 g. The primary efficacy outcome was proportion of patients during the 4-week stable-dose evaluation period who maintained predialysis serum potassium of 4.0–5.0 mmol/L during at least three of four hemodialysis treatments after the long interdialytic interval and did not require urgent rescue therapy to reduce serum potassium.

Zirconium (Lokelma)

- Double blind placebo controlled trial of Lokelma 5gm -15 gm daily vs placebo for control of hyperkalemia in ESRD patients
- 196 dialysis patients who had hyperkalemia predialysis were treated for 8 weeks while following K levels

Zirconium Cyclosilicate(Lokelma)



Fishbane S, Ford M, Fukagawa M, et al. A Phase 3b, Randomized, Double-Blind, Placebo-Controlled Study of Sodium Zirconium Cyclosilicate for Reducing the Incidence of Predialysis Hyperkalemia. *J Am Soc Nephrol.* 2019;30(9):1723–1733. doi:10.1681/ASN.2019050450

Zirconium Cyclosilicate(Lokelma)

- No major safety concerns noted but does give high Na load
- No GI issues note
- Case report suggested lowering of K within 1 hour
- **Bottom line-** more effective and safer (so far) than Kayexelate. Also cheaper than Veltassa at $4-$10 per dose

Kosiborod M, Peacock WF, Packham DK. Sodium zirconium cyclosilicate for urgent therapy of severe hyperkalemia. *N Engl J Med.* 2015;372(16):1577–1578. doi:10.1056/NEJMc1500353

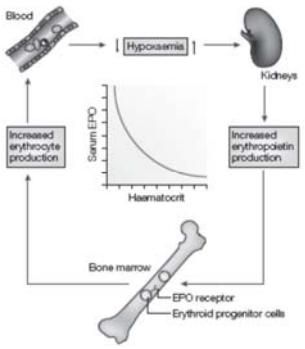
Fishbane S, Ford M, Fukagawa M, et al. A Phase 3b, Randomized, Double-Blind, Placebo-Controlled Study of Sodium Zirconium Cyclosilicate for Reducing the Incidence of Predialysis Hyperkalemia. *J Am Soc Nephrol.* 2019;30(9):1723–1733. doi:10.1681/ASN.2019050450

Comparing Potassium Binding Resins

Pharmacologic property	Sodium polystyrene sulfonate (SPS)	Patiromer calcium sorbitex	Sodium zirconium cyclosilicate
Brand name	Kayexalate	Veltassa	None (not FDA-approved)
Mechanism of action	Binds potassium in the gastrointestinal tract and facilitates excretion in the feces	Binds potassium in the gastrointestinal tract and facilitates excretion in the feces	Binds potassium in the gastrointestinal tract and facilitates excretion in the feces
Selectivity for potassium ion	Nonselective; also binds calcium and magnesium	Selective; also binds magnesium	Highly selective; nine times the potassium-binding capacity compared to SPS; also binds ammonium
Sodium content	1,500 mg sodium per 15 g dose	No sodium content	Approximately 1,000 mg sodium per 10 g dose

Beccari and Meaney. Core Evid. 2017 Mar 23;12:11-24.

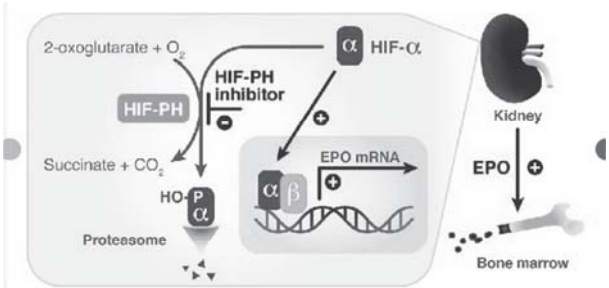
Anemia



- Erythropoetin produced in both the interstitial cells of the renal cortex and to a smaller degree in hepatocytes
- Kidney production is constant and maximal (no EPO stores)
- Anemia induces EPO but not to supranormal levels until Hgb <10

Spivak JL. The anaemia of cancer: death by a thousand cuts. Nat Rev Cancer. 2005 Jul;5(7):543-55. Review.

Hypoxia Inducible Factor (HIF)

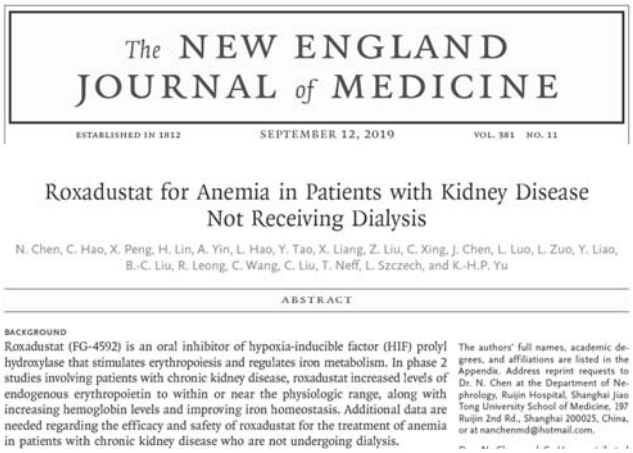


Ap romising novelt herapeutic approach for the treatment of anemia: stabilization of HIF via inhibitiono fHIF-PH translates into EPO inductioni nthe kidney and formation of red bloodcells in the bonemarrow. EPO:erythropoietin;HIF:hypoxia-inducible transcriptionf actor;HIF-PH:HIFprolyl hydroxylase;HO-P:hydroxylated proline residues.

https://www.researchgate.net/figure/Ap-romising-novelt-herapeutic-approach-for-the-treatment-of-anemia-stabilization-of-HIF_fig1_323438942

Roxadustat

- Oral HIF stabilizer that blocks the prolyl hydroxylase that normally breaks HIF down in normal conditions
- Increased HIF increases EPO production even in situations without hypoxia



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 12, 2019 VOL. 381 NO. 11

Roxadustat for Anemia in Patients with Kidney Disease Not Receiving Dialysis

N. Chen, C. Hao, X. Peng, H. Lin, A. Yin, L. Hao, Y. Tao, X. Liang, Z. Liu, C. Xing, J. Chen, L. Luo, L. Zuo, Y. Liao, B.-C. Liu, R. Leong, C. Wang, C. Liu, T. Neff, L. Szczech, and K.-H.P. Yu

ABSTRACT

BACKGROUND

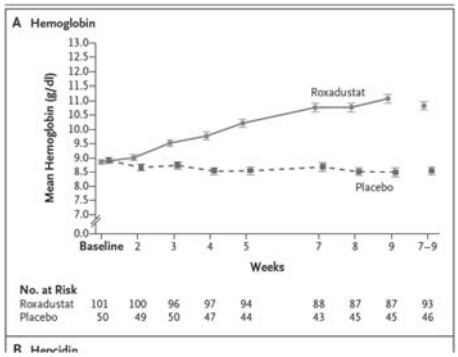
Roxadustat (FG-4592) is an oral inhibitor of hypoxia-inducible factor (HIF) prolyl hydroxylase that stimulates erythropoiesis and regulates iron metabolism. In phase 2 studies involving patients with chronic kidney disease, roxadustat increased levels of endogenous erythropoietin to within or near the physiologic range, along with increasing hemoglobin levels and improving iron homeostasis. Additional data are needed regarding the efficacy and safety of roxadustat for the treatment of anemia in patients with chronic kidney disease who are not undergoing dialysis.

The authors' full names, academic degrees, and affiliations are listed in the Appendix. Address reprint requests to Dr. N. Chen at the Department of Nephrology, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, 197 Ruijin 2nd Rd., Shanghai 200025, China, or at nanchenmd@hotmail.com.

Roxadustat

- Randomized open label placebo controlled trial in China
- 154 patients were randomized 2:1 roxadustat to placebo
- Followed for 18 weeks
- Primary end point was average Hgb levels weeks 7-9

Roxadustat



Roxadustat

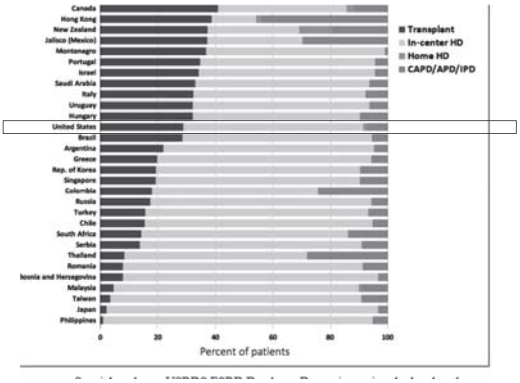
Table 3. Adverse Events (Safety Population).

Adverse Event	Roxadustat (N=101)	Placebo (N=51)
	no. of patients (%)	
Any adverse event*	37 (37)	25 (49)
Anemia	0	3 (6)
Diarrhea	0	3 (6)
Peripheral edema	7 (7)	3 (6)
Pyrexia	2 (2)	3 (6)
Upper respiratory tract infection	5 (5)	4 (8)
Hyperkalemia	16 (16)	4 (8)
Metabolic acidosis	12 (12)	1 (2)
Gout	1 (1)	3 (6)
Back pain	0	3 (6)
Dizziness	1 (1)	4 (8)
Hypertension	6 (6)	2 (4)

Roxadustat

- First oral medication to treat CKD related anemia
- Likely will be more important in pre-ESRD patients who otherwise need to come to an infusion center or give themselves injections
- Side effect profile is concerning in that hyperkalemia and acidosis are already difficult to manage in late stage CKD
- Still awaiting FDA approval (submitted 12/19)

Home dialysis US vs Everyone Else



USRDS 2014

EXECUTIVE ORDERS

Executive Order on Advancing American Kidney Health

— HEALTHCARE | Issued on: July 10, 2019

* * *

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Purpose. My Administration is dedicated to advancing American kidney health. The state of care for patients with chronic kidney disease and end-stage renal disease (ESRD) is unacceptable: too many at-risk patients progress to late-stage kidney failure; the mortality rate is too high; current treatment options are expensive and do not produce an acceptable quality of life; and there are not enough kidneys donated to meet the current demand for transplants.

Kidney disease was the ninth-leading cause of death in the United States in 2017. Approximately 37 million Americans have chronic kidney disease and more than 726,000 have ESRD. More than 100,000 Americans begin dialysis each year to treat ESRD. Twenty percent die within a year; fifty percent die within 5 years. Currently, nearly 100,000 Americans are on the waiting list to receive a kidney transplant.

Executive Order

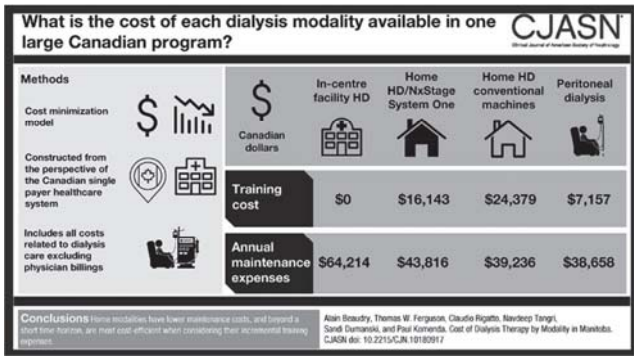
- Unfunded mandate to have 80% of patients of new ESRD patients transplanted or on home dialysis
- Encourages living donation but no formal pathway yet

Executive Order

- Since this is unfunded and there is no framework to change transplantation rates, this is largely an attempt to shift patients to home dialysis
- Why? Home dialysis is cheaper for Medicare
  - Less nursing care
  - No facility review/regulation costs

Executive Order

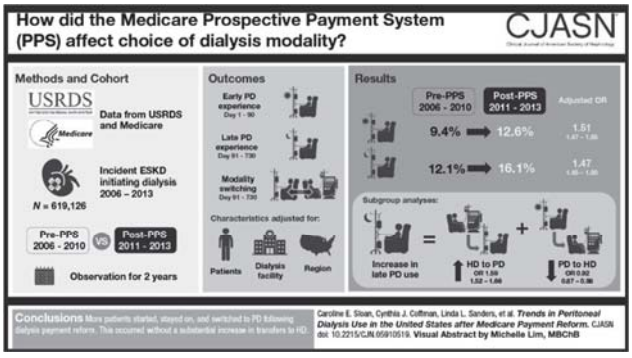
Costs of therapies in Canada (US costs vary widely)



Executive Order

- Large dialysis groups are also in favor as the current model of payment is one of capitated payments so they get paid nearly the same but with less overhead so it's still more profitable for them
- Patient outcomes are slightly better on home dialysis albeit with a strong selection bias

Executive Order



Executive Order

- In general the idea of getting more patients to transplant or home seems good.
- The goal is high/nearly impossible
  - Not all patients live at "home"
  - Not all homes have space for dialysis
  - Not all patients have support at home
  - I do think some patients like coming to a center, having help every treatment by nurses, dietitians and social workers, seeing patients in similar circumstances and not having to do all the work themselves

Executive Order

- There is still a lot of money involved so there will be more patients on home therapy
- PD is likely to be more common so being familiar with it will be helpful
  - PD fluid uses glucose so it can spike blood sugars
  - The glucose load also causes weight gain

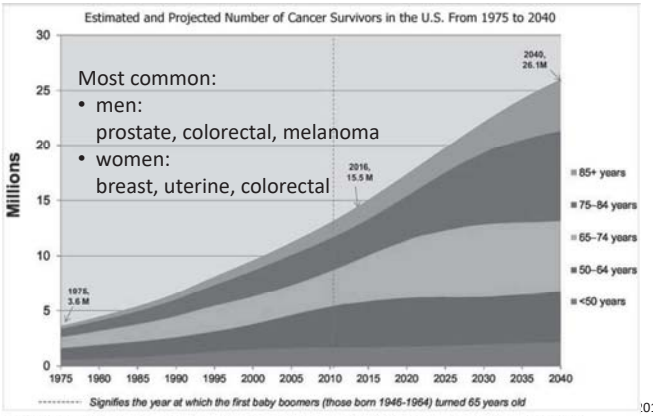
Questions


Muner Mohamed
@MunerMohamed1
When nephrologist asked to cut tomatoes

Late or Long-term Effects of Cancer Treatment

Mary Pickett, MD
Associate Professor in Medicine
OHSU

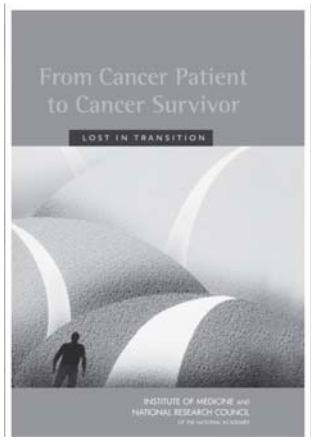
OHSU Internal Medicine Review
March 6, 2020 Portland, Oregon



Bluethmann SM, Mariotto AB, Rowland, JH. Cancer Epidemiol Biomarkers Prev. 2016;25:1029-1036.

1/2 of all men and
1/3 of all women
will develop cancer in
their lifetimes.

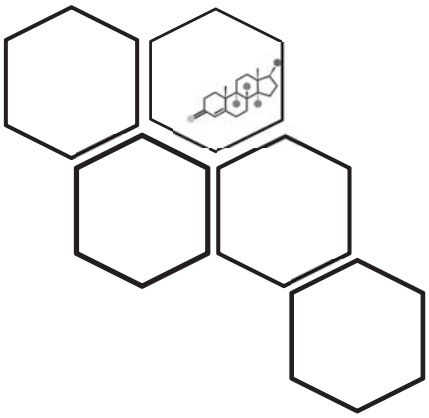
Cancer survivors should be provided with a "Survivorship care plan"



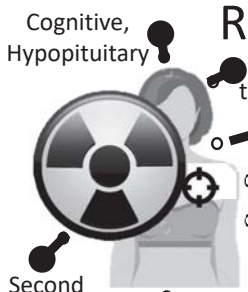
November 2005

What belongs in a "survivorship care plan"?

- **Record of care**
- **Late/long-term effects**
- **Screening/surveillance** plan
- **Psychosocial support**
- inform **1st degree relatives**?
- +/- **Genetic testing**
- +/- **Chemoprevention**
- +/- **Risk reducing surgery**

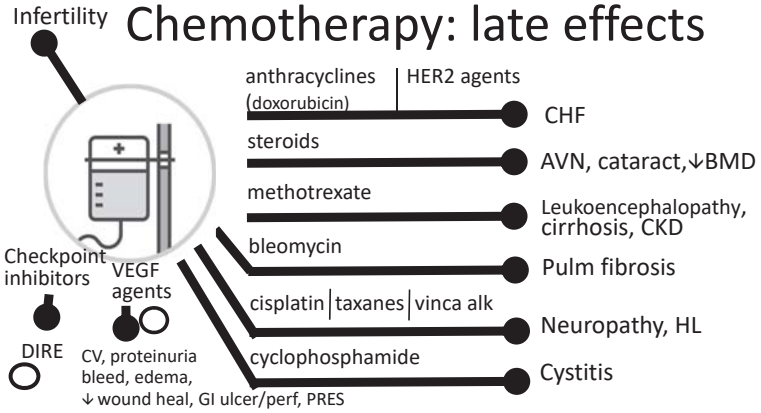


Radiation: late effects



Cognitive, Hypopituitary
Cataract, tinnitus, HL
Hypothyroid, trismus, dry mouth, autonomic dysreflexia
CAD, CHF, Valve disease
Pulm Fibrosis
Myelopathy, lower motor neuron syndrome
↓ motility/SIBO, stricture, malabsorption, DM (pancreatic)
Radiation proctitis, fecal soiling, anal ulcer/fistula, pelvic/hip fx
Second cancers
Infertility, postmenopausal bleeding

Chemotherapy: late effects



Hormonal therapies

Surgery/resection: late effects

Imaging exposures: sequelae

Breast Cancer
Late Effects of Treatment

Induced Menopause: Non-estrogen alternatives

For hot flash:

- SSRI/SNRI (venlafaxine, paroxetine*, citalopram) *avoid if taking tamoxifen
- Gabapentin

For vaginal dryness:

- Non-estrogen moisturizers: Replens, Vagisil
- if symptoms are severe, estrogen ring, cream may be discussed.

Longterm/Late effects: Breast Cancer treatments

Cognitive ("Chemo brain")

16 -71% --memory, mental cloudiness, ↓concentration, ↓ multitasking
Consider stimulants

Lymphedema

10 - 50% if complete axillary lymph node dissection/
5 - 20% if sentinel lymph node biopsy.
Triggers: BP cuff, insect bites, venipuncture, trauma, air travel
Treatments: PT and compressive garments

Neuropathy

Fertility

- Can achieve a healthy pregnancy without negatively affecting disease-free survival, regardless of hormone receptor status.
- Amenorrhea from chemo:
  Affects most women
  More likely to be reversible in women < 40 years
- Avoid hormonal birth control

Colon Cancer
Late Effects of Treatment

Colon cancer: late effects

Ostomy

- Ostomy "wrap"/cummerbund "specialty lingerie"

Radiation Proctitis

Pelvic and hip Fractures (from radiation-induced ↓BMD)

Urinary, Sexual dysfunction

- Chronic persistent diarrhea in 49%

Prostate Cancer
Late Effects of Treatment

Prostate cancer: Late Effects

Osteoporosis (androgen deprivation)

Cardiovascular disease (androgen deprivation)

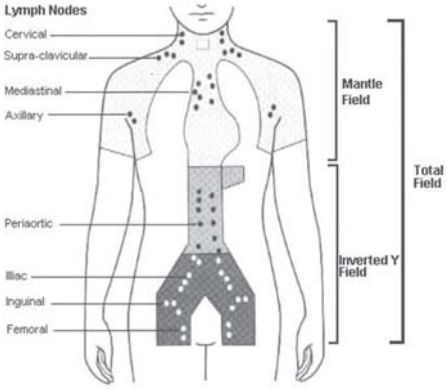
Radiation Proctitis

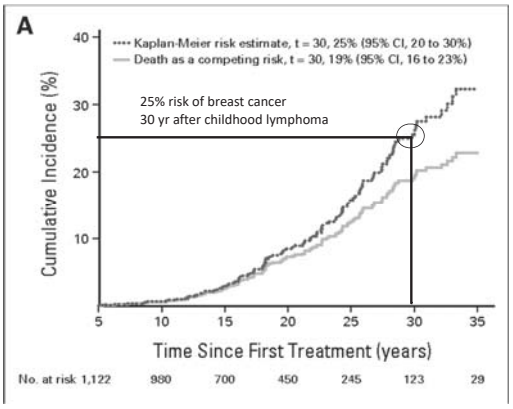
Pelvic and Hip Fractures (from radiation-induced ↓BMD)

Urinary, Sexual dysfunction, Penile fibrosis/shortening

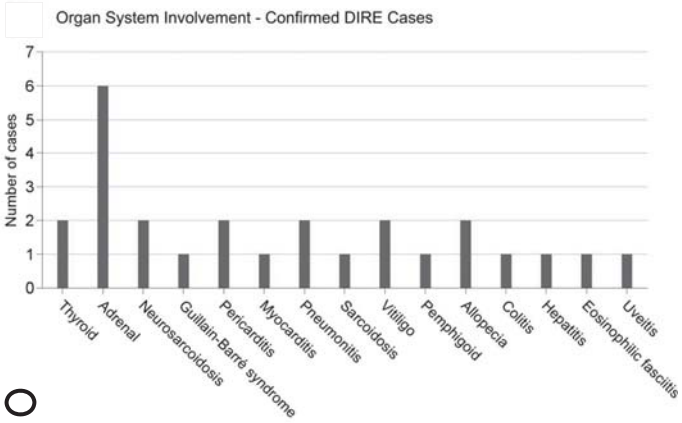
Low T

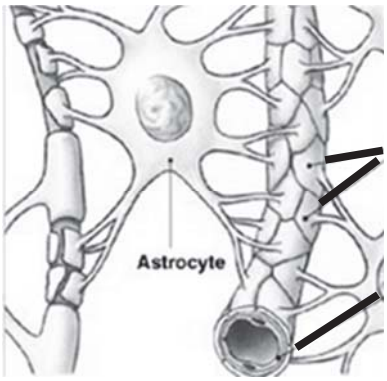
–testosterone therapy may be used after "prudent interval"



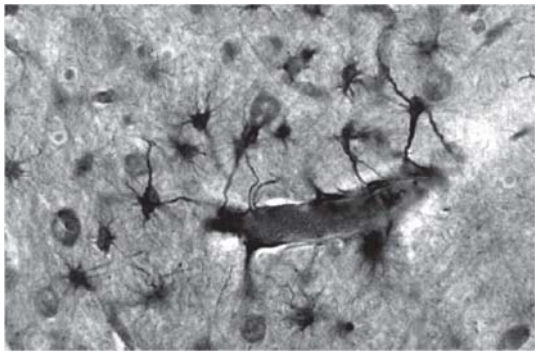


Hodgkin's Lymphoma: Lifetime Breast Cancer Risk is strongly elevated





Blood brain barrier



Melanoma detection:
Different tools for different populations

Sancy Leachman, MD, PhD
Internal Medicine Review - Breakout
2/5/2020

No Relevant Conflicts of Interest
MoleMapper (iPhone App) free & open source
Non-topic related COI:

Myriad Genetic Laboratories (early access)
Castle BioSciences (early access)
Palvella Therapeutics (advisory board)
DermDetect (Business Associate Agreement)
Merck (advisory board)
Orlucent (advisory board

Today's Objectives

- **Evaluate the Lesion**: Practice visual identification
- **Biopsy:** Identify melanoma biopsy guidelines
- **Resources: Identify** where to find further CME and un-branded patient education materials

How to perform a total body skin examination

Opportunistic exam:
- Exam areas of skin that are readily available without having the patient change into a gown

Rapid total body skin examination:
- 5 minutes or less
- Start with the scalp/face, then work your way down
- Do it in the same order every time

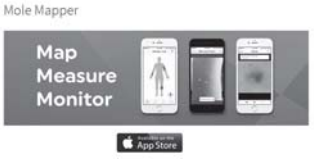
Thorough skin examination +/- dermoscopy:
- Necessary for patients with numerous nevi
- Consider referral to derm

Self-Exams: Empowering Patients

- Performance of a monthly Total Self-Skin Exam (TSSE) is **associated with thinner melanomas and reduced mortality**
- Roughly 75% of melanomas are first detected **by the patient**, not the provider
- Patients should conduct a TSSE once a month to look for **new, changing, or non-healing lesions**

Self Exams and Partner Exams

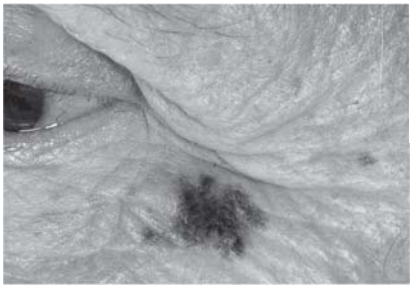
- Use mirrors (ideally full-length and hand mirror) to examine skin from head to toe
- If available, a partner can assist in monitoring difficult-to-see areas
- Take serial photos



Objective #1
Evaluating the Lesion

- Compare and contrast benign and malignant melanocytic neoplasms in the skin
- Outline helpful clinical criteria in differentiating between the two

What is your diagnosis?

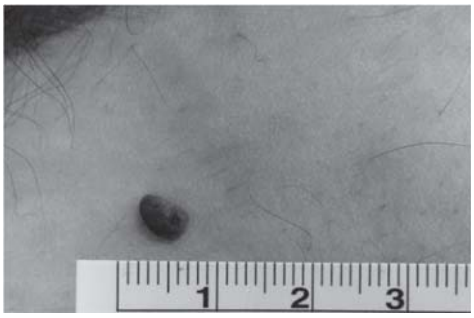


Reference: Visual Perception Training, Northwestern

What is your diagnosis?

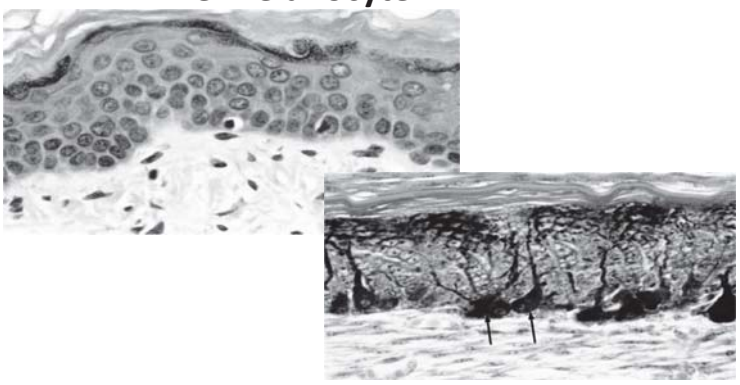
Reference: Visual Perception Training, Northwestern

What is your diagnosis?



Reference: Visual Perception Training, Northwestern

The Melanocyte

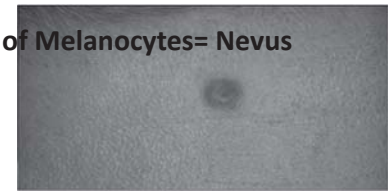


What are Typical Benign Pigmented Lesions?

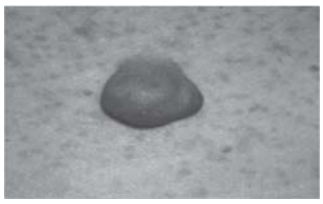
- Symmetrical
- Rounded borders
- Uniform color
- Small (5-6mm)

Benign Proliferation of Melanocytes= Nevus

Junctional nevus



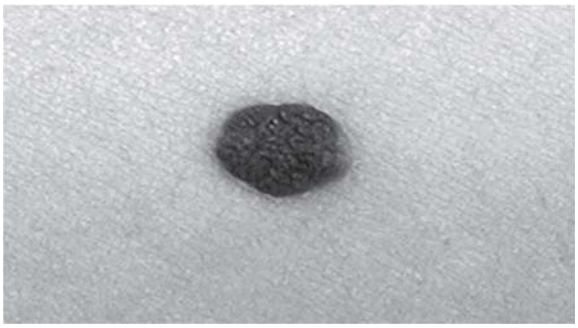
Compound nevus

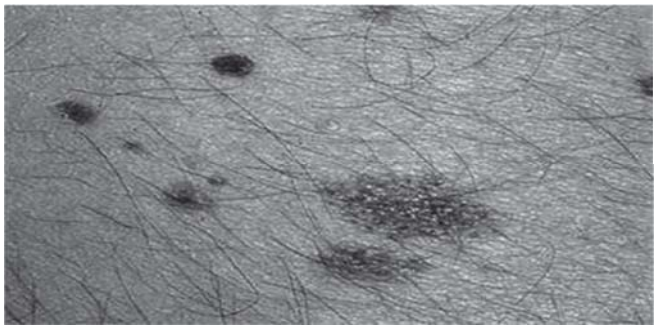


Intradermal nevus

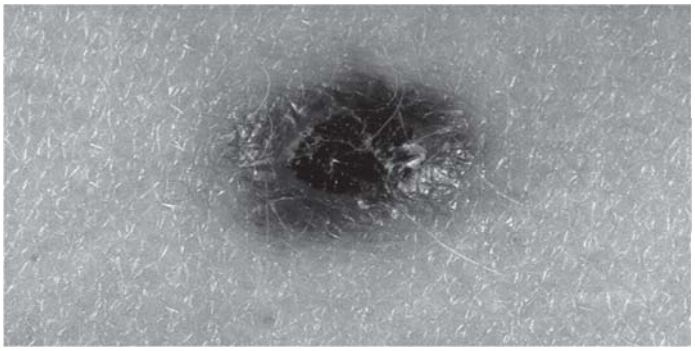
Melanocytic Nevi Subtypes

- Junctional (flat, brown)
- Compound (raised, brown)
- Intradermal (more raised, brown or often skin colored)

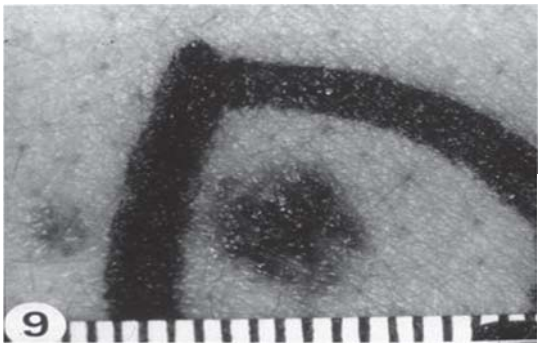




Blue Nevus



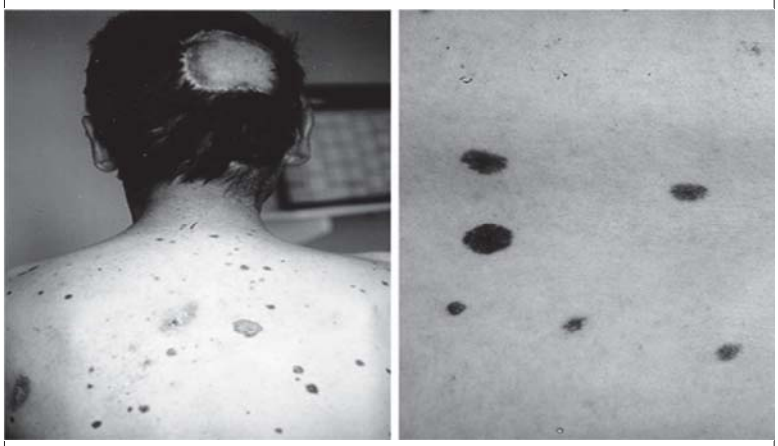
Simple Lentigo



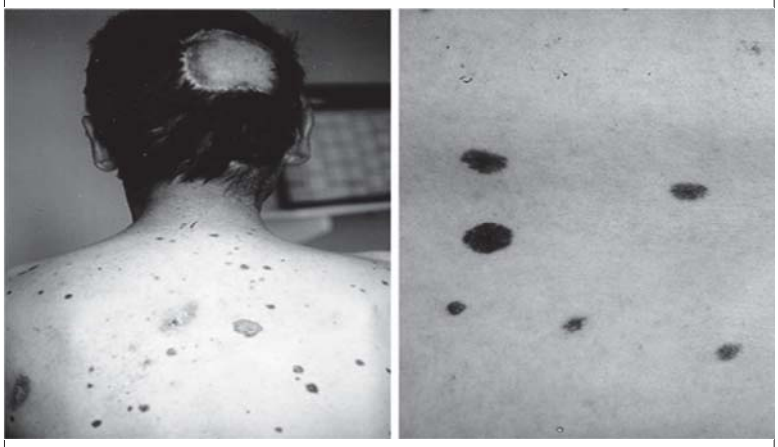
For Every “Rule” There Are Exceptions

Clark’s (Dysplastic / Atypical) Nevus

Exception!



How would you describe these pigmented lesions?

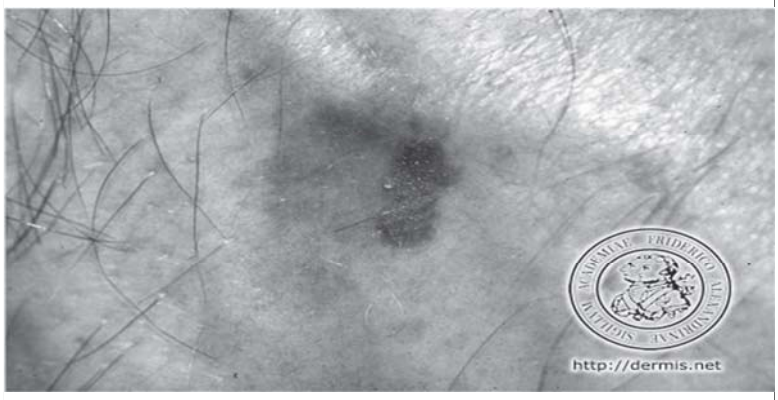


Some Congenital Nevi

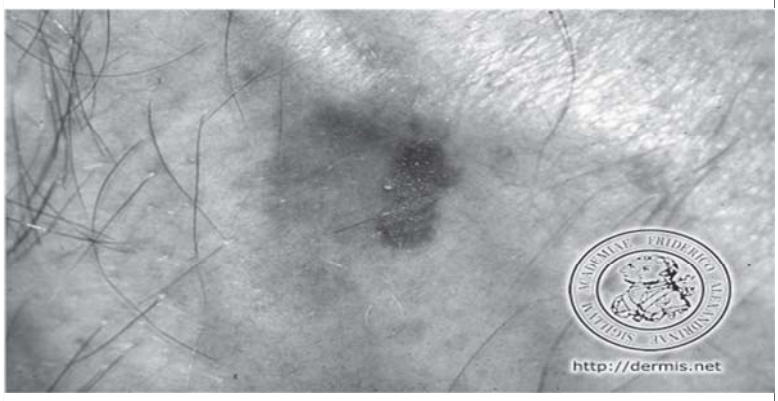
Exception!

Solar Lentigo (age spots)

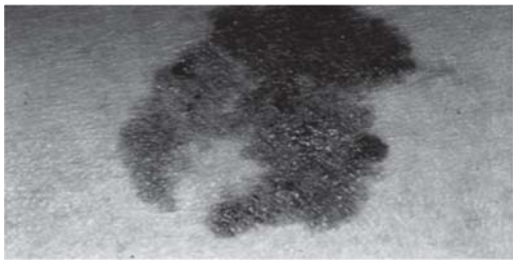
Exception!



What is different about this lesion compared with a “normal mole”?



Melanoma = malignant proliferation of melanocytes



Melanoma

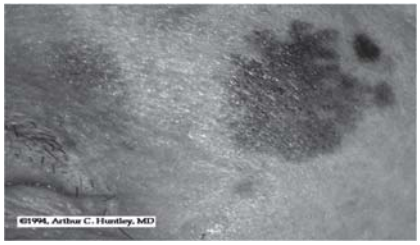
- 1 in 80 Americans
- Incidence increased 1000% in past 50 years
- Risks
  - Light complexions
  - Light eyes
  - Blond or red hair
  - Blistering sunburns
  - Heavy freckling
  - Tanning poorly
  - Family or personal history of melanoma

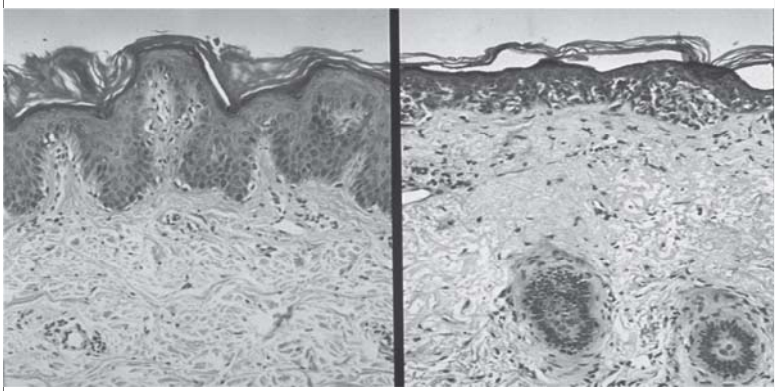
Melanoma

- Most often begin from melanocytes in the epidermis
- About half evolve from pre-existing nevi
- Survival nearly ensured if lesion caught early!

Melanoma in situ

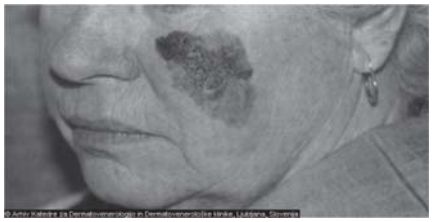
- Confined to the epidermis
- Often found on face of elderly patients with sun damage
- Melanoma caught early has the best prognosis





Invasive Melanoma

- Melanoma which has grown into the dermis
- Happens quickly in some patients but slowly in others
- Prognosis based on depth and presence of ulceration
- Sentinel node biopsy is a current prognostic adjunct

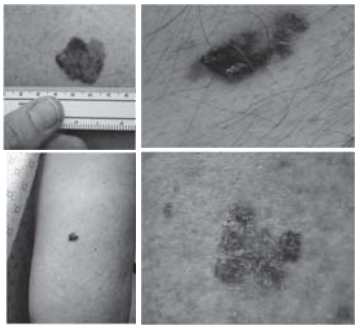


Keys to Early Diagnosis of Melanoma

- Maintain a **HIGH** index of clinical suspicion
- Maintain a **LOW** threshold for biopsy
- Utilize good biopsy technique insuring adequate specimen

Superficial spreading melanoma

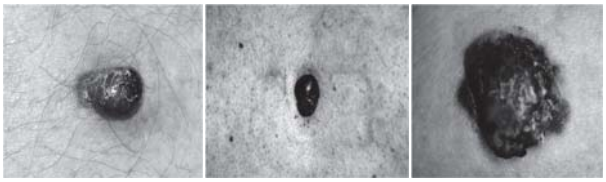
- Most common (70%)
- Intermittently sun-exposed skin
  - Backs of men
  - Legs of women
- Variable pigmented macule with irregular borders
- Thinner Breslow depth



Reference: Missouri ECHO

Nodular melanoma

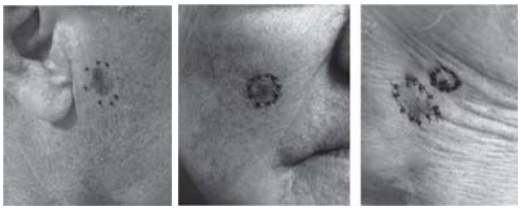
- Second most common (15-30%)
- Darkly pigmented papules or nodules, may be pink/amelanotic, may have even symmetric borders
- Early vertical growth phase → deeper Breslow depth



Reference: Missouri ECHO

Lentigo maligna

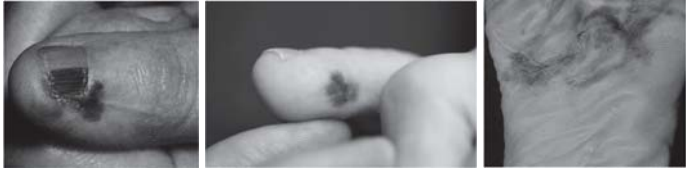
- Third most common (10-15%), incidence rising
- Chronically sun-damaged skin
- Slowly enlarging irregularly pigmented macule
- Prolonged radial growth phase (in situ phase)



Reference: Missouri ECHO

Acral lentiginous and subungual melanoma

- Less than 5%, most common subtype in dark-skinned individuals
- Palmar, plantar, subungual surfaces
- Irregularly pigmented macules or patches
- Thickening band of pigment within the nail plate or nail fold



Reference: Missouri ECHO

Comparison

Nevus

- Symmetric
- Round to oval
- Uniform Color
- Small
- Non-changing

Melanoma

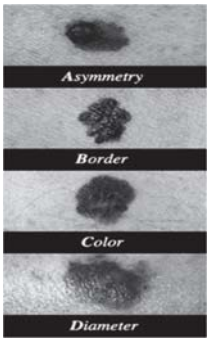
- Asymmetric
- Irregular border
- Irregular or multicolored
- Large
- Evolving / changing

Keys to Early Diagnosis of Melanoma

- Maintain a HIGH index of clinical suspicion
- Maintain a LOW threshold for biopsy
- Utilize good biopsy technique insuring adequate specimen

ABCDE's of Melanoma

- Not all of these criteria need to be met
- Some melanomas only have one "strike" against them!
- A= Asymmetry
- B= Border
- C= Color
- D= Diameter > 6mm
- E= Evolution
- most important criteria!

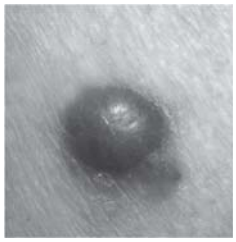


E= Evolution

- "My mole is changing"
- "My mole is growing"
- "My mole is itching"
- "This is a new mole"

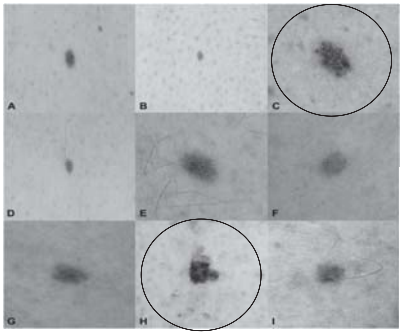
Difficult melanomas- the "EFGs"

- **E**levation
- **F**irm
- Continuous **G**rowth for greater than one month
- Helps in diagnosing spitzoid, amelanotic, desmoplastic melanomas, etc which typically lack characteristic features of melanoma



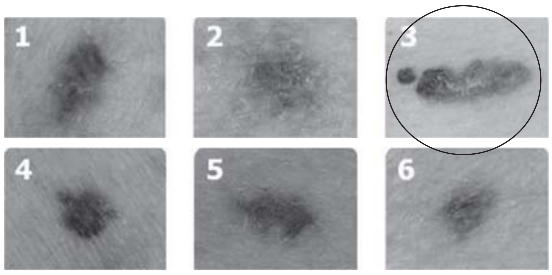
Chamberlain AJ, et al. J Am Acad Dermatol. 2003;48(5):694

The Ugly Duckling Sign

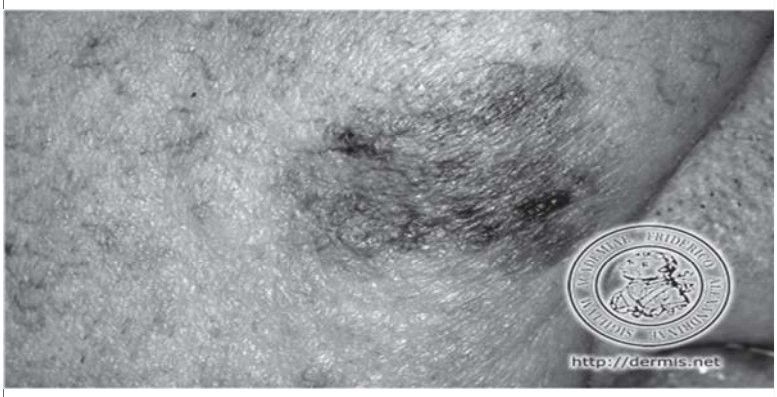


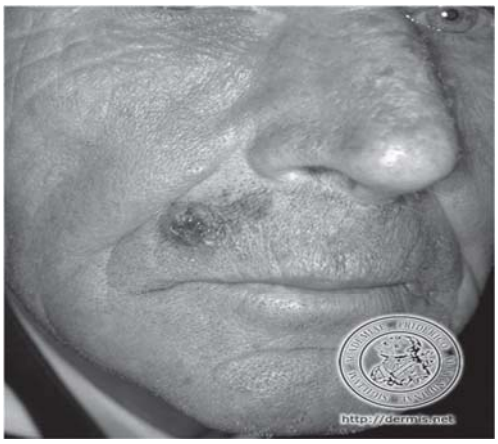
Ilyas, et al. JAAD 2017;77(6):1088-1095

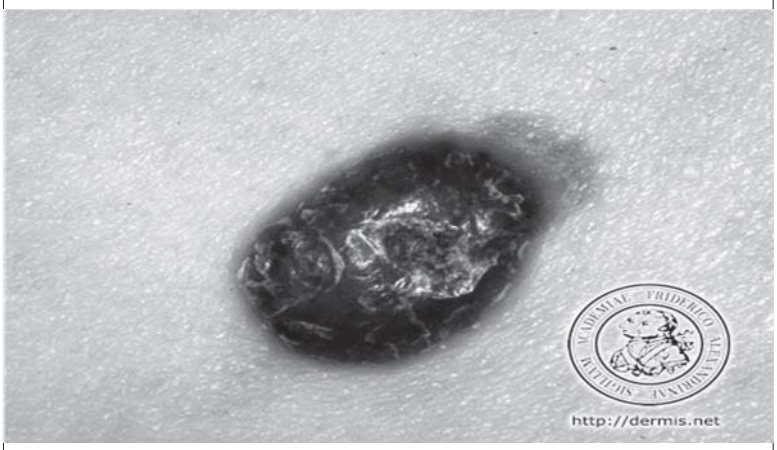
The Ugly Duckling Sign

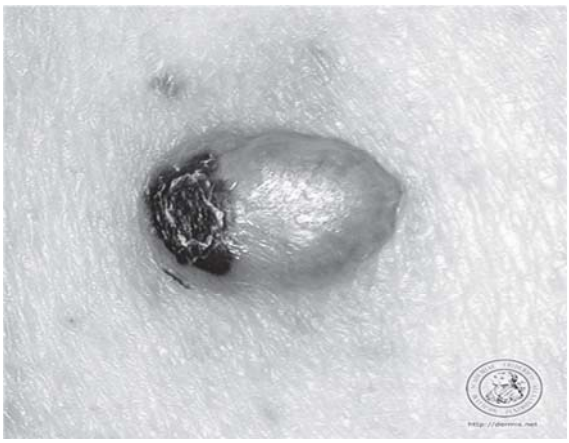


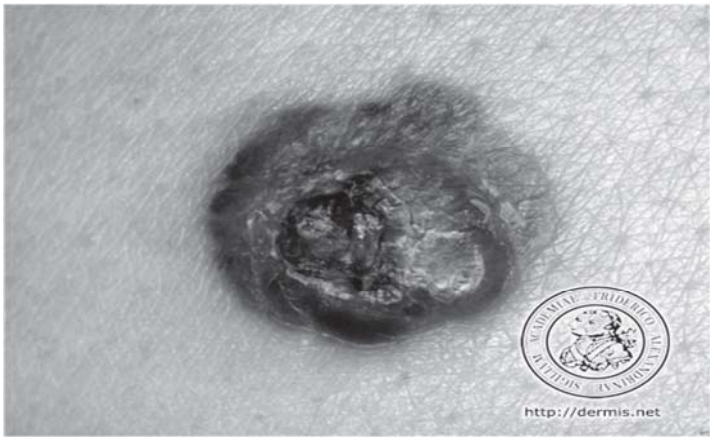
Reference: Informed







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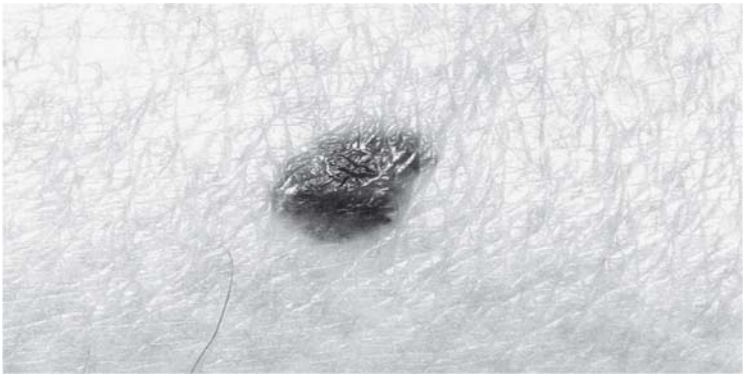
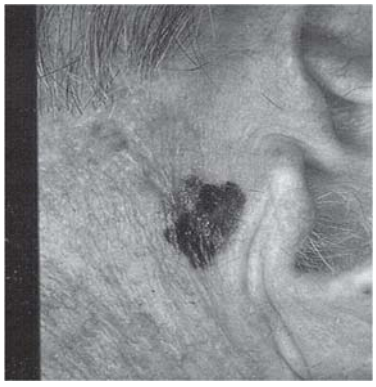
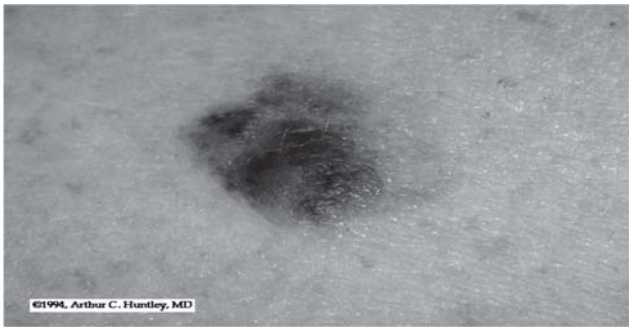
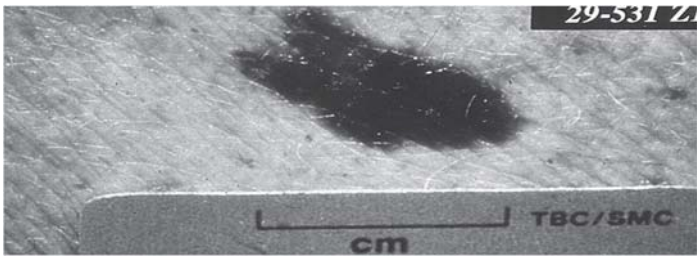





©1994, Arthur C. Huntley, MD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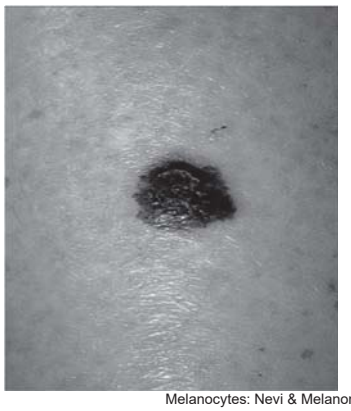
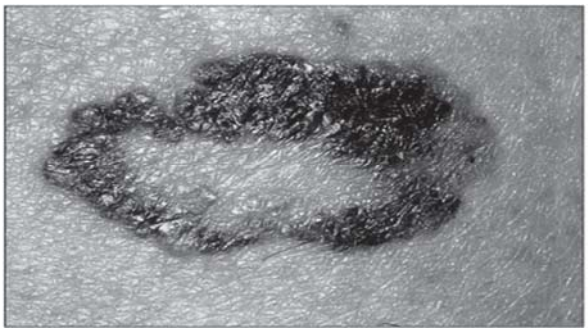
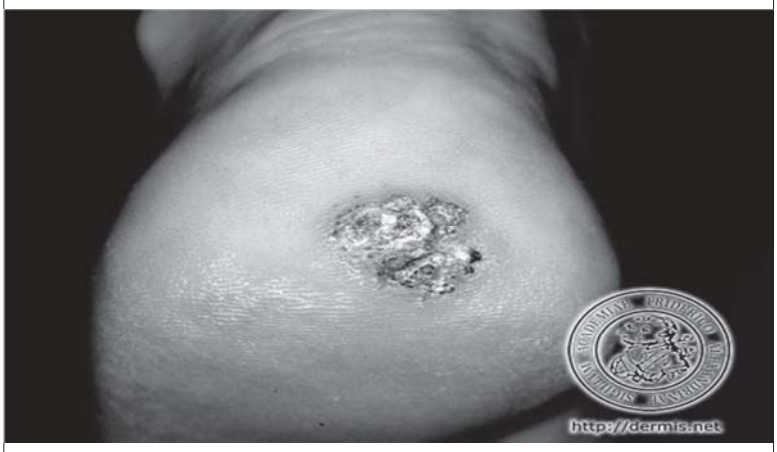
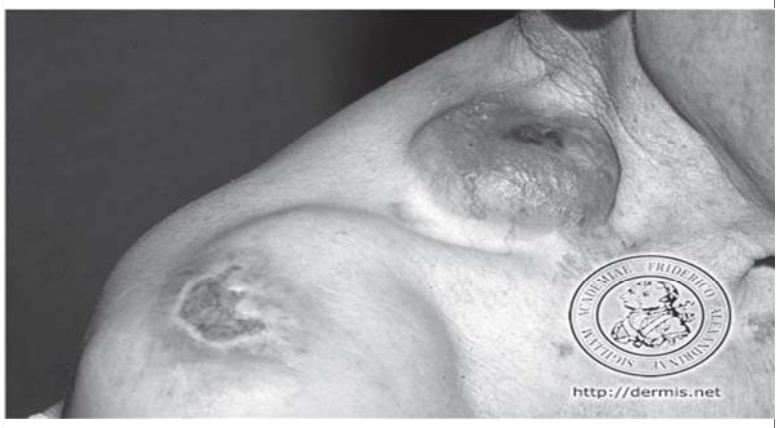


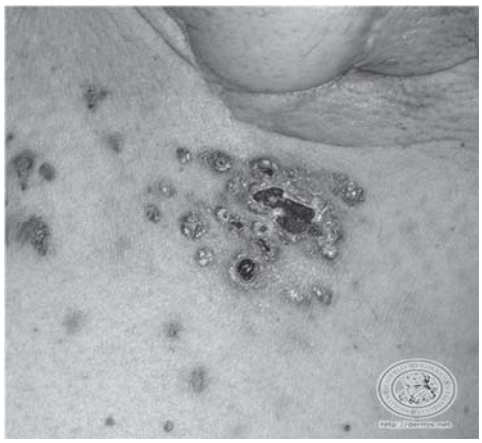
Kevin White, MD

Melanocytes: Nevi & Melanoma





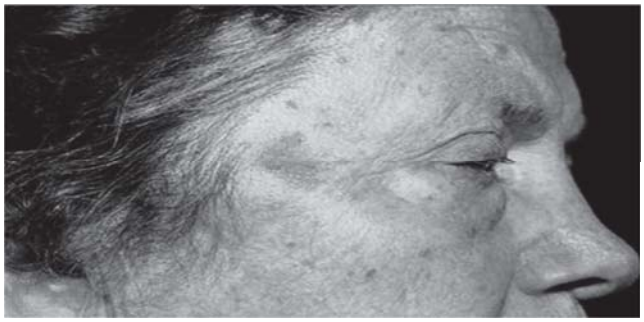




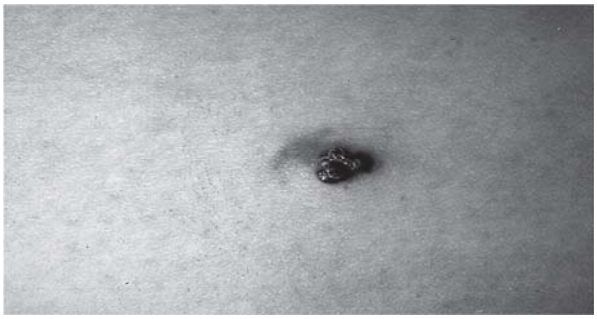
Comparison

Nevus
- Symmetric
- Round to oval
- Uniform Color
- Small
- Non-changing

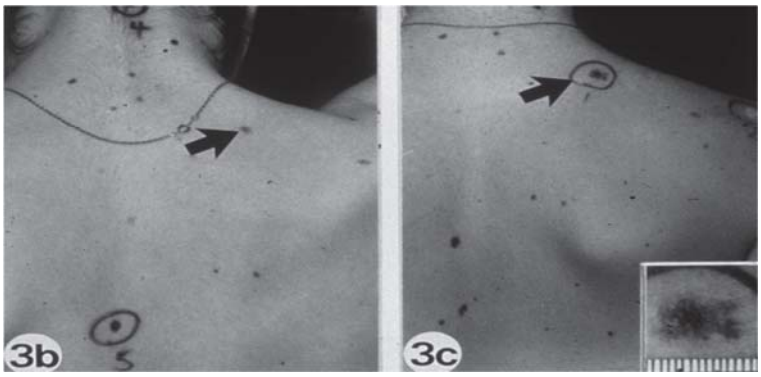
Melanoma
- Asymmetric
- Irregular border
- Irregular or multicolored
- Large
- Evolving / changing



Amelanotic melanoma-difficult to diagnose

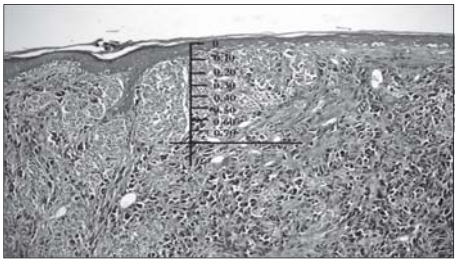


Practice the ABCDE's with this lesion:



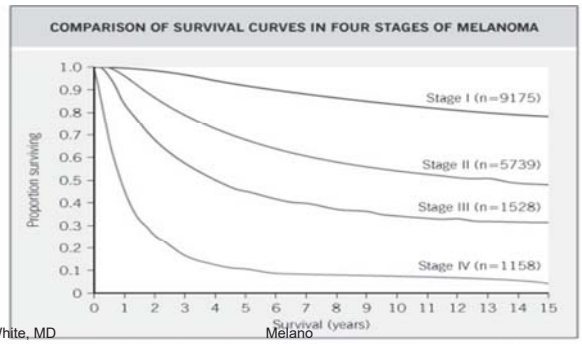
Primary Melanoma: What factors influence prognosis?
- Depth (microscopic thickness) of involvement is the single most important factor in survival
- Ulceration is next

Breslow's Micrometric Thickness



Ocular micrometer

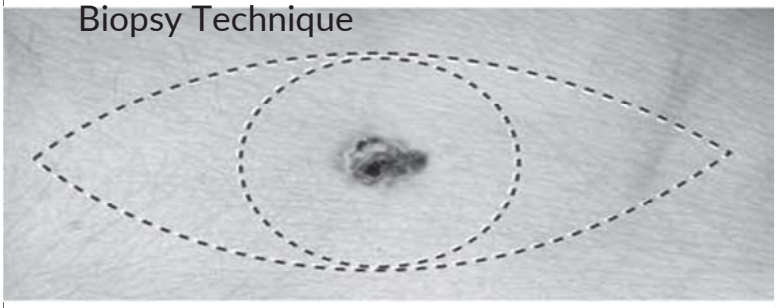
Melanoma Survival



Kevin White, MD Melano cytes:

The single best treatment for melanoma is complete excision prior to metastasis.

Biopsy Technique



Kevin White, MD Melano cytes:

Objective #2
Biopsy Guidelines

Triggers for Biopsy

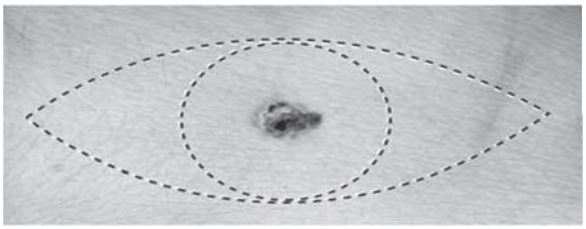
- **ABCDEs , EFGs, "ugly duckling" sign**
- **Rapidly growing** (weeks to months)
- **Tender** to palpation
- **Bleeding** without manipulation
- I**mmunosuppressed** patient
- **If the patient is concerned**! *Especially* if they have a history of skin cancer
- At minimum, photograph, measure, and follow-up in 3-6 months, educate the patient to contact you sooner if there are changes

Biopsies

- Incisional biopsy = removal of a portion of the lesion
  - Non-melanoma skin cancers
  - Only need enough to make the diagnosis
  - Can use shave or punch technique
- Excisional biopsy = removal of entire lesion
  - PIGMENTED LESIONS
  - Must remove the whole lesion for staging purposes
  - Can use deep shave/ saucerization, punch, or elliptical excision technique

Biopsy Technique

The single best treatment for melanoma is complete excision prior to metastasis.



Biopsy Key Points

- For pigmented lesions, remove the ENTIRE lesion (excisional biopsy)
  - Punch biopsy
  - Deep shave/ saucerization biopsy
  - Elliptical excision with scalpel
- Lesions <8mm in diameter = PUNCH BIOPSY
- Lesions >8mm in diameter = SAUCERIZATION or ELLIPTICAL EXCISION

Biopsy Key Points

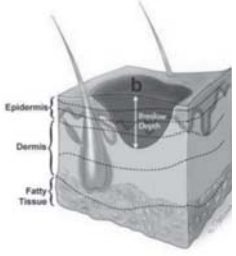
- If an excisional biopsy is impractical due to very large size or location (face), may perform partial biopsy as a last resort
  - For thin melanomas on the face, consider:
    - Broad thin shave biopsy
    - Multiple small shave biopsies ("scouting biopsies")
  - For multicolored lesions, each color in the lesion should be sampled

Biopsy Results

- If a melanoma is detected, the standard of care is to arrange treatment within 4 weeks of diagnosis
- Refer melanomas with <0.8mm Breslow depth to dermatology
- Refer melanomas with ≥0.8mm Breslow depth to surgical oncology and dermatology

Biopsying Pigmented Lesions

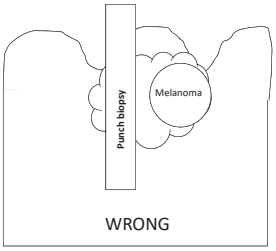
*The most important prognostic indicator in melanoma is the Breslow depth



Reference: Missouri ECHO

Biopsying Pigmented Lesions

Partial biopsy can lead to diagnostic <u>inaccuracy</u> or <u>misdiagnosis</u>



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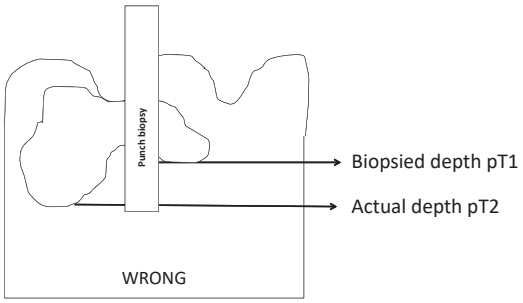
Biopsying Pigmented Lesions



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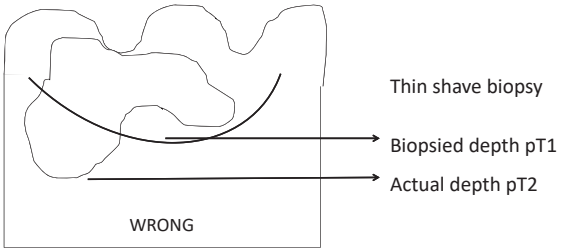
Biopsying Pigmented Lesions



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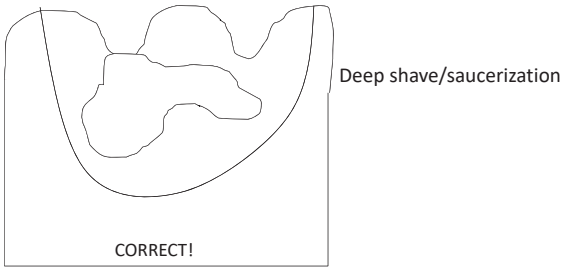
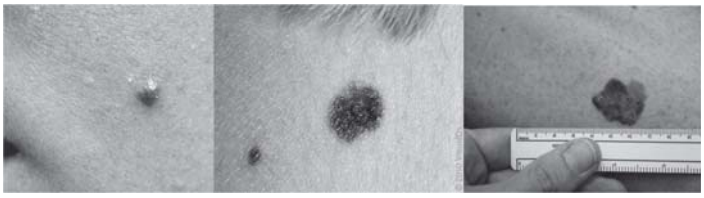
Biopsying Pigmented Lesions



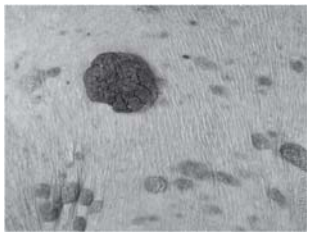
Reference: Missouri ECHO

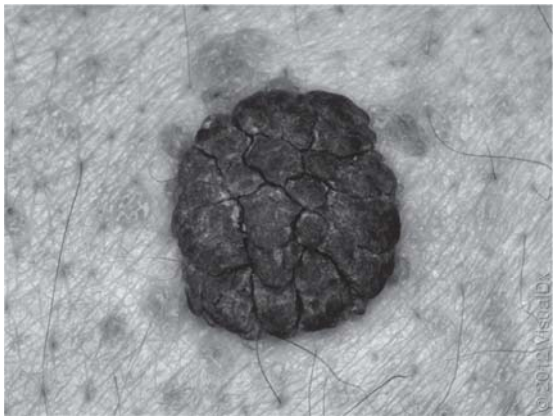
Nevus vs. atypical nevus vs. melanoma

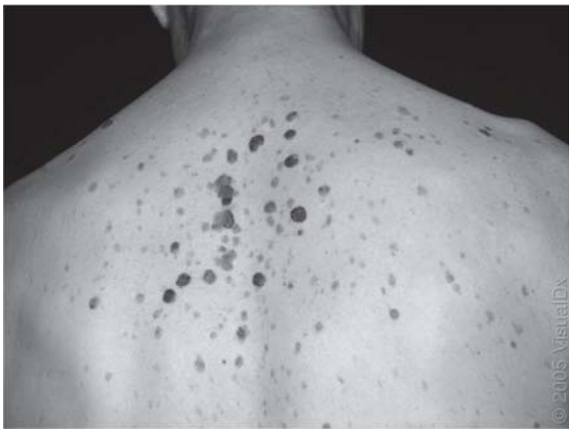


Seborrheic keratosis

- Waxy or scaly "stuck-on" papules
- Patients often have multiples
- Grow to a certain point, then remain static
- Easily inflamed/irritated, traumatized
- Unfortunately these lesions break nearly all the ABCDE rules!

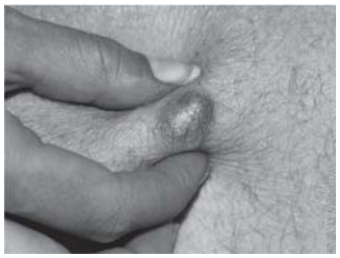


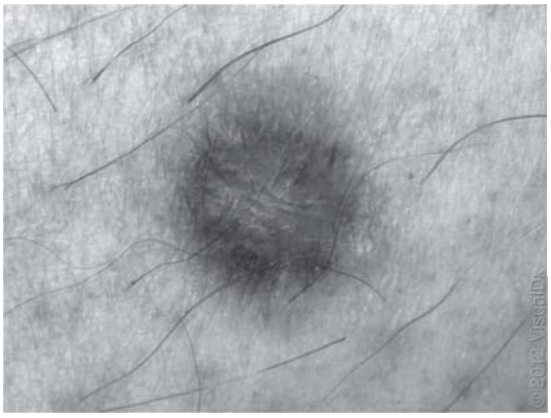


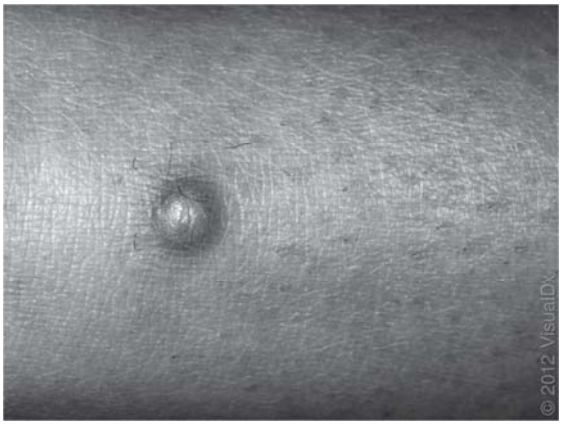


Dermatofibroma

- Very common on the extremities
- Appear brownish, but not melanocytic
- Often secondary to minor trauma (shaving, folliculitis, bug bites)
- Use the "dimple" sign to diagnose

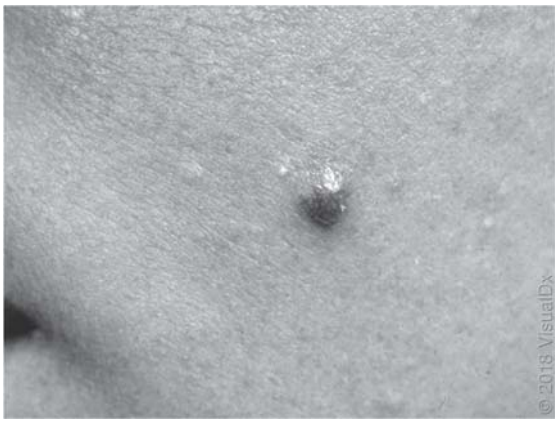


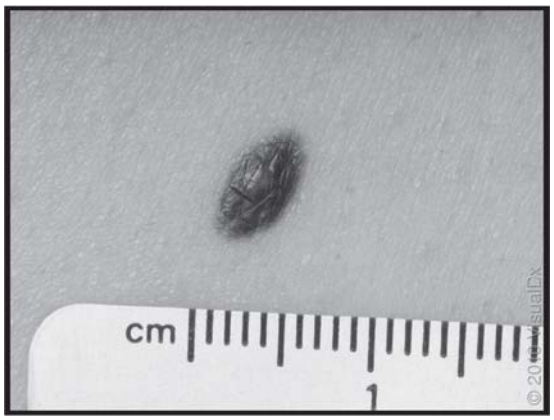


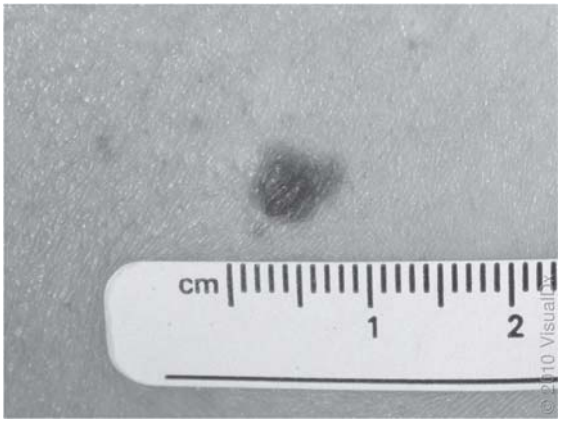


Visual Identification: Nevi

Reference: Missouri ECHO







Objective #3

Where to find CME for further learning and un-branded patient education materials

How Melanoma is Diagnosed

What to expect in an exam from a health care professional

A medical exam will include health history questions about you and your family. Your provider may also perform a physical exam, where they carefully inspect your skin for abnormal spots, also called lesions.

If your provider is concerned that a lesion may be skin cancer, a sample must be removed to test for cancer cells under a biopsy. Often, the entire lesion is removed to check for cancer cells.

What to expect with a biopsy

Before a biopsy, your skin will be numbed with local anesthetic (a medicine that results in loss of feeling for a short time, to prevent pain from a medical procedure.) Tell your provider if you have had any reaction to anesthesia in the past. After the biopsy, the provider might close the wound with sutures (or "stitches"). Depending on the type of biopsy, sutures might not be necessary.

Your provider will send the tissue sample to a pathologist, a doctor who specializes in the examination of tissue through a microscope, to determine if it is cancer or not. Your provider will contact you to tell you what the results are. **If you do not receive results within 2 weeks, contact to your provider.**

If the result is positive

If the pathologist finds cancer cells in the sample from the biopsy, more tests may be needed. They will assess if cancer cells are growing into the deeper layers of the skin, and how deeply they are growing. This will determine if more tests, or treatment such as the removal of more skin around the original lesion, are necessary.

Sometimes, the result is not clear, and a pathologist might see some features that suggest cancer, and others that suggest it is not cancer. Your provider may suggest additional tests, a second opinion, or additional surgery if the result is not clear. Talk about all your options with your provider, and visit AllAboMelanoma.org to talk to a physician assistant

Toolkit and Patient Education: Waronmelanoma.org

- Self-Exams Download
- Early Detection Download
- Sun Safety Download
- Biopsy and Diagnosis Handout
- Online Learning

Melanoma Early Detection Toolkit

1. CME Training (Online or In-Person)
2. Patient education materials and tools (Order Form)
3. Melanoma Risk Evaluation Tool (in progress)

www.waronmelanoma.org → "For Medical Professionals"

Thank you!

leachmas@ohsu.edu
www.WarOnMelanoma.org
www.StartSeeingMelanoma.com
503-494-6024 (Katie)

What every primary care clinician should know about STD's

Jennifer Vines, MD, MPH
Health Officer
Multnomah County Health Department

Introductions

Who I am
(Nothing to disclose; many to acknolwedge)

Who you are

Objectives

Describe local disease trends for sexually transmitted infections of public health interest

Know who/what/how to screen

Review essentials of treatment

Understand the role of public health

Pre-test: True or false?

Someone on a good antiretroviral regimen for HIV is essentially unable to spread the virus.

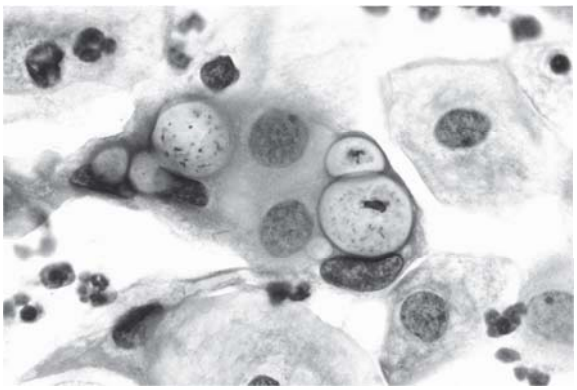
A positive syphilis test in a pregnant woman can wait to be addressed until after the delivery.

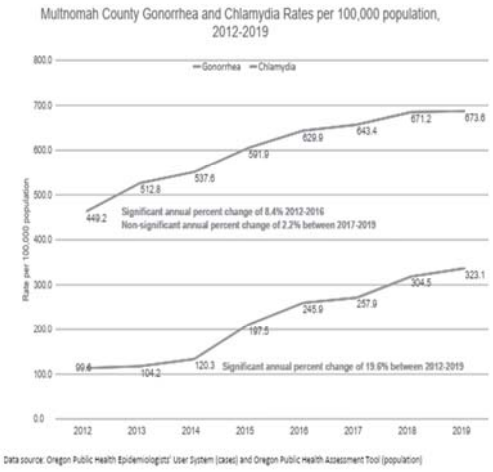
Pharyngeal gonorrhea typically presents with symptoms of sore throat

Sexual history taking

- No assumptions: Ask everyone
- Include all possibilities with all patients:
  - Any partners outside of marriage?
  - Do you have sex with men/women/both/Trans MTF-FTM?
  - With/without barrier methods?
  - New vs. established partners, one or more concurrent partners?
  - High risk venues? Exchange sex for drugs or a place to stay?
- Include what type of sex with all patients:
  - Penis in your mouth/vagina/rectum, with/without condom/barrier
  - Mouth to vulva or anus not considered efficient in STD transmission

Chlamydia trachomatis





Chlamydia screening: Females

- Sexually active females < 25 annually; older women at increased risk (USPSTF B; I for men)
- Pregnancy, pre-IUD insertion, recent known contact to Chlamydia--varying recommendations
- Re-test 3-12 months after treatment—not to identify treatment failure but re-infection (5-9% or greater)

CT screening **does not** require speculum exam

- Screening can happen at any care visit
- All collection methods comparable for CT NAAT: urine, self-collected vaginal swab, clinician-collected vaginal swab, endocervical swab
- **Self-collected vaginal swab is test of choice**
- Self-collected vaginal swab is acceptable to patients
- Screen any other receptive* site: pharyngeal, rectal

  (* of penis entering body)

Chlamydia screening: Males

- Testing of men with symptoms* is helpful but is not considered screening

  * urethral itch, burn, dysuria, clear discharge: usually intermittent
- Screening of asymptomatic males is less productive unless patient's partner has Chlamydia
- Screening is a urine test: minimum 1 hour since last void (reassure NO Q-Tip Required)

Chlamydia treatment: CDC 2015 recommended regimens

- Azithromycin 1 gram po x 1 OR
- Doxycycline 100 mg BID x 7 days

TOC not routinely recommended if AZ/Doxy used

Chlamydia follow up

- Women age <25: retest at 3 months or next visit if sooner than 1 year
  - Testing for reinfection, not TOC
  - No TOC needed if treated with approved regimen; consider if alternatives used
- Pregnant <25, or high risk: re-test 3rd trimester
  - TOC 3 weeks after treatment (NAAT's done sooner may be falsely positive due to "dead bugs")

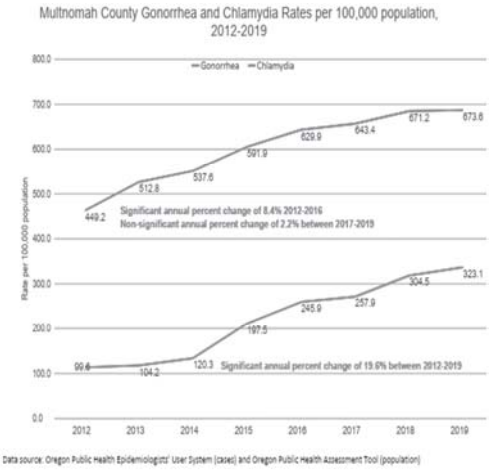
Expedited Partner Therapy (EPT)
to prevent/reduce re-infection

- EPT is legal and encouraged in Oregon
- Azithromycin Rx/meds for CT treatment for your patient to bring to the partner, even if partner is un-named. Write Rx for partner; if no name, write "EPT partner"
- You can give enough Rx for all recent (2 months) partners, a separate Rx required for each.
- No sex until 1 week after all partners treated

Chlamydia take-aways

- Screen females under age 25 annually.
- Self-collected vaginal swab is best.
- Help patient strategize to get partners treated to avoid re-infection: refer to MCHD STD clinic, refer to partner's provider, or provide EPT via your patient.
- No sex until 1 week after treatment for both client and partner(s) to avoid re-infection.

health threat that requires urgent and aggressive action.



CDC's Gonococcal Isolate Surveillance Project

Gonorrhea screening

- Same as Chlamydia
- NAATs test for both
- High incidence of co-infection chlamydia and gonorrhea
- Test exposed receptive sites
- Infection with either GC or CT increases risk of HIV acquisition by 4-5 times

Gonorrhea symptoms

- Men: purulent urethral discharge: green/yellow, generally profuse, staining clothing with rapid onset. Intense dysuria "like razors"
- Women: generally none, vaginal discharge without change
- Pharyngeal and rectal: generally asymptomatic >90-95%

Gonorrhea treatment guidelines CDC 2015

- **Ceftriaxone 250mg IM ceftriaxone PLUS 1 gram of azithromycin PO**
- Regardless of CT infection; regardless of site of infection
- Any other regimen requires test of cure at 2 weeks post-treatment
- For PCN allergic patients, 240mg IM Gentamicin PLUS 2 gm azithromycin
- **Strongly consider empiric treatment in settings where follow up cannot be guaranteed.**

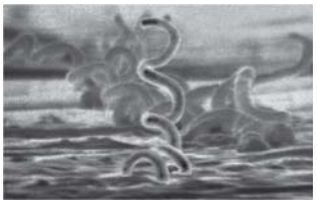
Pharyngeal/rectal CT and GC

- Rectal GC/CT for MSM greatly increases chance of HIV infection.
- Pharyngeal GC significant in transmission cycle – rare to use condoms for oral sex, even if used regularly for intercourse.
- MCHD STD clinic finds + pharyngeal/rectal GC/CTr with negative urine for MSM. (Less commonly among women).
- STD Clinic tests any receptive site exposed in the last 3 months.

Gonorrhea take-aways

- Significant disparities for MSM and African-American.
- Screen all receptive sites.
- Treat with dual therapy: Ceftriaxone IM plus Azithromycin, regardless of Chlamydia result
- Anyone treated with anything else gets a TOC at 2 weeks
- Strongly consider empiric treatment in settings where follow up cannot be guaranteed
- Public health provides prioritized partner services for only a fraction of cases
- Strategize with the patient about how to get their partners treated

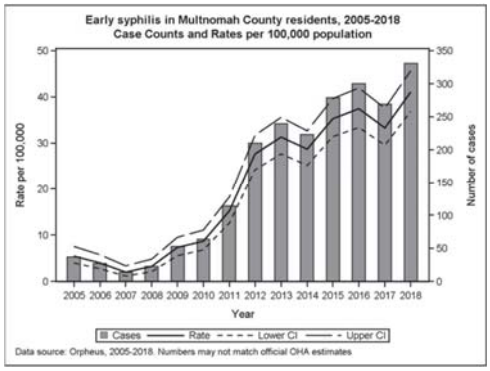
Treponema pallidum pallidum



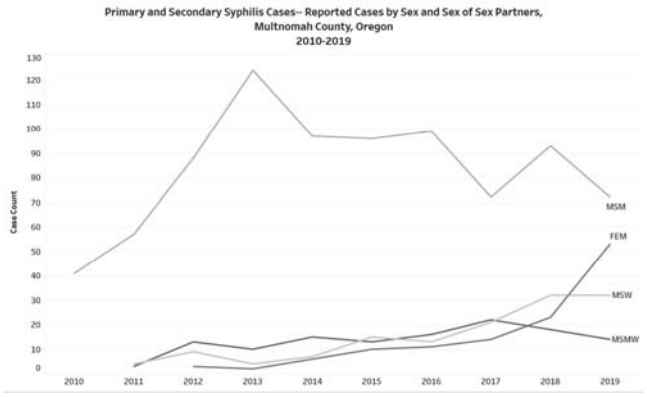
CDC hoped, at turn of millennium, that we were close to eliminating syphilis. It is back nationally and locally.

Epidemiology of the Syndemic

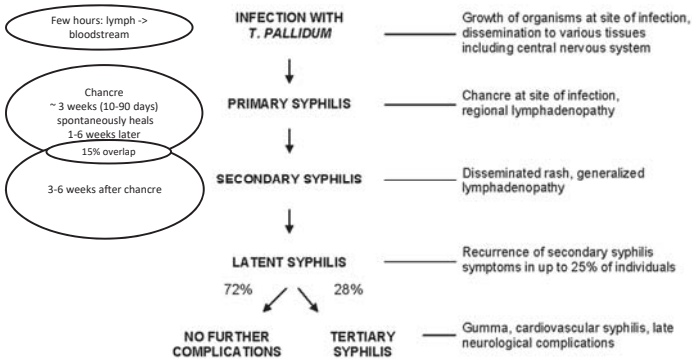
Local Trends: Syphilis



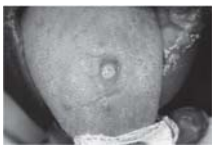
Local Syphilis Trends // Sex and Sex of Sex Partners



Syphilis – A Brief Refresher

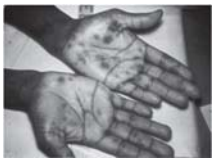


Primary Syphilis chancre



Source: https://www.cdc.gov/std/syphilis/images.htm

Secondary Syphilis palmar rash and back rash

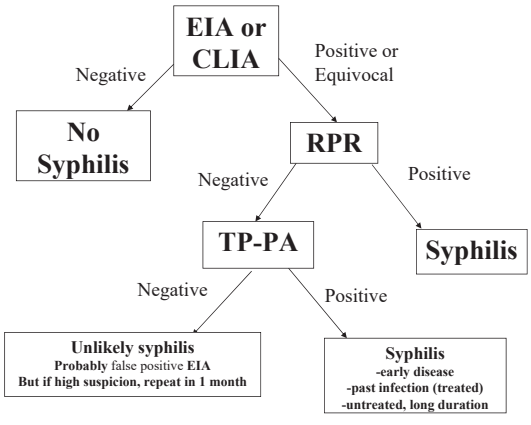


Source: https://www.cdc.gov/std/syphilis/images.htm

Syphilis screening guidelines

- Screen for syphilis annually in those with risk factors, every 3 months for those with multiple partners. (USPSTF A)
- HIV + patients: yearly
- Pregnant women: 1st prenatal, 3rd tri, delivery (state rec)
- No current general population advisory
- Be aware of "reverse sequence" testing

Reverse sequence screening



Syphilis screening in pregnancy

- Congenital syphilis is on the rise in Oregon.
- Statewide rec is screen in 3rd trimester and at delivery
- This recommendation is in addition to the routine prenatal panel screen and regardless of risk factors.
- Scrutinize any positive syphilis test in pregnancy – it may be an obstetric emergency

Syphilis treatment

- Primary, secondary, early latent, contact to early syphilis:
  BiCillin LA 2.4 mu IM x1
  Per CDC: "No recommended alternative"
- Late latent, unknown duration latent, tertiary or possible treatment failure:
  BiCillin LA 2.4 mu IM weekly x 3 weeks
- **Strongly consider empiric treatment in settings where follow up cannot be guaranteed.**

Syphilis follow up

- RPR titer at (1) 3, 6, 12 months after treatment for primary/secondary
- Re-Test: RPR at (1) 3, 6, 12, 24 months after treatment for all latent syphilis
- Goal is fourfold or more drop in titer by end of follow up period; may not return to NR
- Use only RPR, cannot follow with treponeme specific test (CIA, EIA, FTA, TP-PA)

MCHD STD prioritizes all potential and confirmed syphilis cases for patient and partner follow up

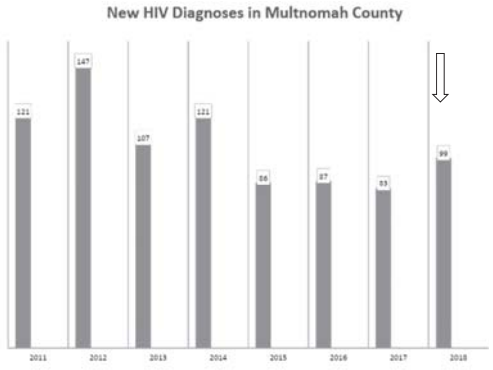
- Labs get reported and triaged daily.
- Can do same day RPR (within 20 minute result)
- Dark field exam for suspicious lesions
- Phone consult with experienced STD provider
  - Call us at (503) 988-3702
  - Identify yourself as a provider
  - Ask for provider or Disease Intervention Specialist (case investigator)

Syphilis take-aways

- Screen those at risk
- Additional screening in all pregnant women
- Ask MCHD for help with test interpretation, treatment plan
- Do follow up RPR's to track treatment response
- MCHD prioritizes syphilis for public health follow up

HIV

Local Trends: HIV



HIV screening recommendations

- Everyone between 15 and 65 --at least once in life (USPSTF A)
- Pregnant women (USPSTF A)
- Those with ongoing risk (loosely defined) –yearly (CDC)
- Men who have sex with men and have new/multiple partners ---every 3-4 months (CDC)

HIV: Changes in national strategy

- Treatment as Prevention: 96% less transmission when viral load suppressed (source below)
- A third of HIV cases in Portland area are diagnosed "late" (AIDS Dx within 1 yr of HIV Dx) = poorer outcomes, higher cost of care, more transmission
- Goals:
  - diagnose early
  - connect to care seamlessly
  - start ART early: if HIV + or for PrEP

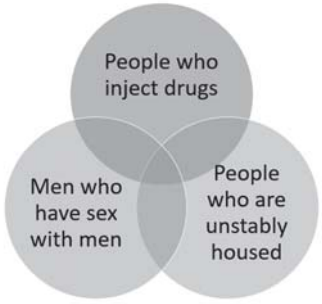
Cohen MS, Chen YQ, McCauley M, et al. Prevention of HIV-1 Infection with Early Antiretroviral Therapy. *N Engl J Med*. 2011;365(6):493–505. doi:10.1056/NEJMoa1105243.

PrEP: **Pr**e**E**xposure **P**rophlylaxis

- CDC/FDA approved 2012
- Truvada 1 pill po daily for those at high risk
- Requires baseline labs and regular monitoring of HIV status plus screening for other STD's (q3 months)
- Well tolerated, highly effective
- Covered by OHP; Gilead has generous drug assistance and co-pay assistance programs

Local public health at work

The syndemic: HIV, Syphilis, and Hepatitis C



<u>Key takeaways for continuity settings:</u>

1. Take a good sexual history
2. Test exposed sites for GC/CT
3. Strategize re how to get partners from the last 2 months tested and treated
4. Screen for HIV and syphilis when appropriate
5. Contact public health for help with HIV/syphilis results, high priority contacts, advice re treatment and PrEP

Key takeaways for urgent care settings:

1. Take a good sexual history
2. Test exposed sites for GC/CT
3. Screen for HIV and syphilis if you possibly can
4. Strongly consider presumptive antibiotic treatment
5. Get good patient contact information
6. Contact public health for help with follow up of results, high priority contacts, advice re treatment and links to preventive services

Post test: True or false

Local public health always follows up with partners of patients with Chlamydia

First line gonorrhea treatment is dual therapy (ceftriaxone + azithro) regardless of site of infection

Men who engage in risky sexual behavior who are on PrEP should be screened for STD's every 3 months.

Stay current with STD treatment:
http://www.cdc.gov/std/std-tx-app.htm

QUESTIONS

MCHD STD Clinic
619 NW 6th Ave
Portland OR 97204

503-988-3700 for appointments
503-988-3702 to talk to a DIS, have a provider paged

Falls In the Older Adult:
Tools For your Practice

Lisa N. Miura, MD, FACP
Associate Professor of Medicine, OHSU
Geriatrician, Portland VA Health Care System

Disclosures

- I have no financial relationships with any commercial interest related to the content of this activity.

Objectives

- By the end of this session you will be able to:
  - 1. Recognize the impact of falls on the lives of older adults.
  - 2. Identify risk factors for falls.
  - 3. Perform at least 3 tests to assess a patient's balance and mobility.
  - 4. Describe interventions to reduce an older person's risk of falling.

Mr. Chase

- 83 yo male presents with 4 falls in the past month.
- He lives alone and cannot remember the exact events surrounding falls.
- + anxious about falling.
- Seen in ED 2X in the past year for falls.
- + walker but forgets to use it; doesn't want to look "old."
- Sometimes feels dizzy.
- Wonders if it's an "equilibrium" problem.

What is a fall?

"Anyone inadvertently coming to rest on the ground or a lower level but not due to trauma or other overwhelming medical event (stroke, syncope)" *-M.Tinetti, MD*

- Falls are not random events
  - Patient characteristics
  - Activity at time of the fall
  - Environment

The Impact of falls

- 30-40% over age 65 and 50% in long-term care and age >80 years fall annually
- Complications from falls are a **leading cause** of injury-death in those >65 years
- Fall injury hospitalizations cost more than all other traumas combined
- **OREGON**: ~**700 deaths** and **8,000 hospitalizations** are due to falls

Oregon Dept. of Health, Fall & Injury Prevention 2018
Centers for Disease Control & Prevention 2010

Sequelae of Falls

- Associated with:
  - Decline in functional status
  - Nursing home placement
  - Increased use of medical services
- Serious injuries: fractures, head trauma, lacerations
- "Long lie": Half of those who fall unable to get up without help
  - Rhabdo, dehydration/AKI, pressure ulcers
  - Predicts lasting decline in functional status
- Post-fall Anxiety Syndrome
  - ¼ of all fallers limit their activities due to **fear of falling**
  - Increased risk of institutionalization and mortality

Tinetti, JAMA 1993
Visschedijk, JAGS 2010

Falls in Older Adults

- Common and Expensive
- High Morbidity and Mortality
- Many Causes and Risk Factors
- Potentially Preventable

An Ounce of Prevention

- Education and activity programs have been shown to reduce fear of falling and improve measures of stability and strength in community dwelling seniors
- Risk factor interventions have reduced the risk of falling by more than 30%

Brouwer, JAGS 2003
Tinetti, NEJM 1994

Issues with Addressing Falls in Clinical Practice

- Lack of awareness of the morbidity and mortality related to falls
- Lack of **time** during the office visit to adequately address a multifactorial problem
- Lack of awareness of evidenced-based interventions available for fall prevention
- Logistical barriers to patient access to interventions

Chou, J Gen Intern Med 2006

Cause of Falls

- **Multiple** causes usually involved
- Frequently not observed
- Often poor recall of event
- Different ways to categorize cause

Risk Factors for Falls: Sixteen Multivariate Studies

FACTOR	Mean RR
Muscle weakness	4.4
Prior fall	3.0
Balance deficit	2.9
Gait deficit	2.9
Assistive device	2.6
Vision deficit	2.5
Arthritis	2.4
ADL deficit	2.3
Depression	2.2
Cognitive deficit	1.8
Age > 80	1.7

Rubenstein & Josephson, Med Clin N Amer 2006

When and How to Screen for Falls

- **USPSTF: screening at age 65;** identify older adults at increased risk for falls - *history of falls, mobility problems, and poor performance on TUG
- **AGS, BGS, AAOS** recommends yearly screening for patients ≥65
  - **NNS** to prevent 1 fall over 1 year is **20** (*Tinetti, NEJM 1994*)
- Screening questions:
  - **Have you fallen in the past year?**
    - If so how many times and under what circumstances?
  - **Do you feel unsteady when standing or walking?**
  - **Do you worry about falling?**
- If answer is "**Yes**" to any of these questions then proceed with a fall risk assessment

Fall Risk Assessment

- Determine multifactorial fall risk
  - History of falls
  - Gait, balance, mobility
  - Neurologic impairment
  - Muscle weakness
  - Cognitive impairment
  - Visual Acuity
  - Cardiovascular risks (arrhythmias)
  - Orthostatic hypotension
  - Foot care and footwear
  - Medications
  - Environmental Hazards (home safety)

AGS

Gait, Balance, Mobility

- Tinetti – POMA (Performance Oriented Mobility Assessment)
- Timed Up and Go test (TUG)
- Four-Stage Static Balance Test
  - **"Two of the most sensitive tests are the Static Balance and TUG"** *McMichael, J Geri Nursing 2008*
- 30-Sec Sit-to-Stand
- Gait Speed

Tinetti Balance and Gait Evaluation (aka POMA)

BALANCE:

- Sitting balance
- Arising
- Attempts to arise
- Immediate standing balance (first 5 secs)
- Standing Balance
- Nudging
- Turn 360*
- Sitting Down

Less than 19 = high fall risk

19-24 = medium fall risk

25-28 = low fall risk

GAIT:

- Initiation of gait (Immediately after being told to go)
- Step length and height
- Right Swing
- Left Swing
- Step Symmetry
- Step Continuity
- Path
- Trunk Alignment
- Walking Stance

Amer J Med 1986

Timed Up and Go (TUG)

- Technically it's Timed Up, Go and Return
- Record the time it takes a person to:
  1. Rise from a hard-backed chair
  2. Walk 10 feet (3 meters)
  3. Turn
  4. Return to the chair
  5. Sit down

Podsiadlo, JAGS 1991

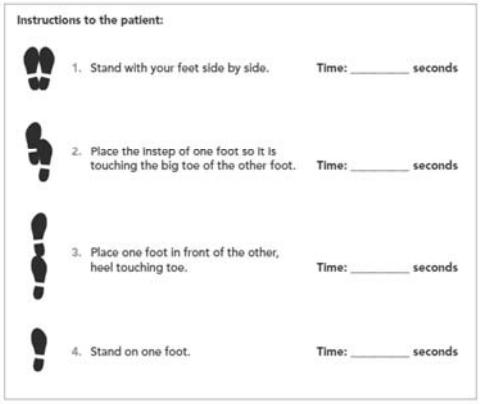
Timed Up and Go

TUG (Timed Up and Go)

- Most adults can complete in 10 seconds
- Most frail older adults can complete in <20 seconds
- ≥12 sec = ↑ falls risk *Lusardi, J Geriatr Phys Ther 2017*
- >20 sec → comprehensive evaluation
- Association between the TUG score and mortality observed in both men and women
- Addition of Cognitive or Physical Tasks can dramatically increase the difficulty and can identify fallers that are better compensated

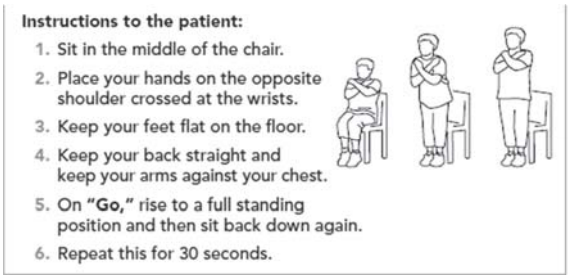
Bohannon, J Geri PT 2006
Hofheinz & Schusterschitz, Clin Rehab 2010
Tang, Geri & Gerontol Int'l 2014
Cardon-Verbecq, Ann Phys Rehab 2017

Four-Stage Balance test



STEADI

30-Second sit-to-Stand



Count and record the number of times the patient can complete the chair stand in 30 seconds.

30-Second sit-to-Stand

30-sec Sit-to-Stand Published Averages by age

Age	Men	Women
60-64	14 - 16	12 - 14
65-69	13 - 15	11 - 13
70-74	13 - 15	10 - 12
75-79	12 - 14	9 - 11
80-84	11 - 13	8 - 10
85-89	10 - 12	7 - 9
90-94	9 - 11	6 - 8

Rikli & Jones, Res Quart Exer & Sport 2001

Gait speed

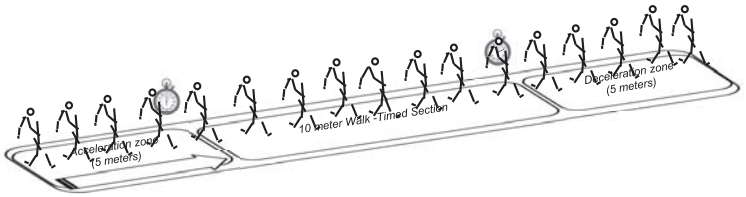
- Almost the perfect measure *Wade, Meas In Neuro Rehab 1992*
- Reliable *Richards, Gait and Posture 1996*
- Valid *Steffen, Phys Therapy 2002*
- Sensitive *van Iersel, J Clin Epidem 2008*
- Specific *Harada, Phys Therapy 1995*

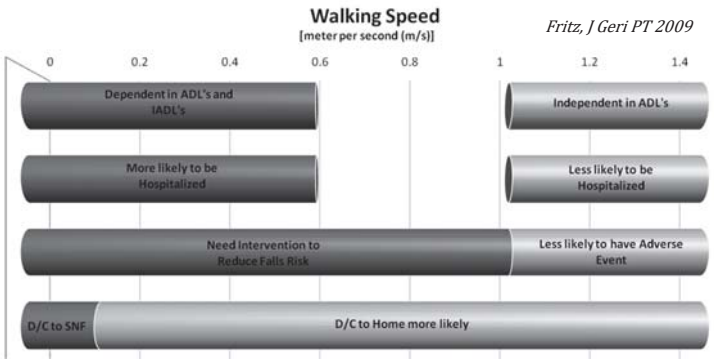
Correlates with …

- Functional Ability *Perry, Stroke 1995*
- Balance and Confidence *Mangione, Physio Can J 2007*
- Future Health Status *Studenski, JAGS 2003; Purser, J Rehab Res & Dev 2005*
- Functional Decline *Brach, Phys Therapy 2002*
- Rehabilitation Potential *Goldie, Arch Phys Med & Rehab 1996*

GAIT SPEED: 10 Meter Walk Test

- Reliable, inexpensive method *Perera, JAGS 2006*
- 20 meter path
  - Central 10 meters being the timing area
- Start your patient at the beginning of the 20 meter line
  - Ask pt to walk "at a comfortable pace" to the end line
  - Time during the central 10 meters



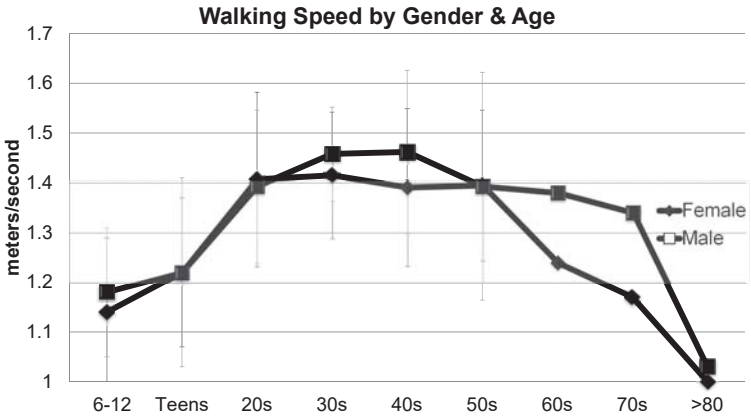


Fritz, J Geri PT 2009

Gait Speed Correlates with:

- Functional ability (*Perry, Stroke 1995*)
- Balance confidence (*Mangione, Physio Can 2007*)
- Hospitalization *(Studenski, JAGS 2003)*
- Mortality *(Hardy, JAGS 2007)*
- Falls *(Guimaraes, Int'l Rehab Med 1980)*
- Fear of Falling *(Maki, JAGS 1997)*

WALKING SPEED VARIES BY AGE, GENDER, & ANTHROPOMETRICS



Self selected walking speed categorized by gender & age : 6-12 & teens (Waters, Lunsford et al. 1988); 20s-50s (Bohannon 1997); & 60's-80's (Bohannon 2008)

FALL RISK ASSESSMENT

- Clinical assessment

-Targeted H&P

- *History of previous falls
- *Lower extremity weakness
- Neuro exam including cognitive testing
- Cardiac exam including orthostatics
- Examine feet and footwear
- Vision and hearing

-Chronic medical issues*:* OA, Stroke, Parkinson's, Chronic Pain, Cognitive Impairment, Diabetes, Neuropathy, Cardiopulmonary conditions

-Substance use*: Alcohol intake*

HIGH-RISK MEDICATIONS FOR FALLS

- Psychoactive medications (OR 1.47-1.68)
  - **Antipsychotics** (e.g., haloperidol, risperidone)
  - **Antianxiety drugs** (e.g., benzodiazepines)
  - **Hypnotics** (e.g., zolpidem)
  - **Antidepressants** (e.g., SSRI's, TCA's)

- Cardiovascular (OR 1.24)
  - Antihypertensives
  - Diuretics

Woolcott, Arch Int Med 2009

ASSESSING FOR ORTHOSTASIS

- Checking orthostatics: 0,1, and 3 minutes
- Drop in systolic BP ≥20 mmHg or diastolic BP ≥10 or + symptoms
- Consider standing BP only if unable to perform full orthostatics
- Treatment can reduce falls
  - **Medication reduction**
  - **Fluid optimization (1.5-3 L)**
  - **Elastic stockings (Waist high)**
  - **Ankle Pumps / Isometrics**
  - **Consider adding Salt (1g/BID)**
  - **MEDS: Fludrocortisone, Midodrine, Droxidopa**

Amer Geri Soc Clin Prac Guideline 2010

DIAGNOSTICS

- TSH
- Vitamin B12
- Vitamin D (*levels <10 ng/mL*)
- Folate
- CBC
- Comprehensive panel (for renal/hepatic disease)
- RPR
- Brain imaging: CT or MRI
- X-ray of injuries
- Cardiac eval: EKG, Holter, ECHO -- *If syncope, arrhythmia, or cardiac contributors are suspected*
- Bone density

Vitamin D

- Those >65 years with 25(OH)D levels <10 ng/mL at greater risk for loss of muscle mass, strength, & increased risk for hip fracture
- Low risk of harm in appropriate doses
- Dosing recommendations:
  - *American Geriatrics Society and AHRQ*: 800-1000 IU daily

  Include calcium if needed! 1000 mg daily

Visser, J Clin Endo Metab 2003
Cauley, Ann Int Med 2008

Other Modifiable Factors

- Footwear & Podiatry Care

  - **Highest fall risk**: socks or barefoot
  - **Best**: athletic shoes or thin, hard soles
  - Anti-slip shoe devices in icy conditions
  - Multifaceted podiatry intervention led to 36% decrease in falls

Kelsey, Footwear Sci 2010; Koepsell, JAGs 2004; Spink, BMJ 2011

- Vision
  - Impairment has been associated with falls and hip fracture *Lord, JAGS 2002*
  - Increased falls with multifocal lenses
  - Expedited surgery for first cataract reduced rate of falls

Gillespie, Cochrane Database 2009

Strength and Endurance for Fall Prevention

- Exercise as a single intervention can prevent falls

Sherrington, NSW Pub Hlth Bulletin 2011

- Exercise programs for lower-limb muscle endurance significantly improved static and dynamic balance

Avelar, Physiotherapy Rev Brazil 2010

- Low-intensity strength training resulted in improved gait stability and steadiness in disabled elderly

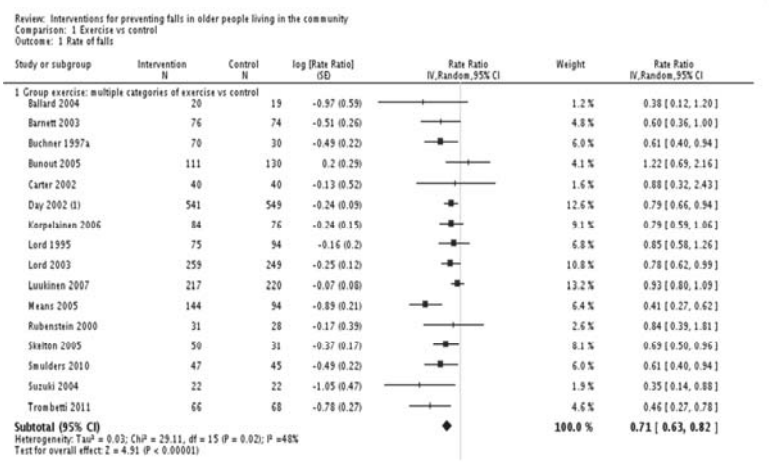
Krebs & Jette, Amer Congress of Rehab 1998

- Incidence of hip fracture in the older population can be cut nearly in half with physical activity throughout one's life

Beck & Snow, Exer & Sports Sci Rev 2003

- Exercise can improve postural and neuromuscular control as well as reaction time, thereby reducing falls

Lord, Stroke Mag 1995



The Cochrane Collaboration - published in The Cochrane Library 2012

Tai Chi for Fall Prevention

- Tai Chi exercise improves stride length and QoL scores in older adults *Chyu, Clin Rehab 2010*
- Tai Chi improves muscle quality and posture

Hsu, J Formosan Med Assoc 2014

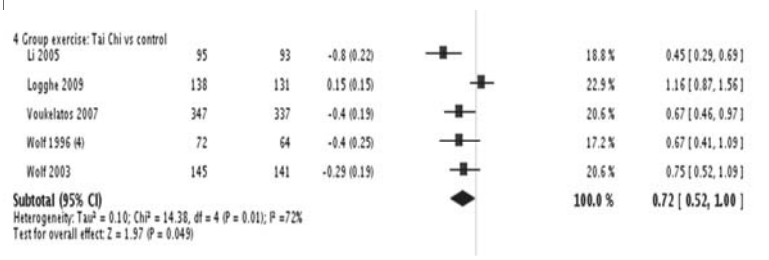
- Tai Chi subjects demonstrated decreased TUG times, increased stride length and improved time on one limb during gait

Quigley, Amer J Phys Med & Rehab 2014

- Comparing falls incidents in Taiwan with CDC data for the same period seems to show that falls in Taiwanese elders occur about half as often as in their U.S. counterparts

Lai, Gait & Posture 2013

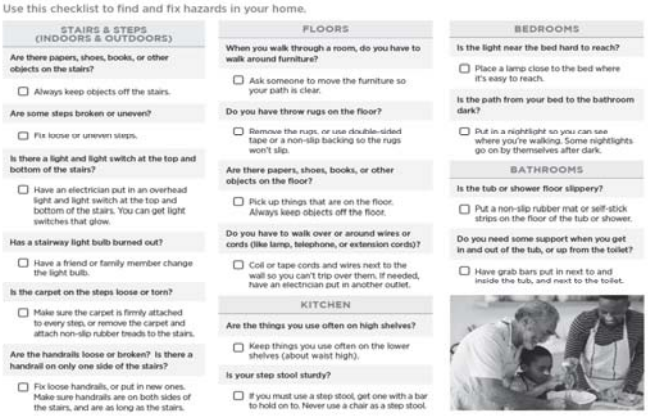
Tai Chi



Home Safety

- Edges of stairs, uneven surfaces marked
- No throw rugs, mats, long electrical cords
- Less clutter
- Chairs, toilet at appropriate height
- Furniture arranged so provides assistance, not obstacles
- Night lights
- Nonslip pads in shower, tub
- Grab bars in shower, next to toilet (raised, handbars)
- Handrails along staircases
- Even, non-glare lighting

CDC Home Safety Checklist



Use this checklist to find and fix hazards in your home.

STAIRS & STEPS (INDOORS & OUTDOORS)

Are there papers, shoes, books, or other objects on the stairs?
- ☐ Always keep objects off the stairs.

Are some steps broken or uneven?
- ☐ Fix loose or uneven steps.

Is there a light and light switch at the top and bottom of the stairs?
- ☐ Have an electrician put in an overhead light and light switch at the top and bottom of the stairs. You can get light switches that glow.

Has a stairway light bulb burned out?
- ☐ Have a friend or family member change the light bulb.

Is the carpet on the steps loose or torn?
- ☐ Make sure the carpet is firmly attached to every step, or remove the carpet and attach non-slip rubber treads to the stairs.

Are the handrails loose or broken? Is there a handrail on only one side of the stairs?
- ☐ Fix loose handrails, or put in new ones. Make sure handrails are on both sides of the stairs, and are as long as the stairs.

FLOORS

When you walk through a room, do you have to walk around furniture?
- ☐ Ask someone to move the furniture so your path is clear.

Do you have throw rugs on the floor?
- ☐ Remove the rugs, or use double-sided tape or a non-slip backing so the rugs won't slip.

Are there papers, shoes, books, or other objects on the floor?
- ☐ Pick up things that are on the floor. Always keep objects off the floor.

Do you have to walk over or around wires or cords (like lamp, telephone, or extension cords)?
- ☐ Coil or tape cords and wires next to the wall so you can't trip over them. If needed, have an electrician put in another outlet.

KITCHEN

Are the things you use often on high shelves?
- ☐ Keep things you use often on the lower shelves (about waist high).

Is your step stool sturdy?
- ☐ If you must use a step stool, get one with a bar to hold on to. Never use a chair as a step stool.

BEDROOMS

Is the light near the bed hard to reach?
- ☐ Place a lamp close to the bed where it's easy to reach.

Is the path from your bed to the bathroom dark?
- ☐ Put in a nightlight so you can see where you're walking. Some nightlights go on by themselves after dark.

BATHROOMS

Is the tub or shower floor slippery?
- ☐ Put a non-slip rubber mat or self-stick strips on the floor of the tub or shower.

Do you need some support when you get in and out of the tub, or up from the toilet?
- ☐ Have grab bars put in next to and inside the tub, and next to the toilet.

STEADI, 2018

STEADI (Stopping Elderly Accidents, Deaths & Injuries)

- Researchers at CDCs Injury Center have created this **tool kit for providers** who treat older adults who are at risk of falling or have fallen in the past
- Resources and tools that help make fall prevention an integral part of clinical practice
  - **Falls screening algorithm (adapted from the American and British Geriatric Societies' Clinical Practice Guidelines)**
  - **Risk factor check lists**
  - **Gait and balance tests, instructions and videos**
  - **List of medications linked to falls**
  - **Educational handouts for providers and patients**

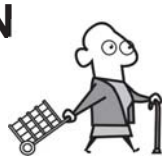
http://www.cdc.gov/homeandrecreationalsafety/Falls/steadi/index.html

Reduction of Falls

- **Tai Chi:** up to 49% reduced risk for falls
- **Muscle strengthening / balance retrainin:** 17% reduced risk
- **Vitamin D supplementation :** 26% reduced risk
- **Withdrawal of psychotropic meds**: 66% reduced risk
- **Home safety assessment for person with history of falls:** 34% reduced risk

Frick, JAGS 2010

Fall Evaluation



- Orthostatic BP check
- Vision check
- Cognitive screen with *Mini-Cog*
- Medication, substances, lab review
- Assess fear of falling with *FES-I*
  - **FES-I: Fall Efficacy Scale International**
- PE, Gait and balance assessment
  - **Timed Up and Go (TUG)**
  - Sit-to-Stand
  - Four-Stage Balance test
  - Gait Speed
- Home safety checklist

Mr. Chase

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- He lives alone and cannot remember the exact events surrounding falls.
- + anxious about falling.
- Seen in ED 2X in the past year for falls.
- + walker but forgets to use it; doesn't want to look "old."
- Sometimes feels dizzy.
- Wonders if it's an "equilibrium" problem.

Case Study

- 83 year old male with 4 falls in the past month.
- PMH: HTN, OA of the knees, DM2
- MEDS: **Lisinopril 20 mg BID, furosemide 20 mg QD Quetiapine 50 mg qhs**
- EXAM:
  - Arthritic deformity of both knees
  - + abnormal monofilament
  - + orthostatics with 25 point SBP drop
  - Difficulty arising from chair without using arms
  - **30STS**- 5; **TUG** 23 sec; **Gait speed** 0.74 m/s
  - **Balance**: unable to close eyes w/feet together
  - **Mini-cog** abnormal (2/5); **FES-I**: 20/28 (high)

Case Study

- **MANAGEMENT**
  - **Medication modification**
    - Address orthostatic hypotension – decrease ACEI; discuss fluid intake
    - Eliminate quetiapine & furosemide
    - Scheduled acetaminophen for pain
  - **Vision screen**
  - **Further cognitive evaluation**
  - **Home safety handout**
  - **Action plan for home exercises/PT/OT referral**
  - **Check labs**

Case Study #2

- 61 yo male with a 2 year hx of intermittent dizziness, near syncope, and difficulty with urination. Admits to a change in sweating. He is falling almost daily.
- **Meds**: MVI, diphenhydramine
- **PE**: 185/100, P 75 supine; 95/54, P 80 standing
- General exam relatively normal although unsteady gait and some slowness of movement.

Implications for Clinical Practice

- ASSESSMENT
  - Inquire about falls annually in those ≥65
  - Assess persons failing screen or with >1 fall
- Review risk factors for falls: chronic medical conditions, exam, labs
- Consider a fall risk assessment note template and screening/assessment tools

Implications for Clinical Practice

- MANAGEMENT OF FALLERS
  - Multicomponent interventions
    - Exercise, Tai Chi, PT/OT
    - Medication review and adjustment
    - Treatment of underlying conditions: vision, cardiac, orthostasis, cognitive impairment, low vitamin D, podiatry issues
    - Environmental assessment and modification

Thank You!

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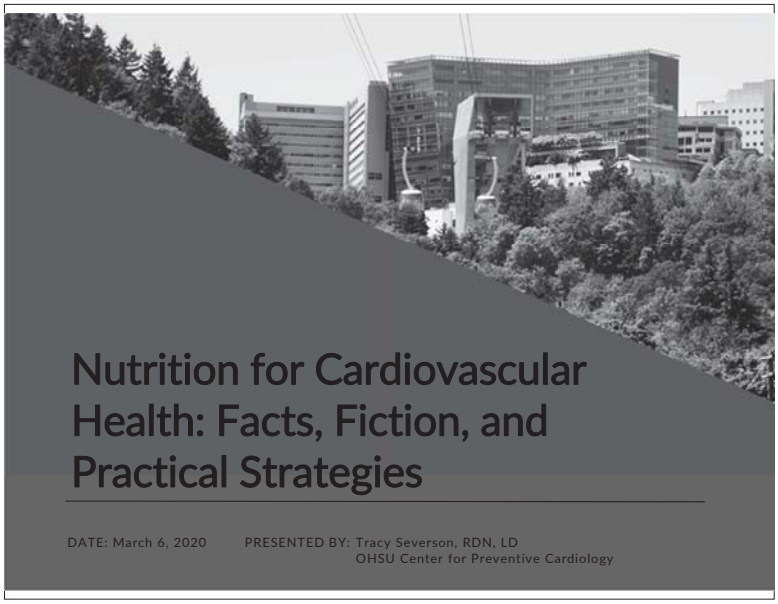


Nutrition for Cardiovascular Health: Facts, Fiction, and Practical Strategies

DATE: March 6, 2020 PRESENTED BY: Tracy Severson, RDN, LD
OHSU Center for Preventive Cardiology

Disclosures/Conflicts of Interest

Tracy Severson, RDN, LD

No relationships to disclose

Objectives

- Discuss common nutrition-related misconceptions
- Examine current fad diets and their cardiovascular (CV) implications
- Provide evidence-based nutrition recommendations to patients for CV risk reduction

Butter Is Back?

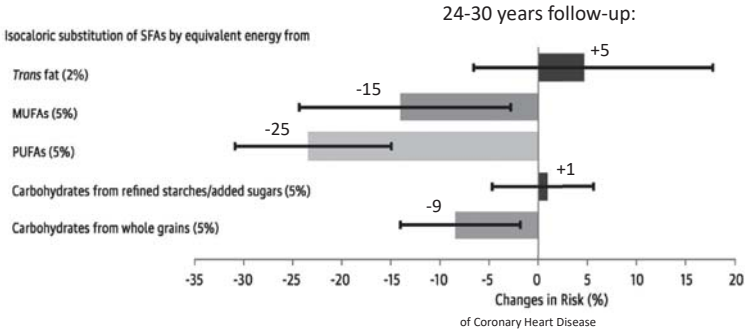
- Large 2014 meta-analysis examined relationship between saturated fat & cardiovascular health
  - Conclusion: findings did not support current cardiovascular guidelines that encourage high consumption of PUFAs and low consumption of saturated fats
- But, did not specify the replacement macronutrient for saturated fat
  - Replacing sat fat w/ refined carbs lowers LDL cholesterol, but also lowers HDL cholesterol and increases triglycerides
  - As bad for the heart as too much saturated fat

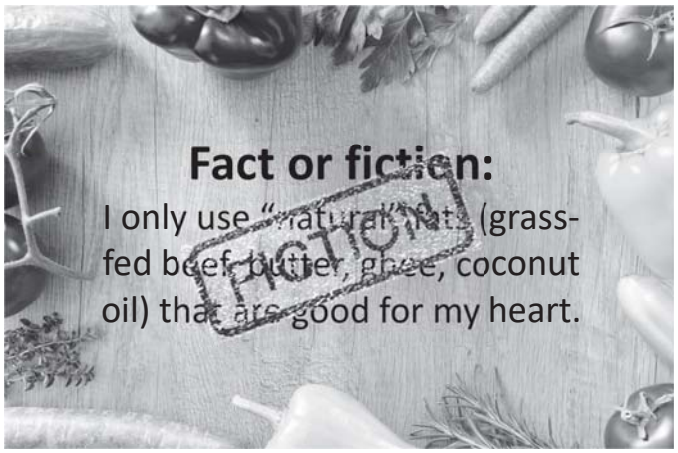
Chowdhury R et al. Ann Intern Med. 2014 Mar 18;160(6):398-406.
Li Y et al. J Am Coll Cardiol 2015; 66(14): 1538–1548.
Sacks FM et al. Circulation 2017;136(3):e1-e23.

Saturated Fats, Unsaturated Fats, Carbohydrates in Relation to CHD Risk: Observational Cohorts

Nurses Health Study and Health Professionals FU Study

Li Y et al. J Am Coll Cardiol. 2015 Oct 6; 66(14): 1538–1548.





Fatty Acid Comparison

	Total fat	Saturated fat	MUFA	PUFA	Omega-3
Butter	11.4 g	**7.2 g**	2.9 g	0.4 g	44 mg
Grass-fed butter	11.2 g	**7.6 g**	1.8 g	0.3 g	n/a
Ghee	12.7 g	**7.9 g**	3.7 g	0.5 g	184 mg
Coconut oil	13.5 g	**11.2 g**	0.9 g	0.2 g	3 mg
Olive oil	13.5 g	**1.9 g**	9.9 g	1.4 g	103 mg
Canola oil	14 g	**1.0 g**	8.9 g	3.9 g	1279 mg

Serving size: 1 tablespoon

USDA Nutrient Database, NutritionData.com

Fatty Acid Comparison

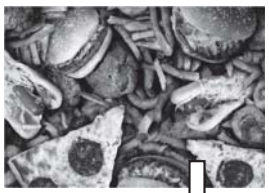
	Total fat	Saturated fat	Trans fat	MUFA	PUFA	Omega-3
Conventional ground beef (85% lean)	15.0 g	**5.9 g**	0.9 g	6.6 g	0.4 g	**57 mg**
Grass-fed ground beef	12.7 g	**5.3 g**	0.8 g	4.8 g	0.5 g	**88 mg**
Salmon, wild coho	5.9 g	**1.3 g**	0 g	2.1 g	2.0 g	**1474 mg**
Salmon, farmed coho	7.7 g	**1.8 g**	0 g	3.3 g	1.9 g	**1281 mg**

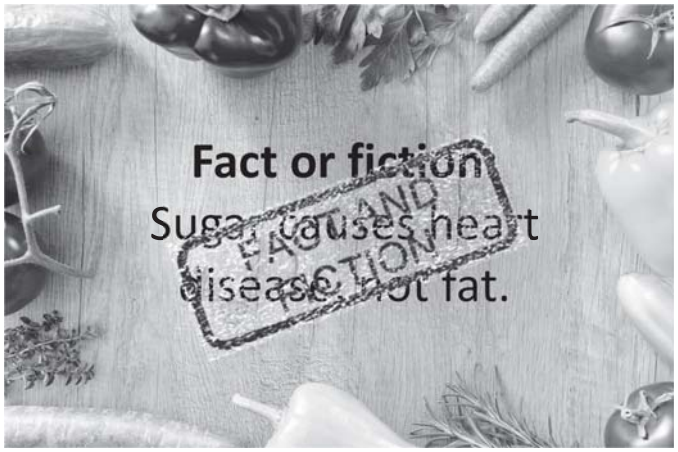
Serving size: 100 grams

USDA Nutrient Database, NutritionData.com

Fat: Good or Bad?

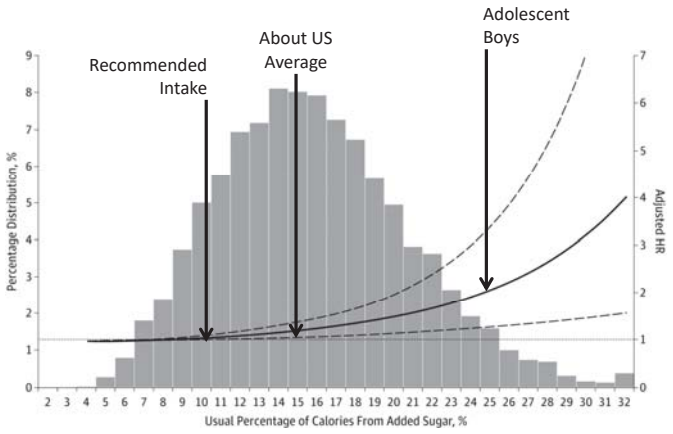
- Avoid processed and fried foods
- Cut back on most animal fats & tropical oils (saturated)
- Choose non-tropical plant fats & fish (MUFA & PUFA)





Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults

Yang Q, et al. JAMA Intern Med. 2014;174(4):516-524



Added Sugars

- Sugars and syrups added to processed foods and beverages
  - ➢ Empty calories → weight gain → increased TGs → increased risk of heart disease
- Limit ***added sugar*** (not naturally-occurring sugars in milk and fruit)
- Average American consumes 82 grams (~20 teaspoons) per day
- AHA recommendation:
  - ≤ 24 grams (6 teaspoons) per day for women
  - ≤ 36 grams (9 teaspoons) per day for men

12-oz soda = 33 grams (8 teaspoons)
➢ as much as in 1 orange + 16 strawberries + 2 plums

60+ Names for Sugar

INGREDIENTS: SUGAR, AGAVE NECTAR, HONEY, MAPLE SYRUP, RAW SUGAR, BROWN SUGAR, FRUIT JUICE CONCENTRATE, HIGH-FRUCTOSE CORN SYRUP, CANE JUICE EXTRACT, EVAPORATED CANE JUICE, MOLASSES, BROWN RICE SYRUP, MALTODEXTRIN, ANYTHING ENDING IN "-OSE" AND MOST "SYRUPS"

➢ 74% of processed foods contain added sugars

Beware of Hidden Sugar

Breakfast:
- Low-fat strawberry yogurt
- Cereal with almond milk
  - Cheerios Oat Crunch
  - Original Almond Breeze

Lunch:
- Turkey sandwich with 2 slices whole-wheat bread (Dave's Killer Bread)
  - 2 oz turkey *(not honey-roasted)*
- Dill pickle spear

Dinner:
- Spaghetti with jarred tomato sauce
- Italian sausage
- Salad with Italian dressing

Snack:
- Granola bar

Beware of Hidden Sugar

Breakfast: 36 grams
- Low-fat strawberry yogurt: 12 grams *added* sugar (~12 grams *natural* sugar from lactose)
- Cereal with almond milk: 24 grams
  - Cheerios Oat Crunch: 14 grams per 1 cup
  - Original Almond Breeze: 7 grams per 8 ounces

Lunch: 10 grams
- Turkey sandwich with 2 slices whole-wheat bread (Dave's Killer Bread): 10 grams
  - 2 grams per 2 oz turkey *(not honey-roasted)*
  - 4 grams per slice of bread
- Dill pickle spear

Dinner: 8 grams
- Spaghetti with jarred tomato sauce: 4 grams per ½ cup sauce (~6 grams natural sugar)
- Italian sausage
- Salad with Italian dressing: 4 grams per 2 tbsp dressing

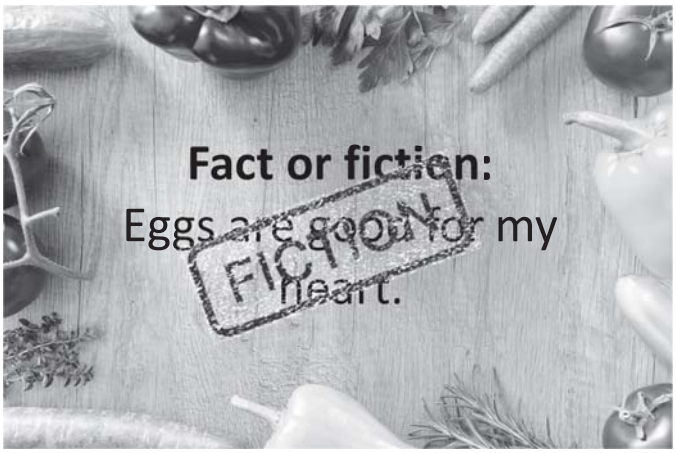
Snack: 12 grams
- Granola bar: 12 grams

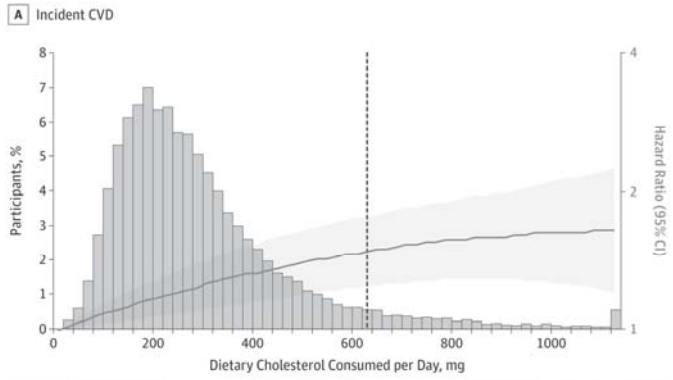
Total added sugar: 63 grams = 15 tsp (1/3 cup)

Carbohydrates: Good or Bad?

Limit less-healthy carbs
- ➢ Processed foods
- Sugar-sweetened beverages
- Refined grains
  - White rice, white bread, white pasta
- Fruit juices
- Foods made with white flour, added sugar, & other starches
  - Cookies, cakes, pies, chips, pretzels, cereals

Choose healthier carbs
- ➢ Unprocessed foods
- Whole grains
  - Brown rice, oatmeal, quinoa, barley, whole-wheat bread & pasta
- Whole fruits & vegetables
- Legumes (beans, lentils)
- Non-fat or low-fat milk & yogurt





Dietary cholesterol & lipids

- Higher consumption of egg yolks and dietary cholesterol associated w/ increased CVD & all-cause mortality
- Each 100 mg/day of dietary cholesterol raises LDL-C by ~2 mg/dL
  - 1 egg yolk = 185 mg cholesterol (& 2 g sat fat)
- Hyper- and hypo-responders exist—absorption efficiency ranges from 15-85% between individuals
- ~15–25% are hyper-responsive to dietary cholesterol.
  - May need further reduction of dietary cholesterol (near 0 mg/d)

Zhong VW. JAMA. 2019 Mar 19;321(11):1081-1095.
Miettinen TA, Gylling H. Atherosclerosis 2000;153:241–248.
McNamara DJ. Biochim Biophys Acta 2000;1529(1–3):310–20.

Rouhani MH et al. J Am Coll Nutr 2017;7:1-12.
Jacobson TA et al. J Clin Lipidol 2015;9(6 Suppl):S1-122.e1.

Current Controversies: "Pour on the Salt?"

Meta-analysis
25 studies (n = 274,683)

- U-shaped association between sodium intake and health outcomes
- Suggested that low sodium intake < 2300 mg/d should not be recommended

Graudal N et al. Am J Hypertens, 2014;27(9):1129-37.
O'Donnell M et al. N Engl J Med, 2014;371(7):612-23.
Mente A et al. Lancet, 2016;388(10043):465-75.
Cogswell ME et al. N Engl J Med 2016;375(6):580-6.
Cook NR et al. Circulation 2014;129(9):981-9

Current Controversies: "Pour on the Salt?"

Meta-analysis
25 studies (n = 274,683)

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- Suggested that low sodium intake < 2300 mg/d should not be recommended

Problems:

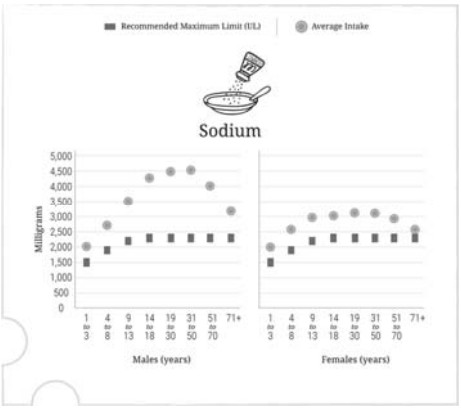
- Potential biases related to reverse causation
  - General population cohort studies – low-Na groups had more diabetes, HTN, preexisting CVD, & chronic illness at baseline
  - Lower Na intake d/t poor appetite or need for low-Na diet?
- Suboptimal methods of estimating Na intake
  - Spot urine tests vs gold standard: Multiple, nonconsecutive, 24-hour urine collections

- Trials of Hypertension Prevention (TOHP): "results consistent with overall health benefits of reducing sodium intake to the 1500 to 2300 mg/d range in the majority of the population, in agreement with current dietary guidelines."

Graudal N et al. Am J Hypertens, 2014;27(9):1129-37.
O'Donnell M et al. N Engl J Med, 2014;371(7):612-23.
Mente A et al. Lancet, 2016;388(10043):465-75.
Cogswell ME et al. N Engl J Med 2016;375(6):580-6.
Cook NR et al. Circulation 2014;129(9):981-9

Sodium: Intakes and Limits

Average intake of sodium in milligrams per day by age-sex groups, compared to tolerable upper intake levels (UL) (Figure 2-13)



U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015 – 2020 Dietary Guidelines for Americans*. 8th Edition. December 2015. Available at https://health.gov/dietaryguidelines/2015/guidelines/.

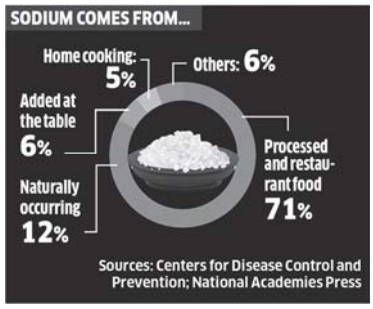
Sodium and HTN

- Academy of Nutrition & Dietetics 2015 MNT guidelines for HTN:
  - Lowering sodium intake to 1500-2300 mg/day reduces SBP up to 12 mm Hg and DBP 8 mm Hg
    - Rating: Strong
    - Average US intake: 3,400 mg/day 2010 Dietary Guidelines for Americans

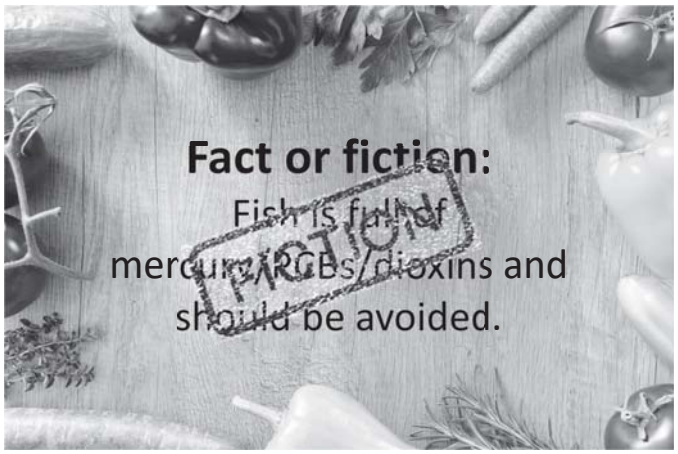
Sodium

- Bottom line – we eat too much
  - avg intake 3,400 mg/day
- Store-bought and restaurant foods contribute the vast majority of sodium in U.S. diets

❖ Potassium helps relax blood vessels and excrete sodium, decreasing BP
  - ➢ Fruits & vegetables!



Quader ZS et al. MMWR Morb Mortal Wkly Rep. 2017 Mar 31; 66(12): 324–238.
Jackson SL et al. MMWR Morb Mortal Wkly Rep. 2016 Jan 8;64(52):1393-7.



Seafood and CV Health

- Mercury:
  - May modestly decrease the CV benefits of fish intake.
  - Very high consumption (≥ 5 servings/wk) – limit intake of highest mercury fish (e.g., shark, tilefish, swordfish, king mackerel)
  - Seafood is a rich source of **selenium** – may mitigate health effects of mercury

Rimm EB, et al. Circulation. 2018 Jul 3;138(1):e35-e47.
Mozaffarian D, Rimm EB. JAMA. 2006;296(15):1885-1899.

Seafood and CV Health

Dioxins and polychlorinated biphenyls (PCBs):

- Potential carcinogenic effects
  - Per 100,000 individuals, consumption of farmed salmon would result in:
    - 24 excess cancer deaths
    - **7,125 fewer** CHD deaths
- PCBs reduced 40% by trimming fat and skin
- 86% PCB & dioxin exposure comes from meat, dairy, and vegetables; 9% from seafood

➢ Should have little impact on choices or consumption of seafood

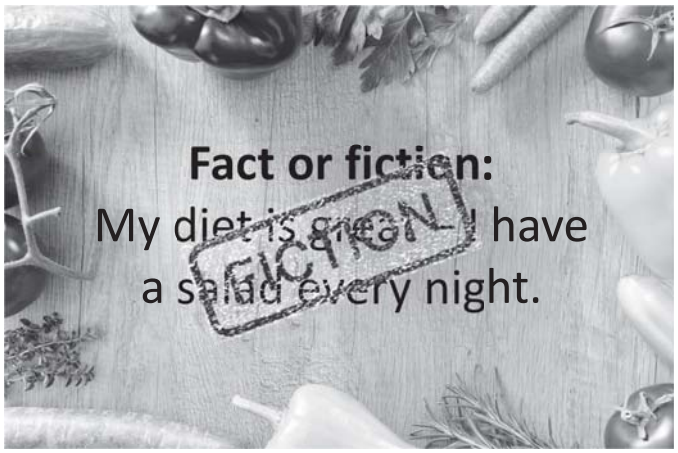
Foran JA et al. J Nutr. 2005 Nov;135(11):2639-43.
Rimm EB, et al. Circulation. 2018 Jul 3;138(1):e35-e47.
Mozaffarian D, Rimm EB. JAMA. 2006;296(15):1885-1899.

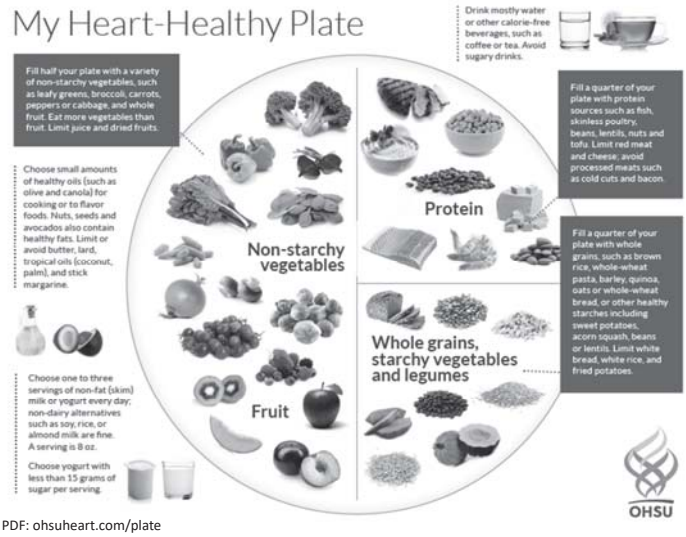
Seafood and CV Health

Benefits outweigh potential risks

- Two 4-oz. servings fish per week (≈ 250-500 mg/d EPA/DHA):
  - reduces risk of CHD death by 36% and total mortality by 17%
  - Greater benefit w/ intake of oily fish (e.g., salmon, albacore tuna, herring, sardines)

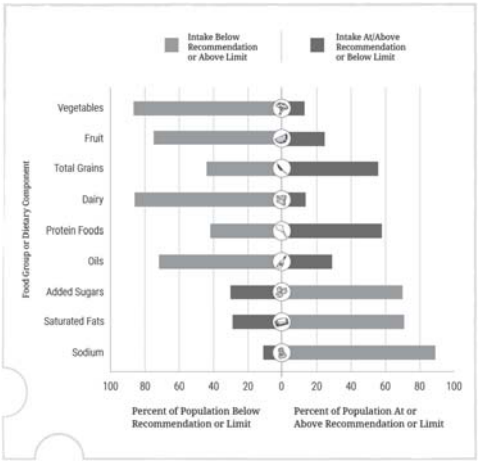
Rimm EB, et al. Circulation. 2018 Jul 3;138(1):e35-e47.
Mozaffarian D, Rimm EB. JAMA. 2006;296(15):1885-1899.





PDF: ohsuheart.com/plate

Dietary Intakes Compared to Recommendations.
% of U.S. Population Below, At, or Above Each Dietary Goal or Limit



Dietary Guidelines for Americans 2015-2020
Data Source: What We Eat in America, NHANES 2007-2010.

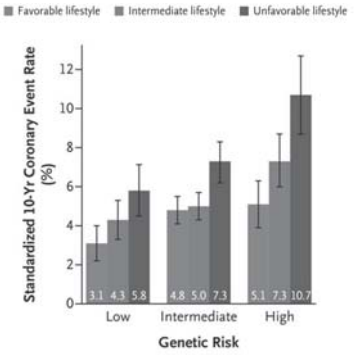
Focus on Prevention

- Healthy lifestyle could prevent ~80% of heart attacks and ~50% of ischemic strokes
- **No side effects!**
- Healthy lifestyle factors:
  - Not smoking
  - Healthy weight
  - Regular physical activity
  - Healthy diet
  - Moderate alcohol intake

➢ **< 3% of American adults have all healthy lifestyle characteristics**

Chiuve SE et al. Circulation. 2008;118(9):947-954.
Akesson A et al. Arch Intern Med. 2007;167(19):2122–2127.
Akesson A et al. J Am Coll Cardiol. 2014 Sep 30;64(13):1299-306.
Loprinzi PD et al. Mayo Clinic Proceedings. 2016;91(4):432-442.

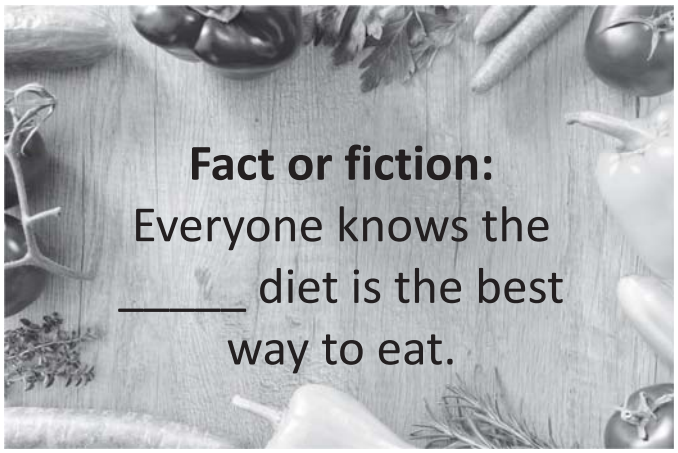
10-Year Coronary Event Rates, According to Lifestyle and Genetic Risk in the Prospective Cohorts.



55,685 subjects from 4 studies:
- **Atherosclerosis Risk in Communities**
- **Women's Genome Health Study**
- **Malmö Diet and Cancer Study**
- **BioImage Study**

- Healthy lifestyle factors: no current smoking, no obesity, regular physical activity, and healthy diet
- High genetic risk: favorable lifestyle (3-4 factors) was associated with 46% lower relative risk of CAD than unfavorable lifestyle (0-1 factor)

Khera AV et al. N Engl J Med 2016;375:2349-2358.



Ketogenic Diet (KD)

What is it?

- Low-carb, high-fat diet (LCHF)
  - 70-80% calories from fat
  - < 20-50 g carbs/d
  - Moderate protein: 0.8-1 g/kg, 15-20% calories
- In the absence of carbohydrates, the body switches to primarily burning fat for fuel → overproduction of acetyl-CoA → ketogenesis (beta-hydroxybutyric acid and acetone)
- Usually takes a week to reach ketosis

Reported uses:

- Initially used for seizure control in pts w/ epilepsy
- Weight loss, metabolic improvements

Hultin G. Food & Nutrition Magazine. Nov 8, 2018.
Bueno NB et al. Br J Nutr. 2013 Oct;110(7):1178-87.
Mansoor N et al. Br J Nutr. 2016 Feb 14;115(3):466-79.
Brouns F. Eur J Nutr. 2018 Jun;57(4):1301-1312.

Ketogenic Diet

What is the evidence?

- Systematic reviews and meta-analyses comparing LCHF (> 30% fat; **most not true KD**) to low-fat diets (< 30% fat) at 1 to 2 years
  - Both LCHF and low-fat diets achieved clinically meaningful weight loss → no significant differences in weight change
  - **No statistically significant differences** for fasting blood glucose, insulin, and HbA1c between LCHF and low-fat diets

- Meta-analysis (13 RCTs) w/ participants assigned to low-fat or KD w/ follow-up at 12-24 months:
  - Those on KD achieved significantly greater weight loss vs. those on low-fat diet (WMD **-0.91 kg** [95% CI -1.65, -0.17], P=0.02)

Naude CE, et al. PLoS One. 2014 Jul 9;9(7):e100652.
Schwingshackl L, Hoffmann G. J Acad Nutr Diet. 2013 Dec;113(12):1640-61.
Bueno NB, et al. Br J Nutr. 2013 Oct;110(7):1178-87.

Mansoor N, et al. Br J Nutr. 2016 Feb 14;115(3):466-79.
Brouns F. Eur J Nutr. 2018 Jun;57(4):1301-1312.

Ketogenic Diet

Risks:

- Increased LDL-C due to excessive saturated fat & cholesterol intake
- Inadequate fiber intake → constipation, increased LDL-C
- "Keto flu" - lightheadedness, fatigue, headaches, nausea, and constipation
- Long-term effects: unknown (longest study: 2 years; most not true KD)
- Difficult to follow long-term

Not recommended for:

- Pregnant or lactating women
- People with or at risk for disordered eating
- People with renal disease
- Patients taking sodium–glucose cotransporter 2 (SGLT2) inhibitors → potential risk of ketoacidosis (use with caution)

Bacon & Egg Fat Bombs

- 212 calories
- 19 g fat (81% calories)
  - 9 g saturated fat (38% calories)
- 9 g protein (17% calories)
- 0 g carbs (0% calories)
- 590 mg sodium

ketodietapp.com/Blog/lchf/Bacon-Egg-Fat-Bombs

Intermittent Fasting

What is it?

- Manipulation of the timing of eating occasions using short-term fasts, used for health reasons and/or weight loss
- Many different programs/definitions:
  - Time-restricted eating (limiting food intake to ≤ 8 hr/day)
  - Alternate-day fasting (ADF) (e.g., 5:2)
  - "Fasting": complete abstinence of eating, or eating 25% of usual calories

Benefits over other "diets"

- Well-defined rules
- Can be easier to follow than continuous energy restriction (CER)
- No restrictions on non-fasting days
- Often no restrictions on food choices, only food timing/quantity

Patterson RD et al. J Acad Nutr Diet. 2015 Aug;115(8):1203-12.
Tinsley GM, La Bounty PM. Nutr Rev. 2015 Oct;73(10):661-74
Tinsley GM, Horne BD. Future Cardiol. 2018 Jan;14(1):47-54.

Intermittent Fasting

What is the evidence?

- Animal studies: beneficial effects on a wide range of disorders (e.g., diabetes, CVD, Parkinson's, cancer, Alzheimer's)
- Limited **human** studies
- Small studies have shown variable impacts for weight loss & lipids; **limited studies on long-term effects**
- RCT (n=100): ADF did not produce superior weight loss or cardioprotection vs daily calorie restriction after 1 year
- May help with weight loss in those with obesity & no other health conditions

Mattson MP, et al. Ageing Res Rev. 2017 Oct;39:46-58.
Harvie MN, et al. Int J Obes (Lond). 2011;35(5):714-727.
Harvie MN, et al. Br J Nutr. 2013;110(8):1534-1547.

Risks

- Dizziness, lightheadedness, fatigue, nausea, headache, hypoglycemia
- Not recommended for:
  - Children, teens, pregnant or lactating women, elderly, BMI < 18.5
  - People with diabetes, reactive hypoglycemia, hormonal imbalances
  - People with hx of eating disorder

Trepanowski JF, et al. JAMA Intern Med. 2017;177(7):930-938.
Trepanowski JF, et al. Clin Nutr. 2018 Dec;37(6 Pt A):1871-1878.
Patterson RE, et al. J Acad Nutr Diet. 2015;115(8):1203-1212.

Potential Problems:

21 yo F patient

- Began intermittent fasting
- Weekdays: Eats dinner only, fasts 22 hours a day
- Weekends: 2 full-day fasts (water only)
- Benefits: helps save time, maintain focus, and improve sleep

Diagnosis?

- Anorexia nervosa

Potential Problems:

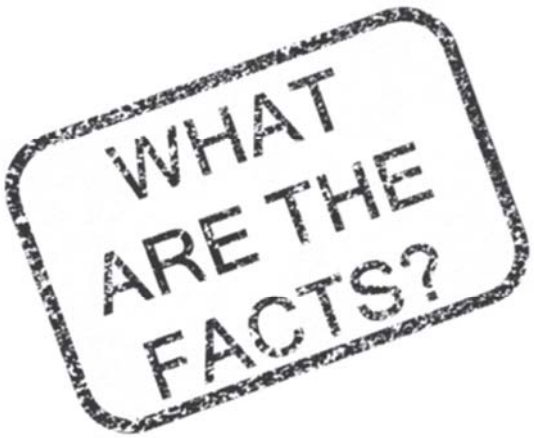
~~**21 yo F patient**~~

42 yo M: Jack Dorsey, Twitter CEO

- Began intermittent fasting
- Weekdays: Eats dinner only, fasts 22 hours a day
- Weekends: 2 full-day fasts (water only)
- Benefits: helps save time, maintain focus, and improve sleep

Diagnosis?

- ~~Anorexia nervosa~~
- "Biohacking"



Heart-healthy diet:

- Reduce saturated fat intake to < 7% of total calories
- Replace saturated & trans fats with monounsaturated and polyunsaturated fats and/or whole grains
- Reduce dietary cholesterol intake to < 200 mg/day
- Increase viscous fiber intake to 5-10 g/day
- For LDL-C reduction, begin a plant sterol/stanol supplement, ~2 g/day
- Reduce sodium intake to 1500-2300 mg/day

Jacobson TA et al. J Clin Lipidol 2015;9(6 Suppl):S1-122.e1.
Eckel RH et al. J Am Coll Cardiol 2014;63(25 Pt B):2960-84.
Sacks FM et al. Circulation 2017;136(3):e1-e23.
Moruisi KG et al. J Am Coll Nutr 2006;25(1):41-8.

Image: Canada's Dietary Guidelines, food-guide.canada.ca/en/guidelines/

Effects of Recommended Whole Foods on CVD Risk Factors

Foods	CVD Risk Factor Effects
Fruits and vegetables	↓ LDL-C, ↓ BP, ↑ glycemic control, ↓ oxidative stress
Whole grains vs. refined CHO	↓ LDL-C, ↓ BP, ↑ glycemic control
Vegetable oils vs. solid fat	↓ LDL-C
Dairy products (skim/low-fat vs. full-fat)	↓ BP (↓ LDL-C)
Lean meat, poultry (vs. high-fat)	↓ BP (↓ LDL-C)
Seafood	↓ TG, ↓ BP, ↓ arrhythmia, ↓ inflammation
Legumes, soy	↓ LDL-C, ↓ BP
Nuts, seeds	↓ LDL-C, ↑ HDL-C, ↓ BP, ↓ oxidative stress

Flock MR et al. Curr Opin Lipidol 2014;25:67–74.

Slide credit: Carol Kirkpatrick, PhD, MPH, RDN, LD, CLS, FNLA

Resources

My Heart-Healthy Plate
- ohsuheart.com/plate

5-Minute Nutrition Counseling Tool
- lipid.org/sites/default/files/5_minute_nutrition_counsel_tool_0.pdf

Starting the Conversation on Diet
- Brief, free, validated nutrition screening tool to be used by PCPs

Nutrition Counseling in Clinical Practice: How Clinicians Can Do Better.
- Kahan S, Manson JE. JAMA. 2017;318(12):1101-1102.

The Heart Protection Kitchen cookbook
- From OHSU's Center for Preventive Cardiology
- Available September 2020

Benefits of Medical Nutrition Therapy (MNT) by RDN

Systematic review and meta-analysis
- 34 studies, n=5704

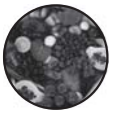
Nutrition counseling from an RDN
- Improved LDL-C, TG, A1c, BMI, quality-adjusted life years
- Reduced need for lipid-lowering medications
- Greater LDL-C reduction compared to general nutrition education from other healthcare provider

Multiple individual sessions with dietitian
- Clinical and cost benefits
- Benefits also reported when dietitian part of multidisciplinary health team

Sikand G et al. J Clin Lipidol. 2018 Sep-Oct;12(5):1113-1122.
Jacobson TA et al. J Clin Lipidol 2015;9(6 Suppl):S1-122.e1.
Grith Møller et al. Am J Clin Nutr 2017;106:1394-1400.

Take Home Message

Focus on small, sustainable changes to improve diet & lifestyle



Emphasize minimally-processed plant foods as the foundation of meals

Use My Heart-Healthy Plate as a guide for meal planning

Thank you!

Tracy Severson, RDN, LD
seversot@ohsu.edu

PARTNERING WITH YOUR COMMUNITY PHARMACIST

Claire Rutledge, PharmD
Kaylie Yoon, PharmD
Fred Meyer
PGY-1 Community Based Pharmacy Residents
March 6, 2020

Overview

- The role of community pharmacists
- Fred Meyer's relationship with The Vancouver Clinic
- Fred Meyer Pharmacy Services
  - Advanced Clinical Services
  - Immunizations and health screenings
  - Medication Therapy Management
  - Diabetes Prevention Program
- Pharmacists as prescribers (Oregon and Washington)

COMMUNITY-BASED PHARMACISTS

https://www.pharmacytoday.org/article/S1041-0160(16)31127-0/fulltext

Community-Based Pharmacist Practitioners

Pharmacists that are able to provide patient-care services in a **community-based setting** to meet the health needs of a patient

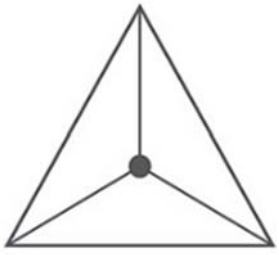
- Provide community-based care
- Collaborate with other health professionals
- Deliver patient care services
- Serve as a leader

The Evolving Role of the Community Pharmacist

Old:
Providing patients with **products**

New:
Providing patients with **services**

Value of the Community Pharmacist



Tripe Aim:

- Better care for populations (Accessibility)
- Decrease health care costs
- Better patient experience

Community Pharmacy Daily Overview

Filling prescriptions	Medication Therapy Management	Immunizations	Collaboration with providers
Medication counseling and education	Clinical services	Health screenings	Health coaching

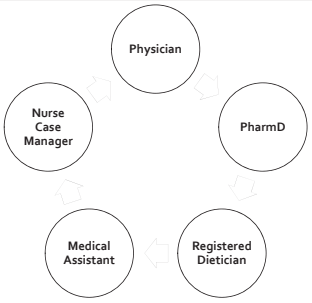
Clinical Services = the Future of Community Pharmacy

- Profession shift away from compensation for products to services
- Kroger Health is preparing for future state *now*:
  - iPC: technology replacing pen and paper!
  - Medical billing: pilots, improvements, additional opportunities

FRED MEYER & THE VANCOUVER CLINIC

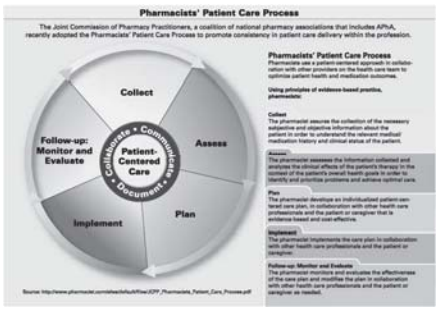
Fred Meyer and The Vancouver Clinic

- **The Vancouver Clinic**
  - Started in 1936 by Dr. John Brougher and Dr. Frank Boersma
  - The largest private, multi-specialty clinic in Clark County
  - 7 locations
- **Transitions of Care Clinic**
  - Fred Meyer pharmacists work alongside physicians, nurses, dietitians, and social workers to manage patients at high risk of re-admission



TRANSITIONS OF CARE MODEL

- Fred Meyer pharmacists use this model to provide the best care for patients
- Focuses on 5 areas:
  - Collect
  - Assess
  - Plan
  - Implement
  - Follow Up



Fred Meyer and The Vancouver Clinic

- **ACEI/ARB and BB Titration for Heart Failure Protocols**
  - Resident collaboration with a clinic provider
  - Developing a pharmacist-led titration protocol for ACE-I/ARB and BB therapies
- **Shortage Protocol**
  - Pharmacist-led recommendations during drug shortages
  - Recommend alternatives and provide expected shortage duration

- Medication Adherence
- Partnered with a Family Medicine physician
- Developed a protocol to identify patients who are non-adherent or at risk of non-adherent to chronic medications
- Epic integration – continuity of care
- Utilized MTM platform and provider referrals

Fred Meyer and The Vancouver Clinic – Medication Adherence Project

COMMUNITY PHARMACY AT FRED MEYER

Pharmacists as Prescribers

Washington: CDTA

- Collaborative Drug Therapy Agreement
- A single or group of pharmacists are permitted to have prescriptive authority under the delegation of an authorized practitioner

Oregon: State-wide protocols

- Issued by the State of Oregon
- Allows pharmacists who meet qualifying criteria to prescribe certain medications

CDTAs = Protocol between Provider & Pharmacists

- RPh prescriptive authority

COLLABORATION

- Flu shots! Adult immunizations!
- Improve access to quality care
- Improve outcomes
- Communication with providers

CDTAs at Fred Meyer Pharmacy

- Local and International Travel Immunizations and Medicine
- TB Testing, Tobacco Cessation, Oral Contraceptives, DM Supplies
- Others: UTI, anaphylaxis, burns, statin in diabetes, and many more!

ADVANCED CLINICAL SERVICES (WASHINGTON)

- Travel Immunizations
- Hormonal Contraception
- Naloxone
- More to come!

CLINICAL SERVICES IN OREGON

MEDICATION THERAPY MANAGEMENT (MTM)

- Need for MTM exists!
- More complicated medication regimens
- Pay-For-Performance
  - Focus is QUALITY care!
  - Triple Aim
    - Improved Care
    - Heathier Patients/Communities
    - Improvements = Lower Costs
- CMS Star Ratings
- CMRs and TIPs

	✖	!	✓	
Blood Pressure Adherence:	<80%	81-84%	>85%	
Cholesterol Adherence:	<75%	76-82%	>83%	
Diabetes Adherence:	<76%	77-80%	>81%	
High Risk Med Use:	>13%	8-12%	<7%	(Lower is better)
Statin Use in Diabetes:	<67%	68-76%	>77%	
Asthma - Absence of Controller:	>41%	31-40%	<30%	(Lower is better)
Asthma - Suboptimal Control:	>15%	11-14%	<10%	(Lower is better)

Comprehensive Medication Review (CMR)

- CMR = Annual Evaluation of All Medications
  - Patient specific analysis of RX, OTC, herbals
    - Appropriate
    - Effective
    - Safe
    - Adherence/Ease of Use
    - Cost
    - Increase Patient Knowledge
    - Evaluate immunization status
- Provide patient-centered medication regimens

Provider Communication

- Comprehensive Medication List
- Notifications of Patient Education / Counseling
- Patient Interventions/PCP Requests
- Referrals
- Link Multiple Providers
  - Cardiologist, Nephrologist, Endocrinologist

Immunizations and Travel Clinics

Travel	Other Vaccines
Cholera	Haemophilus Influenza B (HiB)
Japanese Encephalitis	Measles, Mumps Rubella
Polio	Meningococcal
Typhoid	HPV
Hepatitis A/B	Shingles
Rabies	Pneumonia (13 and 23)
Yellow Fever (when available)	Tetanus/Pertussis (TdaP)

Health Screenings

- Diabetes Screening-HbA1c Tests
- Blood Pressure Screening/Monitoring
- Cholesterol-Total Lipid Panel
- Depression
- Memory
- Asthma

DIABETES PREVENTION PROGRAM

Available at select Fred Meyer Pharmacies in Washington and soon in Oregon!

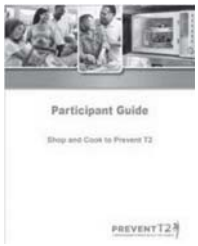
Diabetes Prevention Program (DPP)

- Led by certified lifestyle coaches
- Free to any qualifying patient
  - Not diagnosed with diabetes
- Program goals:
  - Reduce weight by 5-7%
  - Achieve 150 min/week activity
- Program benefits:
  - 58% reduction in risk of developing Type 2 DM compared to medication alone
  - $3,000 savings in healthcare costs over 15 months

NATIONAL Diabetes PREVENTION PROGRAM

OUR CURRENT CLASSES

- Currently have 2 classes:
  - Tuesday afternoon and Thursday afternoon
- **Class outline:**
  - First 7 classes= once a week
  - Next 7 classes= every 2 weeks
  - Last 5 classes= every month
- Each class is about 40 minutes
- **Weights and minutes** of activity recorded at beginning of each class
- Each class has a different topic:
  - Eat well to Prevent T2D
  - Track Your Food
  - Manage Support
  - Get Support



PHARMACISTS AS PRESCRIBERS IN OREGON

Statewide Protocols

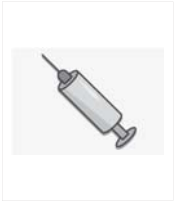
Hormonal Contraception - 2016
Pill & Patch

Signed July 2015

Allowed pharmacists to prescribe and dispense **contraceptive patches and self-administered oral hormonal contraceptives** to a person who is:

At least 18 years old	Under 18 years old
Does not need evidence of a women's health care visit or primary care practitioner (PCP) for hormonal contraception necessary	Needs evidence of previous prescription from a PCP or women's health care practitioner

Hormonal Contraception - 2017
Ring & Injection



- Signed June 2017
- Expanded scope of practice to include injections and ring

NALOXONE

- 2016 HB 4214
- 2017 HB 3440

Travel Medicine –
Upcoming Prescriptive Authority in Oregon

Travel Medicine

- Proposed a pre-travel consult medication algorithm to the Oregon Board of Pharmacy formulary committee
- Service available in Washington
  - One of our popular services
- Currently kit is in process for review by Oregon Board of Pharmacy
- Other initiatives:
  - Smoking Cessation
  - PrEP

Insulin–
Upcoming Prescriptive Authority in Oregon

- Senate Bill 9
  - Allows **pharmacists to prescribe and dispense emergency refills of insulin** and associated insulin-related devices and supplies
  - Prohibits an individual from receiving more **than three emergency refills of insulin** and associated insulin-related devices and supplies in calendar year
  - Requires medical assistance programs and health benefit **plans to reimburse for prescriptions and services** related to emergency refills

HOW CAN WE PARTNER TOGETHER?

- We share similar goals:
  - 1. Providing the best well-rounded care for our patients
  - 2. Medication adherence
  - 3. Patient education
- Two way relationship
  - Support each other
  - Conferences, guest speakers, interprofessional education
- If we can work together, we can provide the best continuity of care for our patients!

THANK YOU!

Questions?

"I have a rash!"

Kim Sanders PA-C
Assistant Professor
OHSU Dermatology

Disclosures

- none

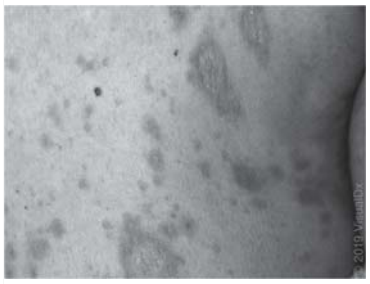
Goals:

- Compare and contrast some common dermatological conditions
- Present some less common conditions that are mimickers of common conditions

Case #1:

- 25 year old healthy female with a new rash x 4 weeks.
  - It is mildly itchy and covers most of her trunk
  - She is feeling well currently, but notes a cold and sore throat prior to the eruption of the rash that has resolved without treatment
  - She recently started a new job that includes public speaking. Due to her anxiety over this she has started prn propranolol.
  - No other medications or chronic medical conditions
  - Family history significant for an uncle that had "skin problems", no details known
  - Social history: she is single and actively dating. Does admit to recent unprotected intercourse with more than one male partner.

Clinical exam:



Differential diagnosis:

- Guttate psoriasis
- Syphilis
- Pityriasis rosea
- Extensive tinea corporis

A little more history…

- She does feel that the rash started with one plaque on her right anterior hip about a week before it exploded all over her body

Diagnosis:

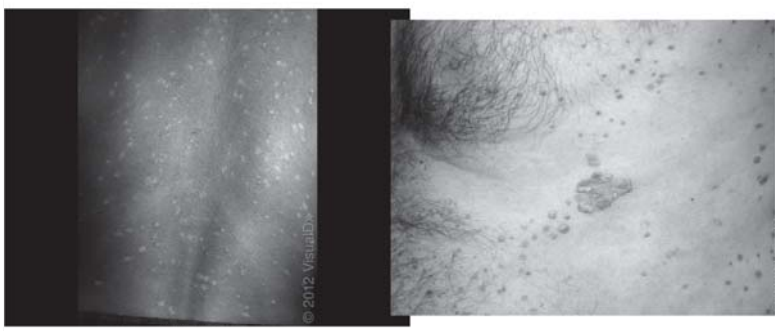
- Pityriasis rosea!
- Should you get an RPR?

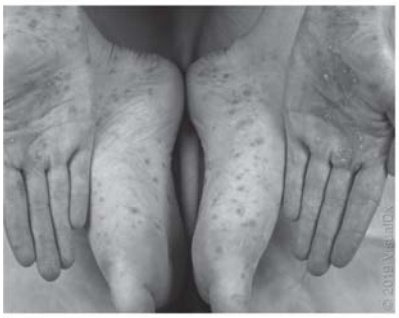
Treatment:

- Topical steroids if needed to help with itching
- Consider biopsy if does not resolve within 12 weeks

Considerations:

- What if she had strep throat prior to the eruption of the rash?
- What if she had erythematous macules on her palms?
- What if you saw her the first week, when she only had one lesion?
- Is the addition of propranolol important?





Case #2

- 40 year old female with new onset hair loss first noticed by her hair dresser, however it is progressing quickly.
  - She is relatively healthy with history of Raynaud's phenomenon and mild psoriasis affecting her elbows and knees, no other chronic medical conditions
  - She is on no new medications, however she takes a variety of vitamins and supplements
  - Family history significant for a sister with psoriasis and psoriatic arthritis
  - Social history: she plays roller derby and does cross fit
  - ROS: fatigue, although notes she has not decreased her activity level

Clinical exam:

Differential diagnosis

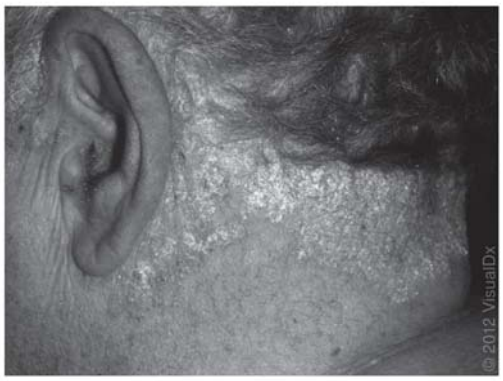
- Alopecia areata
- Flaring scalp psoriasis
- Lupus
- Lichen planopilaris

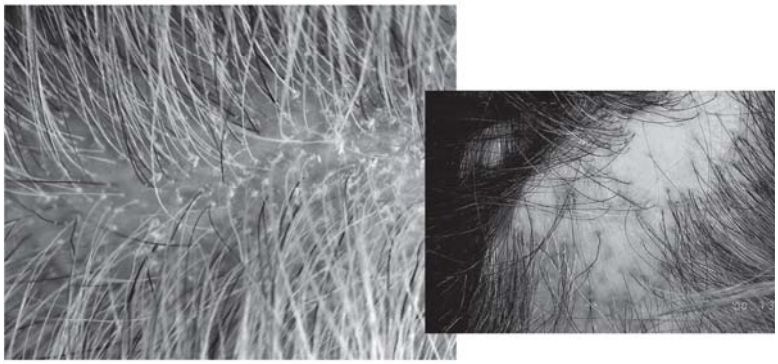
Treatment

- Treatment with intralesional kenalog and topical clobetasol scalp solution are initiated in addition to the recommendations of start Minoxidil
- At follow up she is showing significant improvement

Considerations

- What if she had diffuse redness and scaling in addition to the alopecia?
- What if her systemic symptoms continued/progressed?

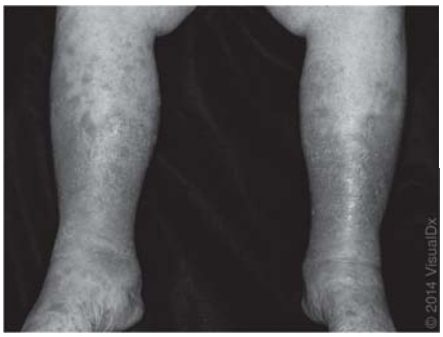




Case #3

- 63 year old obese male following up after a visit to the ER the day before. He notes bilateral leg swelling with itching and pain. Notes several blisters and oozing as well. Notes this started a few weeks ago.
  - Afebrile, generally feeling well
  - Diagnosed with bilateral leg cellulitis and started on Keflex at the ER
  - Past medical history significant for hypertension and hyperlipidemia
  - Medications: several, recently started amlodipine about 6 weeks ago

Clinical exam

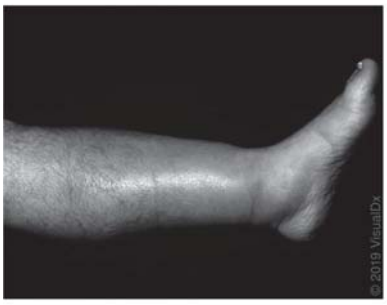


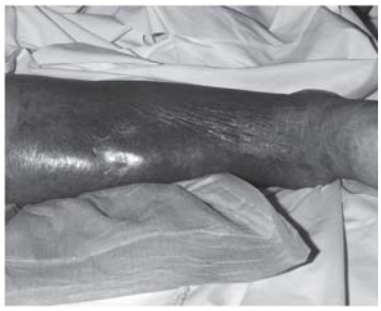
Differential diagnosis

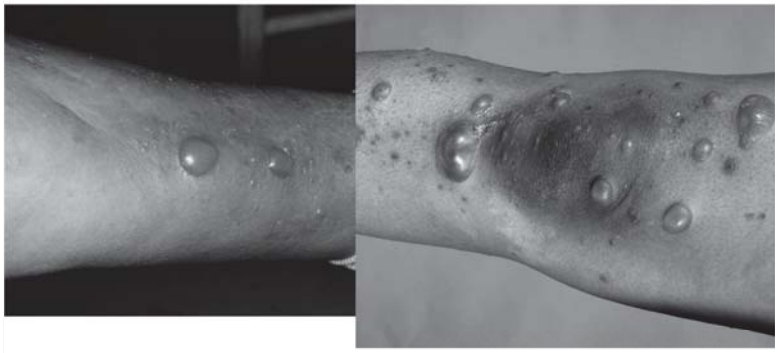
- Cellulitis
- Bullous pemphigoid
- Stasis dermatitis

Treatment

- Slather legs in triamcinolone 0.1% ointment and place unna wrap or profore dressing. Remove in 1 week and replace if needed.
- Or have patient apply triamcinolone at home then wrap with wet gauze/cloths and soak for 20 minutes daily x 2 weeks. Compression stockings during the day are a must.

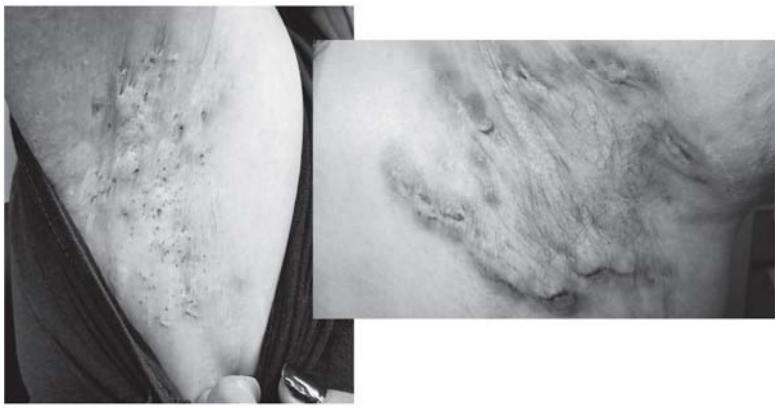






Case #4

- 36 year old obese female with acne in her arm pits, under her breasts, and in her groin. Present for several years. Worsening with time although waxes and wanes.
  - Current daily smoker
  - Otherwise healthy on no prescription medications, IUD for contraception
  - Family history of severe acne and diabetes

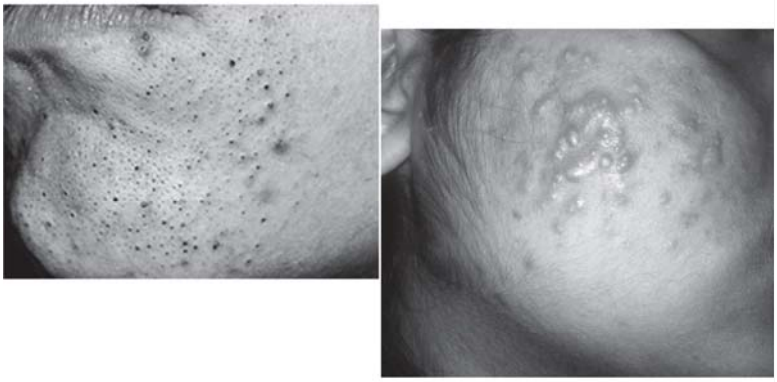


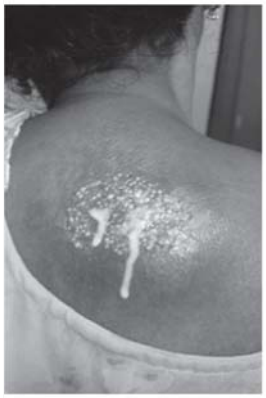
Differential diagnosis

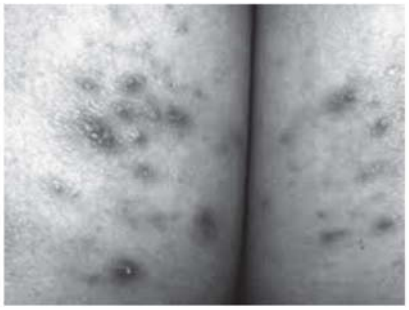
- Acne vulgaris
- Recurrent furunculosis
- Hidradenitis supperativa

Treatment

- Benzoyl peroxide wash
- Topical clindamycin
- Oral antibiotics (doxycycline) for flares
- Intralesional Kenalog injections
- Punch deroof with curettage
- Isotretinoin
- TNF inhibitors
- Surgery
- Stop smoking!!!







Case #5

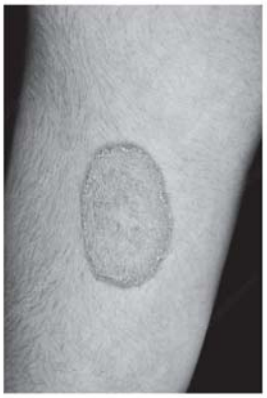
- 47 yo male with new onset itchy rash on his forearms, seems to be appearing within his tattoos, but is also on non-tattooed skin. He has applied over the counter hydrocortisone with some relief of his itching.
  - PMHx: atopic dermatitis, asthma
  - Fhx: unremarkable
  - Meds: triamcinolone, albuterol

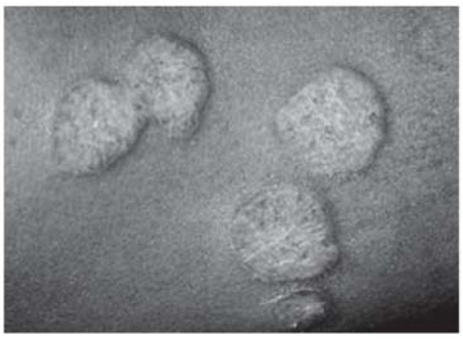
Differential diagnosis

- Sarcoidosis
- Granuloma annulare
- Tinea corporis

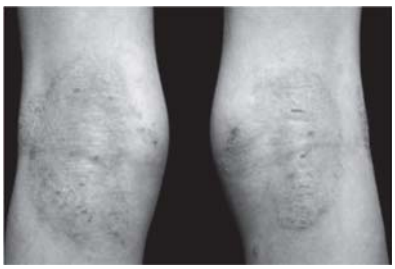
Treatment

- Biopsy if unsure
- High potency topical steroids +/- occlusion
- Intralesional injections
- Phototherapy





Eczema or psoriasis?



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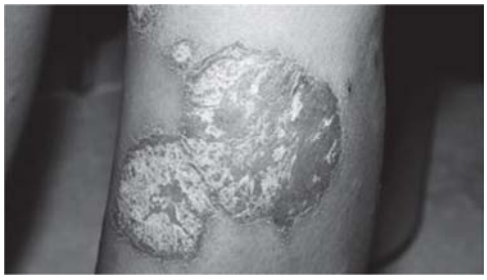

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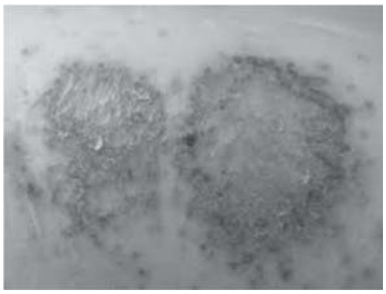

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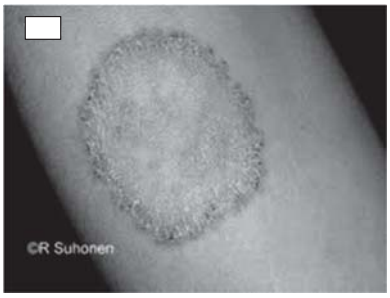
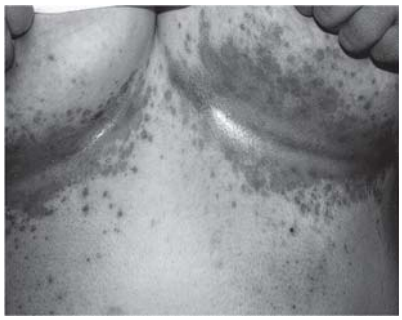


Intertrigo?

Intertrigo?



Thank you!!!