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Considering Visual Impairment in the Primary Care Setting

DATE: February 11th, 2020 PRESENTED BY: Alan Labrum OD

Objectives

1. To learn about what vision rehabilitation is.
2. To identify some aspects of visual impairment that the primary care provider should consider.
3. To explore examples of treatment options for patients with visual impairment.

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Vision Rehabilitation

- Multidisciplinary approach to improving the quality of life for individuals with vision loss by helping individuals
  - meet their visual goals
  - overcome daily challenges
  - become more independent
  - overcome emotional difficulties
  - meet learning potential

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Vision Rehabilitation

- Can include several professionals
  - Ophthalmologists, optometrists, occupational therapists, orientation & mobility specialists, social workers, counselors (vocational or psychological services) and **primary care providers**
  - Treatment can include glasses, optical devices, assistive technology, adaptive strategies and environmental adaptations

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Who can benefit from vision Rehabilitation?

- American Academy of Ophthalmology recommends vision rehabilitation services if patient has
  - Best-corrected visual acuity in the better-seeing eye of less than 20/40.
  - Scotomas
  - Visual field loss
  - Loss of contrast sensitivity

Fontenot, JL et al. Vision Rehabilitation Preferred Practice Pattern. *Ophthalmology.* 2018;125(1)

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Prevalence in the US

2017 estimates for older adults (>45 years)

- <20/40 BCVA: 3 894 406
- <20/60 BCVA: 1 483 703
- 20/200 or less: 1 082 790

2017 estimates for all ages

- <20/40 BCVA: 5 704 144
- <20/60 BCVA: 1 845 651
- 20/200 or less: 1 277 223

Chan, T et al. Estimates of Incidence and Prevalence of Visual Impairment, Low Vision, and Blindness in the United States. *JAMA Ophthalmol.* 2018;136(1)

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Access Barriers

- Lack of
  - awareness of services
  - referral
  - services where they live
  - understanding of the potential benefits
  - transportation to appointments
  - resources to purchase devices or pay for other services

The PCP has an important role in managing vison

- Early identification of patients with a decrease in vision is not only important for managing the ocular condition, but also for improving quality of life

Marra, KV et al. Care of Older Adults: Role of Primary Care Physicians in the Treatment of Cataracts and Macular Degeneration. *J Am Geriatr Soc.* 2016;64

Definitions

- **Low vision**-BCVA in the better seeing eye of less than 20/60 (WHO)
- **Blindness**-BCVA in the better seeing eye of less than 20/400 (WHO)
- **Legal blindness**-BCVA of 20/200 or less, less than 20/100 when measured with a modern VA chart or visual field of <20 degrees (US SSA)
- **Visual impairment**-any level of vision loss
- **Visual function**-refers to VA, visual field and contrast sensitivity
- **Visual performance**-how vision is used for different tasks

Fontenot, JL et al. Vision Rehabilitation Preferred Practice Pattern. *Ophthalmology*. 2018;125(1)

Common concerns

- Reading
- Driving
- Falling or fear of falling
- Emotional distress

Reading Difficulties

- Difficulty accessing information
- Making errors when reading labels such as on medication bottles
- Difficulty reading for pleasure

Reasonable accommodations in the Workplace

- **Reasonable accommodation**-modifications that allow a qualified individuals to perform the essential functions of that job despite their visual impairment. This should not create undue hardship for the employer.
- American Disability Act, Title I-employment
  -prohibits discrimination based on disability
- Visually impaired or blind- has to show that they are substantially limited in seeing or another major life activity (reading, working, walking as examples).
- https://adata.org/factsheet/reasonable-accommodations-workplace
- https://www.eeoc.gov/eeoc/publications/qa_vision.cfm#_ednref17

Accommodations for school

- Section 504 plan vs Individual Education Plan (IEP)

Optimizing the clinic for the visually impaired

- Big Four Tips
  - Maximize size
  - Maximize contrast
  - Maximize lighting
  - Minimize glare

"SiteWise brochure published by Henry Ford Center for Vision Rehabilitation and Research (312) 825-2401 or visionrehab@hfhs.org for more information

Driving with a visual impairment

- Vision requirement vary from state to state
- Driving day or night in Oregon
  -BCVA: 20/40 or better
  -Visual field: >110 degrees
- Daylight driving only in Oregon
  -BCVA: less than 20/40 to 20/70 or better
  -Visual field: >110 degrees

Bioptic telescopes

- For persons with limited vision in order to drive in Oregon
  -BCVA: no better than 20/80 and no worse than 20/200
  -Visual field: >120 degrees horizontally and >80 degrees vertically
- Requires referral for driving rehabilitation from a driving rehabilitation specialist for on road training with this device
- Requires a DMV drive test
- Check with your state DMV for vision requirements.
- Biopticdrivingusa.com is a good resource for vision requirements for all states.

Fall Risk

- Individuals with a visual impairment have an increased risk of falling
- Loss of visual function may increase fear of falling
  - Can restrict walking and other activities
  - Can increase anxiety and depression
  - Can increase social isolation
  - Decreased in physical activity can increase physical decline
  - Decrease quality of life

Fontenot, JL et al. Vision Rehabilitation Preferred Practice Pattern. *Ophthalmology*. 2018;125(1)

Fall risk related to visual impairment

- Reasons
  - Poor contrast
  - Visual field decrease
  - Poor depth perception
  - Visual confusion
  - Visual acuity decrease
  - Anxiety

Options to reduce risk of falls

- **Optimize vision and oculomotor abilities**
- Adaptive strategies with orientation & mobility instructor
  - White cane
- Improve safety at home with occupational therapist
- Behavior modifications
- Improve strength with a physical therapist
- Incorporating several strategies will improve outcome

Monocular Vision

- Loss of vision in one eye
  -other eye may have normal vision
- Can still have issues
  - Loss of depth perception
  - Decreased visual field
  - Safety concerns
  - Cosmetic concerns
  - Depression

What can be done to help patient's with monocular vision?

- Eyewear for protection, to reduce glare/photosensitivity, help with cosmetic concerns
- Adaptive strategies
- Scanning techniques
- O&M training
- Psychological services
- Important to have realistic expectations
  - Vision loss cannot be reverse

Psychological considerations

- Loss of functional vision is linked to increased risk of depression

Morse, AR. Vision Function, Functional Vision, and Depression. *JAMA Ophthalmol*. 2013;131(5)

Example of treatment options

- Optical devices
- Adaptive technologies

Glasses

Trial frame refraction

- Easy way to show large differences in lens power Eg. +/- 1.00 D
- Works well for
  - Low vision patients
  - Eccentric viewing
  - Nystagmus-null point
  - Difficulty with phoropter
  - If not getting good results with retinoscopy or in-phoropter refraction
  - Easy to evaluate ADD power and to demonstrate sRx

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Optical Devices for reading

- Handheld magnifiers
- Stand magnifiers
- Dome magnifiers
- Bar magnifiers
- Microscopic glasses
- Telemicroscopes

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Optical Devices for Distance

- Monocular telescopes
- Binocular telescopes
- Bioptic telescopes
- Autofocus bioptic telescope
- Reverse telescopes to minify image
  - can be useful for constricted visual fields

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Adaptive Technology

- Technology designed to maintain or enhance the capabilities of people with a disability

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Electronic magnifiers (CCTV)

- Provides digital magnification
- Basic components consist of a camera and a monitor
- Can control contrast and brightness
- Various configurations available to meet the needs of the individual
- Example: desktop vs portable

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Electronic magnifiers

- Davinci HD CCTV magnifier by Enhanced Vision
  - Rotating camera
  - Text to speech (OCR)

https://www.enhancedvision.com/low-vision-product-line/davinci-all-in-one-hd-video-magnifier-with-text-to-speech.html

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Electronic magnifier

- Transformer HD
  - Portable
  - Can connect to TV or monitor via Wi-Fi or HDMI

https://www.enhancedvision.com/low-vision-product-line/transformer-hd-portable-electronic-magnifier.html

Electronic magnifier

- Prodigi Connect 12 by Humanwa
  - Touchscreen
  - Tablet-access to Android apps
  - Portable

https://store.humanware.com/hus/connect-12-electronic-magnifier-new-generation.html

Electronic glasses

- A camera based headset that displays a digital image in front of the eye.
- This digital image can then be magnified and contrast can be enhanced.
- Various other features are available depending on the model.
- This device can be used to enhance distance, intermediate or near vision.

Electronic glasses

- eSight
  - Bioptic tilt
  - Handheld trackpad to control color, contrast, focus, brightness and magnification

esighteyewear.com

Electronic glasses

irisvision.com

IrisVision
- Integrates with a Samsung phone and VR headset
- No handheld controller
- OCR

Electronic glasses

- Jordy by Enhanced Vision

https://www.enhancedvision.com/low-vision-product-line/jordy.html

Electronic glasses

- Oculenz AR Wear Glasses by Ocutrx
  - Diagnostic mode-tracks size and shape of scotoma
  - Eye tracking ability
  - Dynamic opacity
  - Will be available soon

https://www.youtube.com/watch?v=h-LZr_-ilBs

http://www.oculenz.com

Orcam MyEye 2

- Text to speech
- Identifies products
- Recognizes faces

https://www.orcam.com/en/myeye2/

ScripTalk by En-Vision

Accessibility features

- Apple iPhone/iPad
  - Voiceover
  - Zoom
  - Magnifier
  - Invert Colors
  - Siri
- Speak screen
- Typing Feedback
- Larger Text
- Bold Text

Low vision apps

- Seeing AI by Microsoft

- Lookout by Google for Google Pixel

Talking Books

- https://www.oregon.gov/Library/print-disabilities/Documents/Applications/application_individual.pdf

Mobility

- Aira
  - Use camera of smartphone or smart glasses with app to connect with agent
  - Trained agent can provide visual information for school, work or mobility

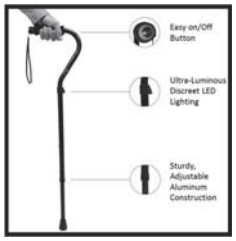
aira.io

Mobility

- We Walk
  - Smart cane with ultrasonic sensors to detect obstacles
  - Can connect to navigation apps such as Google maps

wewalk.io

Stridelight Ultrabright Walking Cane



Mobility

- Wayband by wear.works
  - Wearable haptic navigation device

www.wear.works/wayband

- Sunu band

www.sunu.com/

Assistive software

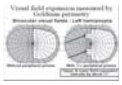
- Zoomtext magnifier
  - Magnifier software
- JAWS (Job Access With Speech)
  - Screen reader
- Dragon
  - Voice recognition software

Music

- ForScore app
- LimeLighter by Dancing Dots
  - Assistive music technology
  - Wireless pedal board for hands free control of music

http://www.dancingdots.com/limelighter/limelightermain

Field expanding Prism

- Peli prism
  - ~20 degrees of field expansion
  - May help with obstacle detection for a patient with a hemianopsia
- Scanning therapy to compensate for visual field defect
  - Dynavision
  - Games-I spy, word search, post-it notes

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Low vison Filters

- Reduces glare
- Helps with photoaversion
- May enhance contrast
- Also recommend proper lighting, preferential seating and brimmed hats


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Resources

- Low vision resources by state

www.enhancedvision.com/low-vision-resources.html

- Oregon

https://www.oregon.gov/blind/livingwithvisionloss/Pages/Resources.aspx

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Summary

- Consider your patients that have a visual impairment and inform them of services that may help them
- Vision rehabilitation can be effective at improving quality of life, however it will not reverse the damage to the eye. It is important to set expectations
- The PCP has an important role in vision rehabilitation

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Thank You

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The Pressure is On! Using Available Data and Individualization of Care to Manage Hypertension in Older Adults

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Conflict of Interest Disclosure

Disclosure

I do not have any relationship(s) to disclose.

What we'll discuss

- Data and rationale for
  - Some blood pressure control (versus none)
  - BP targets in older adults
  - Impact of comorbidities on BP targets
  - BP targets in CKD
  - Specific medication choices for HTN in CKD

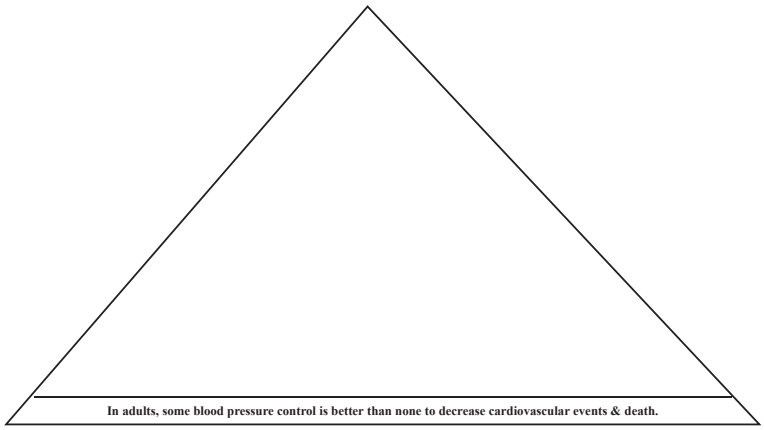
Treatment of hypertension improves cardiovascular outcomes

MRC
Mean Age 51

Aus-BP
Mean Age 50.5

VA Cooperative Studies
Mean Age 50-52

VA Cooperative Studies, JAMA, 1967 & 1970
Aus-BP, Lancet, 1980
MRC, BMJ, 1985



Dr. A

An 83 yo retired PhD, referred by his primary care provider for recommendations on hypertension management.

PMH:
Hypertension
Diet-controlled DM
PUD
Edema (multifactorial)
BPH
Gout

188/66 → 169/59
HR 62

Medications:
Amlodipine 2.5 mg/d
Atenolol 50 mg daily
Lasix 20 mg daily
Tamsulosin 0.4 mg/d

You say my blood pressure should be lower – how much lower? I read the news – no one agrees!

Special Communication

2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults

Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

Recommendation 1

In the general population aged 60 years or older, initiate pharmacologic treatment to lower BP at systolic blood pressure (SBP) of 150 mm Hg or higher or diastolic blood pressure (DBP) of 90 mm Hg or higher and treat to a goal SBP lower than 150 mm Hg and goal DBP lower than 90 mm Hg.

Strong Recommendation – Grade A

CLINICAL GUIDELINE

ACP American College of Physicians® Leading Internal Medicine, Improving Lives

Pharmacologic Treatment of Hypertension in Adults Aged 60 Years or Older to Higher Versus Lower Blood Pressure Targets: A Clinical Practice Guideline From the American College of Physicians and the American Academy of Family Physicians

Whelton PK, et al.

2017 High Blood Pressure Clinical Practice Guideline

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Guideline	BP target recommendation/rationale
JNC-8 2014	-In a population of patients age 60 and older, initiate therapy with SBP >150 or DBP >90 and treat to target <150/90
ACP/AAFP 2016	-In adults over age 60, initiate treatment when SBP is >150 and treat to <150 to reduce the risk of mortality, stroke, and cardiovascular events. -In adults over age 60 with history of stroke, target SBP <140 for secondary stroke prevention -In adults over age 60 with high cardiovascular risk, consider SBP <140
ACC/AHA 2017	-For non-institutionalized ambulatory adults age 65+ with SBP >130, treatment to SBP <130 is recommended. (For adults >65 with high burden of comorbidity, limited life expectancy, clinical judgement, pt preferences, and a team-based approach are recommended.)

JNC-8 Systematic review: Data related to BP targets older adults

SBP target <140	More vs less therapy, resulting in SBP <160
• VALISH (2004, n= 3,260) • JATOS (2008, n= 4,418) • Cardio-sis (2008, n= 1,111)	• SHEP (1991, n= 4,736) • Syst-Eur (1997, n= 4,695) • HYVET (2008, n= 3,845)

ACP-AAFP Syst Review: Data related to BP targets older adults

(All studies used had mean age >60)

• Older adults with baseline SBP ≥160 vs <160

	All-cause mortality	CV events	Stroke
Baseline SBP ≥160	0.9 (0.83; 0.98)	0.77 (0.68; 0.89)	0.74 (0.65; 0.84)
Baseline SBP <160	0.89 (0.79; 1.01)	0.84 (0.73; 0.93)	0.79 (0.68; 0.91)

• Older adults in study arms with achieved SBP ≥140 vs <140

	All-cause mortality	CV events	Stroke
Achieved SBP ≥140	0.91 (0.84; 0.99)	0.78 (0.68; 0.93)	0.72 (0.62; 0.82)
Achieved SBP <140	0.89 (0.79; 0.98)	0.82 (0.72; 0.91)	0.8 (0.7; 0.9)

ACP-AAFP Syst Review: Data related to BP targets older adults

Treat to target studies using SBP <140 versus a higher target

	All-cause mortality	CV events	Stroke
ACP-AAFP Systematic review -SBP <140 or DBP <85	0.86 (0.69; 1.06)	0.82 (0.64; 1.00)	0.79 (0.59; 0.99)

Figure 2. RRs for death, stroke, and cardiac events in trials in which the intervention group had a target of SBP <140 mm Hg or DBP ≤85 mm Hg and the control group had a less strict target.

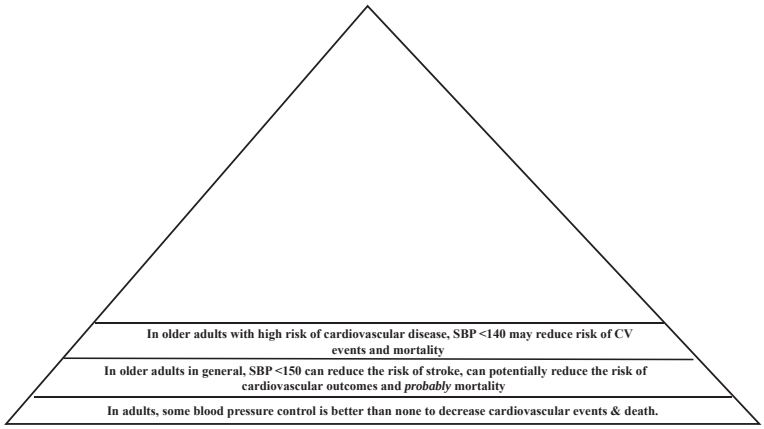
Study, Year (Reference)	BP Goal (Treatment vs. Control), *mm Hg*	RR (95% CI)	Events, *n/N* Treatment	Control
Mortality				
ACCORD, 2010 (11)	SBP <120 vs. <140	1.05 (0.84–1.30)	150/2362	144/2371
Cardio-SIs, 2009 (12)	SBP <130 vs. <140	0.79 (0.21–2.94)	4/557	5/553
HOT, 1998 (13)	DBP ≤85 vs. ≤90	0.77 (0.48–1.21)	46/12 526	30/6264
SPRINT, 2015 (3)	SBP <120 vs. <140	0.74 (0.60–0.91)	155/4678	210/4683
JATOS, 2008 (14)	SBP <140 vs. <160	1.12 (0.43–2.90)	9/2212	8/2206
VALISH, 2010 (16)	SBP <140 vs. <150	0.79 (0.47–1.35)	24/1545	30/1534
Overall (I^2 = 13.3%; P = 0.33)		0.86 (0.69–1.06)	388/23 880	427/17 611

ACP-AAFP and ACC Reviews: Data related to BP targets older adults

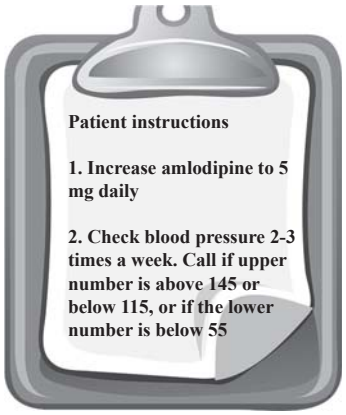
	All-cause mortality	CV events	Stroke
ACP-AAFP Systematic review -SBP <140 or DBP <85	0.86 (0.69; 1.06)	0.82 (0.64; 1.00)	0.79 (0.59; 0.99)
ACC-AHA Systematic review -intensive vs higher target	0.92 (0.76; 1.11)	0.77 (0.64; 0.93)	0.78 (0.64; 0.94)

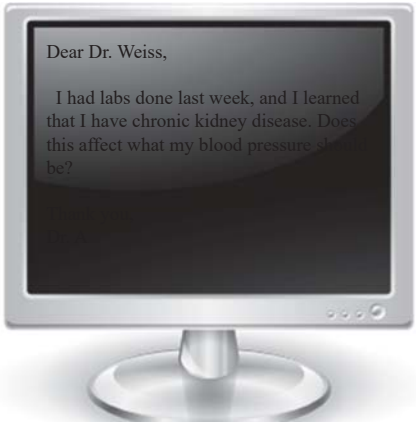
Studies used ACP-AAFP:
ACCORD
Cardio-Sis
HOT
SPRINT
JATOS
VALISH

Studies used AHA:
ACCORD
Cardio-Sis
HOT
SPRINT
JATOS
VALISH
Wei et al



188/66 →
169/59 mm Hg





*What is the "**right**" blood pressure for older adults with kidney disease?*

Recommendation 4
In the population aged 18 years or older with CKD, initiate pharmacologic treatment to lower BP at SBP of 140 mm Hg or higher or DBP of 90 mm Hg or higher and treat to goal SBP of lower than 140 mm Hg and goal DBP lower than 90 mm Hg.
Expert Opinion - Grade E

when weighing the risks and benefits of a lower BP goal for people aged 70 years or older with estimated GFR less than 60 mL/min/1.73m^2, antihypertensive treatment should be individualized, taking into consideration factors such as frailty, comorbidities, and albuminuria.

Lower BP target <140	Lower BP target <150
• ~~VALISH~~ (2004, n= 3,260) • ~~JATOS~~ (2008, n= 4,418) • ~~Cardio-sis~~ (2008, n= 1,111)	• ~~SHEP~~ (1991, n= 4,736) • ~~Syst-Eur~~ (1997, n= 4,695) • ~~HYVET~~ (2008, n= 3,845)

Trial	Mean age	BP goals/tx groups	Achieved BP	Outcomes
Non-CKD population				
Shulman 1989 N=10,940	50.8	DBP <90 vs usual	NR	--Faster rate in creatinine rise reported in those with higher BPs.
Walker 1992 (MRFIT) N=5,524	46.5	DBP <95 vs usual	<140 vs 150-159	--Rate in renal function decline was faster for those with higher vs lower BPs.
Non-DM CKD population				
Klahr 1994 (MDRD) N=840	52	<125/75 vs <140/90	MAP 92 vs ~98	--Lower BP significantly slowed GFR decline ONLY in those with proteinuria >1 gm/d
Wright 2002 (AASK) N=1,094	54	MAP ≤92 vs MAP 102-107	BP 128/78 vs 141/85	--NSD in GFR slope or composite of GFR decline/ESRD/death based on BP alone.
Ruggenenti 2005 (REIN-2) N=338	53-54	<130/80 vs DBP <90	130/80 vs 134/82	-NSD ESRD, change in eGFR (stopped due to futility)

9.3. Chronic Kidney Disease

Recommendations for Treatment of Hypertension in Patients With CKD
References that support recommendations are summarized in Online Data Supplements 37 and 38 and Systematic Review Report.

COR	LOE	Recommendations
I	SBP: B-R[18]	1. Adults with hypertension and CKD should be treated to a BP goal of less than 130/80 mm Hg (1-6).
	DBP: C-EO	

Trial	Mean age	BP goals/tx groups	Achieved BP	Outcomes
Non-CKD population				
Shulman 1989 N=10,940	50.8	DBP <90 vs usual	NR	--Faster rate in creatinine rise reported in those with higher BPs.
Walker 1992 (MRFIT) N=5,524	46.5	DBP <95 vs usual	<140 vs 150-159	--Rate in renal function decline was faster for those with higher vs lower BPs.
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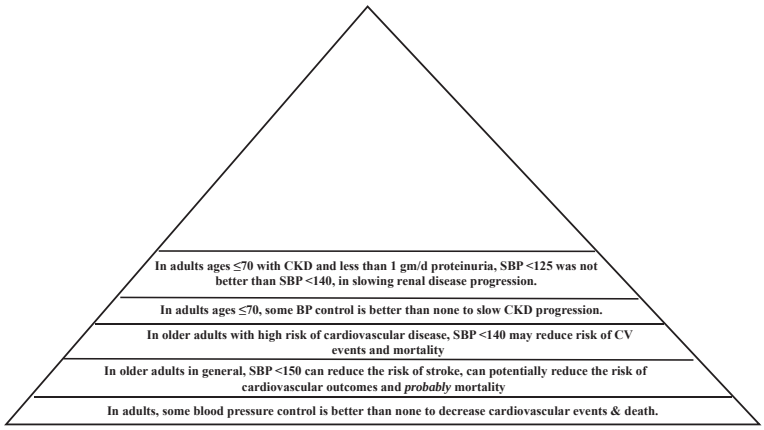
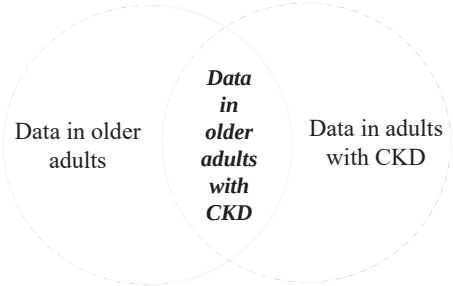
Ruggenenti 2005 (REIN-2) N=338	53-54	<130/80 vs DBP <90	130/80 vs 134/82	-NSD ESRD, change in eGFR (stopped due to futility)

AHA-ACC Systematic Review analysis for CKD populations

	RR (95% CI)
All-Cause mortality	0.96 (0.66; 1.4)
Renal events	1.03 (0.89; 1.19)





Trials of blood pressure control in adults with mean age >60 in trial population

EXCLUSION CRITERIA

Creatinine ≥3	RENAAL (eGFR 21 men, 16 women) **SPRINT** men (eGFR <20 men)
Creatinine >2.5-2.9	EWPHE (2.5; eGFR 25 men, 19 women) **SPRINT** women (eGFR <20 women)
Creatinine >2-2.4	SCOPE men (2; eGFR 32) **Cardio-Sis** (2; eGFR 33 men, 24 women) FEVER (2; eGFR 32 men, 24 women) SYST-EUR (2; eGFR 33 men, 24 women) **VALISH** (2; eGFR 32 men, 24 women)
Creatinine >1.5-1.9	**ACCORD** (1.5; eGFR 39 men, 29 women) BENEDICT (1.5; eGFR 46 men, 34 women) HYVET (1.7; eGFR 39 men, 29 women) **JATOS** (1.5; eGFR 44 men, 33 women) SCOPE women (1.6; eGFR 30)
Less specific renal function exclusion	SHEP, STONE, TRANSCEND

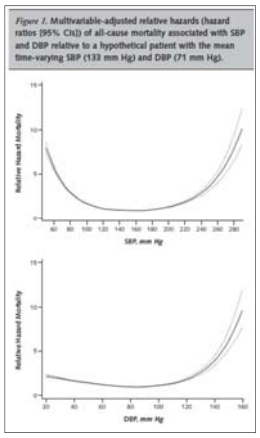
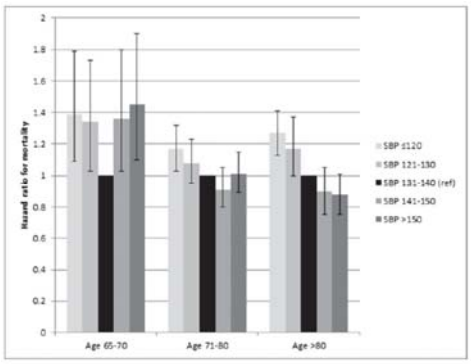


Figure 1. Multivariable-adjusted relative hazards (hazard ratios [95% CIs]) of all-cause mortality associated with SBP and DBP relative to a hypothetical patient with the mean time-varying SBP (133 mm Hg) and DBP (71 mm Hg).



Kovesdy et al, Annals IM, Aug 2013
Weiss et al, CJASN, Sept 2015

SPRINT study group, NEJM, November 2015

Subgroup	Intensive Treatment	Standard Treatment	Hazard Ratio (95% CI)	P Value for Interaction
	no. of patients with primary outcome/total no. (%)			
Overall	243/4678 (5.2)	319/4683 (6.8)	0.75 (0.64–0.89)	
Previous CKD				0.36
No	135/3348 (4.0)	193/3367 (5.7)	0.70 (0.56–0.87)	
Yes	108/1330 (8.1)	126/1316 (9.6)	0.82 (0.63–1.07)	
Age				0.32
<75 yr	142/3361 (4.2)	175/3364 (5.2)	0.80 (0.64–1.00)	
≥75 yr	101/1317 (7.7)	144/1319 (10.9)	0.67 (0.51–0.86)	
Sex				0.45
Female	77/1684 (4.6)	89/1648 (5.4)	0.84 (0.62–1.14)	
Male	166/2994 (5.5)	230/3035 (7.6)	0.72 (0.59–0.88)	
Race				0.83
Black	62/1454 (4.3)	85/1493 (5.7)	0.77 (0.55–1.06)	
Nonblack	181/3224 (5.6)	234/3190 (7.3)	0.74 (0.61–0.90)	
Previous cardiovascular disease				0.39
No	149/3738 (4.0)	208/3746 (5.6)	0.71 (0.57–0.88)	
Yes	94/940 (10.0)	111/937 (11.8)	0.83 (0.62–1.09)	
Systolic blood pressure				0.77
≤132 mm Hg	71/1583 (4.5)	98/1553 (6.3)	0.70 (0.51–0.95)	
>132 to <145 mm Hg	77/1489 (5.2)	106/1549 (6.8)	0.77 (0.57–1.03)	
≥145 mm Hg	95/1606 (5.9)	115/1581 (7.3)	0.83 (0.63–1.09)	

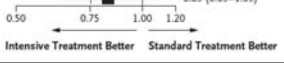
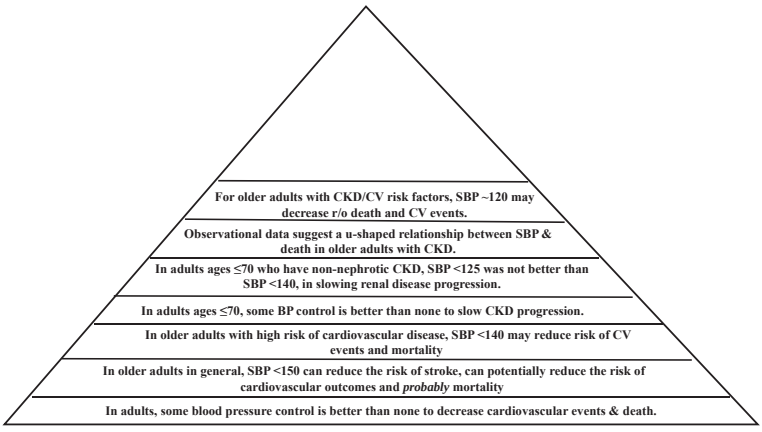
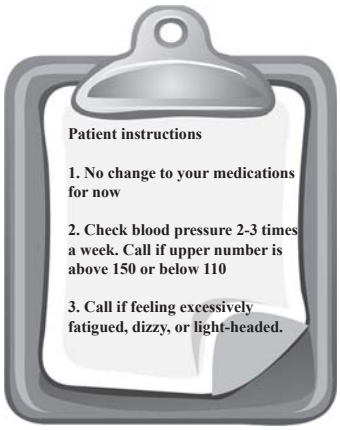


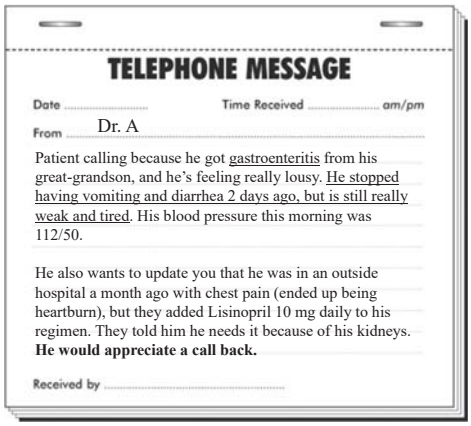
Table 3. **Serious Adverse Events, Conditions of Interest, and Monitored Clinical Events.**

Variable	Intensive Treatment (N=4678)	Standard Treatment (N=4683)	Hazard Ratio	P Value
	no. of patients (%)			
Serious adverse event*	1793 (38.3)	1736 (37.1)	1.04	0.25
Conditions of interest				
Serious adverse event only				
Hypotension	110 (2.4)	66 (1.4)	1.67	0.001
Syncope	107 (2.3)	80 (1.7)	1.33	0.05
Bradycardia	87 (1.9)	73 (1.6)	1.19	0.28
Electrolyte abnormality	144 (3.1)	107 (2.3)	1.35	0.02
Injurious fall†	105 (2.2)	110 (2.3)	0.95	0.71
Acute kidney injury or acute renal failure‡	193 (4.1)	117 (2.5)	1.66	<0.001
Emergency department visit or serious adverse event				
Hypotension	158 (3.4)	93 (2.0)	1.70	<0.001
Syncope	163 (3.5)	113 (2.4)	1.44	0.003
Bradycardia	104 (2.2)	83 (1.8)	1.25	0.13
Electrolyte abnormality	177 (3.8)	129 (2.8)	1.38	0.006
Injurious fall†	334 (7.1)	332 (7.1)	1.00	0.97
Acute kidney injury or acute renal failure‡	204 (4.4)	120 (2.6)	1.71	<0.001



Creatinine: 1.5 mg/dL
eGFR: 45 ml/min/1.73m^2
Urine prot/creat ratio: 0.15 mg/mg

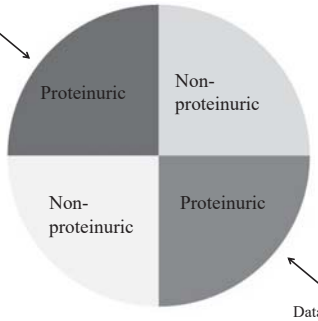




Are some blood pressure medications better than others for older adults with chronic kidney disease?

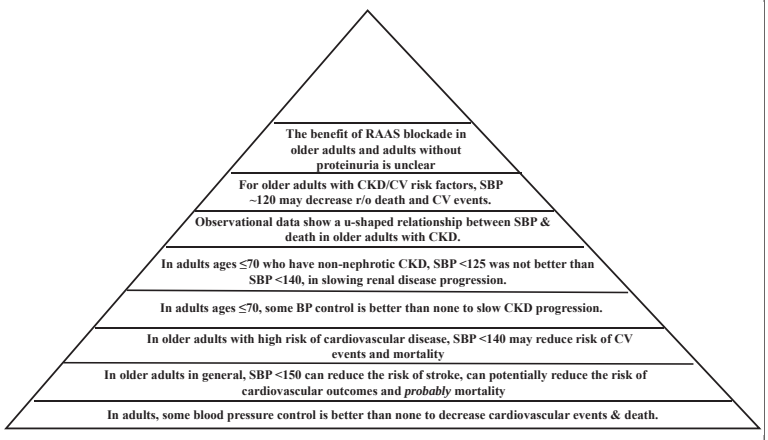
Both JNC-8 and ACC-AHA suggest ace-inhibitors or angiotensin receptor blockers as preferred therapy in CKD.

Data re Ace-inhibition for CKD patients:
Mean age 45 **AASK**
Mean age 58 **AVER**
Mean age 54 **ESPIRAL**



Data re ARB for CKD patients:
IDNT **Mean age 59**

Marin et al, J HTN, 2001
Esnault et al, Clin Ther, 2008
Berl et al, JASN, 2005
Wright et al, JAMA, 2002



eGFR: 45 ml/min/1.73m2
Urine prot/creat ratio: 0.15 mg/mg

Now in clinic, BP 106/49, HR 67
Creatinine 3.2 (eGFR 19 ml/min/1.73m^2)
BUN 58
Potassium 5.7
CO2 21
Na 135

Medications:
Metoprolol 25 mg bid
Lasix 20 mg/d
~~Lisinopril 10 mg/d~~
Amlodipine 7.5mg/d

Mrs. A

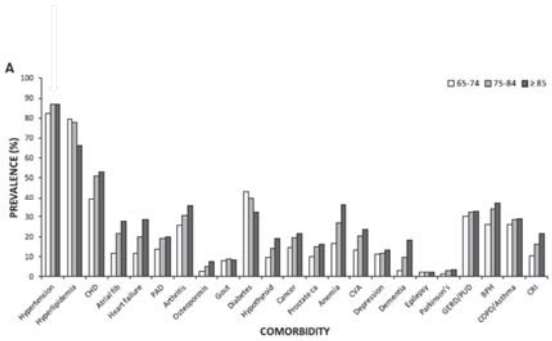
83 yo woman, wife of Dr. A, recently broke her hip in a ground level fall and is in a SNF for rehabilitation.

PMH:
Moderate dementia
Heart failure
CKD IIIa
Hypertension
Osteoarthritis

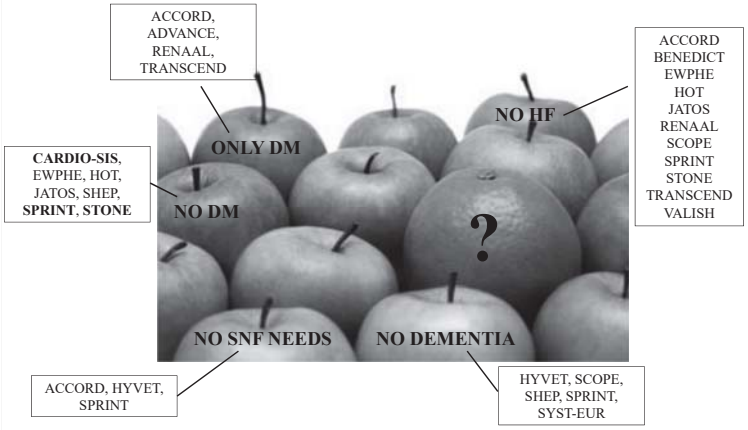
Medications:
Nifedipine ER 60 mg qam
Toprol XL 25 mg daily

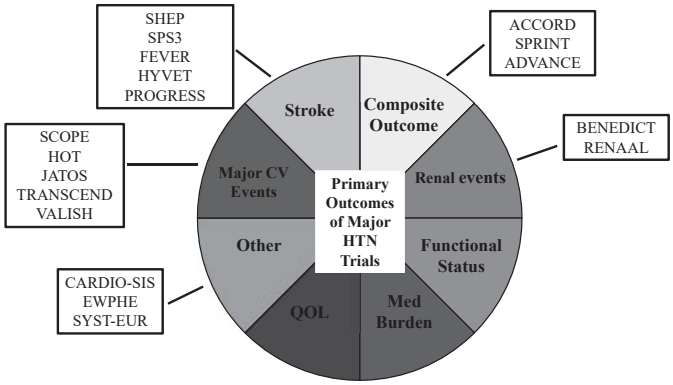
198/63, HR 67

What should her blood pressure be?



Steinman et al, JAGS, 2012





What is the patient's ***primary concern***?

Conduct a complete review or focus on a specific aspect of care

What are current medical conditions and interventions, and *is the patient comfortable with/adherent to* the plan?

What are the ***patient's preferences***?

Consider the patient's ***prognosis***

Consider interactions *within and among* treatments and conditions

Weigh the ***benefits and harms*** of the plan

Communicate and decide for or against the current or suggested intervention/plan.

Reassess at intervals for benefit, feasibility, adherence, alignment, with preferences.

Guiding Principles for the Care of Older Adults with Multimorbidity, JAGS, 2012

~~Hydrochlorothiazide~~	Hyponatremia
~~Furosemide~~	Dehydration
~~Clonidine~~	Profound BP drop
~~Doxazosin~~	Unsteady gait

Mrs. A

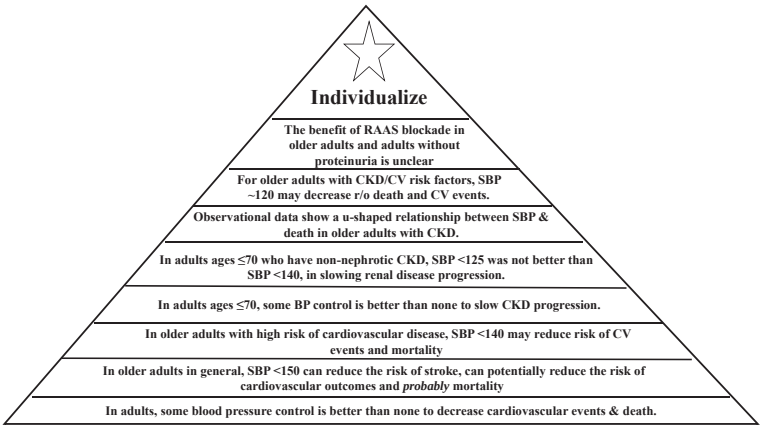
83 yo woman, wife of Dr. A, recently broke her hip in a ground level fall and is in a SNF for rehabilitation.

PMH:
Moderate dementia
Heart failure
CKD IIIa
Hypertension
Osteoarthritis

Medications:
Toprol XL 25 mg daily
Nifedipine ER 60 mg qam

MORE INFORMATION

Sat	AM: 198/63, HR 65	PM:129/49, HR 60
Sun	AM: 185/72, HR 62	PM:127/50, HR 53
Mon	AM: 181/66, HR 70	PM:131/53, HR 61
Tues	AM: 165/60, HR 70	PM:125/46, HR 75
Wed	AM: 190/73, HR 68	PM:133/51, HR 55



High-Risk Behaviors in Adolescents

Jessica Serrano, MD, MPH

Slides not provided

Vaccinations by Dentists: A New Role in Primary Care

Phillip Marucha, DMD, PhD

Slides not provided

Hepatitis C Treatment in the Primary Care Setting

DATE: February 11, 2020
Brian Garvey, MD, MPH & Tim Herrick, MD, MS
OHSU Department of Family Medicine

Disclosures

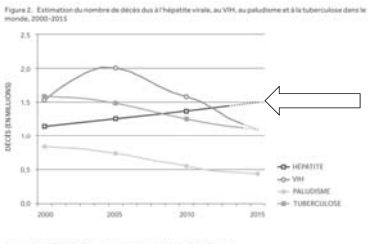
- We have nothing to disclose.

Outline

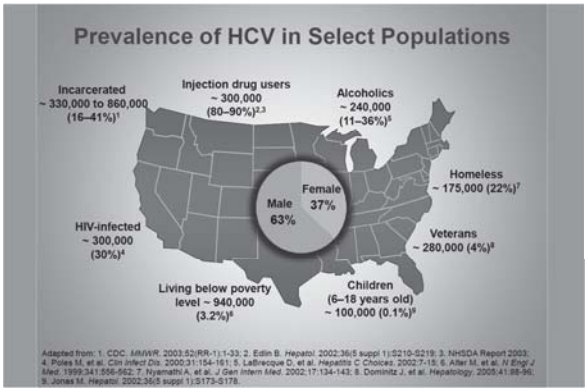
- Epidemiology and screening strategies
- Management of new cases
  - Recommended workup
  - Supportive care, follow-up needs
- Treatment
- Case Studies

Epidemiology and Screening Strategies

Global Infectious Disease Mortality Trends

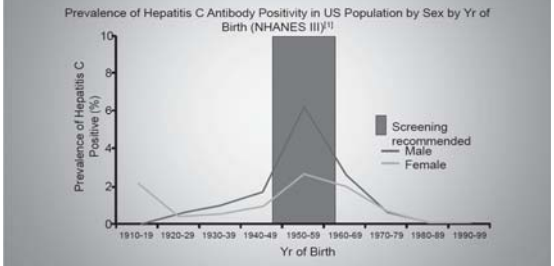


Source : Global Burden of Disease et estimations de l'OMS/ONUSIDA, voir http://hmeuw.org/3pms ; http://hmeuw.org/3pmt (consultés le 2 avril 2016).



Hep C rates by county, 2016

Hepatitis C Prevalence is Increased in Baby Boomers



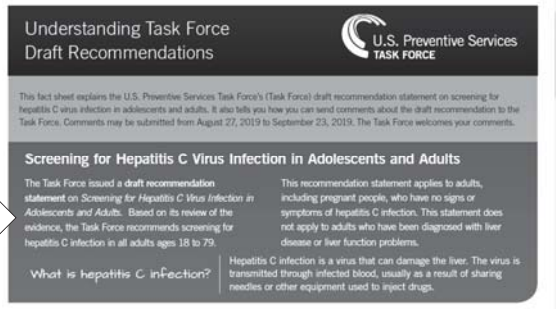
Iwasaki K, et al. ISPOR 2010. Abstract PG17.

CDC, USPSTF, and AASLD/IDSA HCV Screening Recommendations

Population	Recommendation
Age	One-time screening is recommended for persons **born between 1945 and 1965, without ascertainment of HCV risk**[1-3]
Risk	**One-time screening is recommended for persons with these risk factors**[1,3]**:** • History of illicit injection drug use (IDU) or intranasal illicit drug use • History of long-term hemodialysis • Receiving a tattoo in an unregulated facility/setting • Healthcare workers upon accidental exposure • Children born to anti-HCV–positive mothers • History of transfusion with blood or organ transplantation • Were ever in prison • HIV infection • Chronic liver disease/hepatitis with unknown cause, including elevated liver enzymes **Annual screening is recommended for current IDUs and HIV-infected MSM**[3]

1. Smith BD, et al. MMWR Recomm Rep. 2012;61(RR-4):1-32. 2. US Preventive Services Task Force. HCV Screening Guidelines 2013.
3. AASLD-IDSA. HCV Guidelines 2016.

2020 Draft Recommendation


Understanding Task Force Draft Recommendations

U.S. Preventive Services TASK FORCE

This fact sheet explains the U.S. Preventive Services Task Force's (Task Force) draft recommendation statement on screening for hepatitis C virus infection in adolescents and adults. It also tells you how you can send comments about the draft recommendation to the Task Force. Comments may be submitted from August 27, 2019 to September 23, 2019. The Task Force welcomes your comments.

Screening for Hepatitis C Virus Infection in Adolescents and Adults

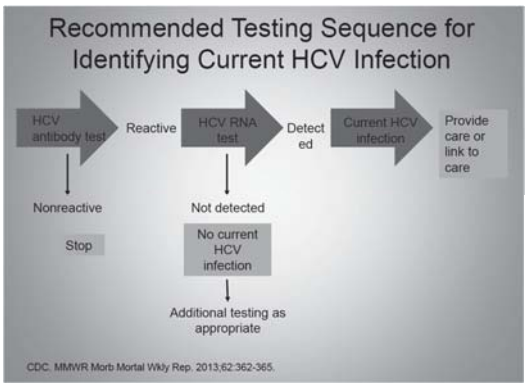
The Task Force issued a **draft recommendation statement** on *Screening for Hepatitis C Virus Infection in Adolescents and Adults*. Based on its review of the evidence, the Task Force recommends screening for hepatitis C infection in all adults ages 18 to 79.

This recommendation statement applies to adults, including pregnant people, who have no signs or symptoms of hepatitis C infection. This statement does not apply to adults who have been diagnosed with liver disease or liver function problems.

What is hepatitis C infection?

Hepatitis C infection is a virus that can damage the liver. The virus is transmitted through infected blood, usually as a result of sharing needles or other equipment used to inject drugs.

Recommended Testing Sequence for Identifying Current HCV Infection



CDC. MMWR Morb Mortal Wkly Rep. 2013;62:362-365.

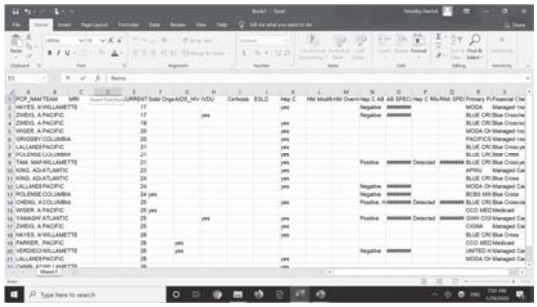
Screening

- Ideally, reflex to PCR or other quantitative viral test
  - There are false positives
  - There is spontaneous clearance
  - Knowing the viral result prior to disclosure spares much patient discomfort

Clearance of acute HCV

- Acute HCV may clear
- Chronic HCV does not spontaneously resolve
- Allow 6 months before beginning treatment in a setting where the positive blood test could represent recent sero-conversion

Population Health Approaches



Initial work-up and management of new cases

Work-up of the patient with HCV

- Consider co-infections [Hep B, HIV, Hep A immunity]
  - Protection needs, [vaccinate Hep A and B]
  - Impact on disease progression and treatment
- Determine disease progression
  - Degree of fibrosis determines treatment priority
  - Presence of cirrhosis determines screening needs for HCC, varices
  - Characterization of disease determines treatment
  - Co-morbidities impact treatment
- Review medication list and assess for use of herbals/supplements

Baseline Labs to Check in Chronic HCV

- CMP
- CBC, INR
- HCV Quantitative PCR
- HCV Genotype
- HAV Ab (total or IgG)
- HBV serologies (HBsAb, HBsAg, HBcAb)
- HIV
- uHCG (women of childbearing age)
- AFP
- Ns5a resistance panel (for those with genotype 1a considering use of elbasvir/grazoprevir; not common)
- Iron studies

Substance Use Disorders and HCV

- EtOH: encourage abstinence or minimizing intake
- Recreational drug use; refer to MAT; no longer an absolute contradiction to treatment; harm reduction
- Tobacco and Marijuana use; may be pro-fibrotic

Minimizing transmission risks for HCV

- Avoid sharing toothbrushes, razors, nail clippers
- Cover cuts and sores
- Clean up any blood exposures with bleach solution (1:9/bleach:water)
- Stop IVDU
- Do not share needles or paraphernalia
- Sexual transmission is rare in monogamous heterosexual couples
- Risk increases in MSM, heterosexual persons with multiple partners and those with co-infection of HIV

Maternal risks of HCV transmission

- HCV-positive women do not need to avoid pregnancy or breastfeeding
- Risks of 6/100 infants born to HCV-infected mothers are infected with the virus at time of birth. Risks are 2-3X greater if mother is co-infected with HIV/HCV
- Children born to HCV-positive mothers should have anti-HCV Ab no sooner than 18 months due to potential circulating maternal antibodies
- HCV-positive mothers should avoid breastfeeding if their nipples are cracked or bleeding
- DAA therapy not studied in pregnancy currently. Ribavirin is CONTRAINDICATED in pregnancy

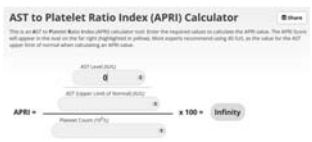
Treatment

Treatment

- Refer to hepatology?
  - Co-infection with HBV, HIV, or decompensated cirrhosis (Child Pugh B or C)
- Determine degree of fibrosis/cirrhosis
- Initiate treatment with DAA
- Weekly check-in with care coordinator or pharmacist (if possible)
- 4 weeks MD visit: CBC, CMP and quantitative HCV viral load
- Not uncommon to have detectable virus immediately after completion of therapy
- Patients receiving elbasvir/grazoprevir (Zepatier) should be monitored with a hepatic function panel at 8 weeks (and again at 12 weeks if receiving 16 weeks of treatment).

Fibrosis Assessment

- Fibroscan (old way)
  - F0-F4
  - OK to treat F0-3 in primary care setting
  - Some providers also treating F4 fibrosis if no signs of decompensation (i.e., Child Pugh A only)
- APRI Score + Liver US (new way)

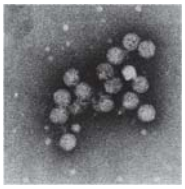


How to choose a DAA?

- Genotype and viral count
- What's covered?
  - Glecaprevir/pibrentasvir (Mavyret) often preferred by Medicaid
- Duration: 8 vs. 12 weeks
  - Varies by degree of fibrosis/cirrhosis and agent

Test of cure

- Sustained virologic response: SVR 12, SVR 48 (?)



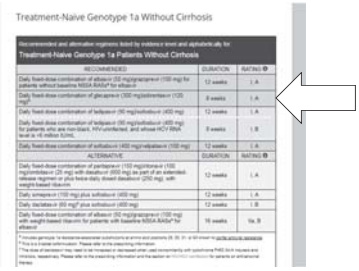
After Treatment Completion

- **ALL PATIENTS**
  - Quantitative HCV 12 weeks after completion of therapy
- **PATIENTS WITH CIRRHOSIS**
  - Liver imaging, CMP, CBC, INR and serum AFP biannually (indefinite HCC screening)
  - Endoscopic variceal screening (cirrhotics only)
- **PATIENTS WHO FAILED TO ACHIEVE SVR**
  - Semi-annual CBC, INR and CMP
  - Liver imaging and serum AFP biannually (indefinite)
  - Variceal screening (cirrhotics only)
  - Referral to hepatology
- **CURED PATIENTS WHO CONTINUE HIGH RISK BEHAVIOR**
  - Annual re-infection screen, with PCR

Case 1: "Steven"

- 70 yo M history of remote IVDU
- Screening labs wnl
- Currently drinks 1-2 beers/wk
- Fibroscan F2
- Medicaid

Case 1: "Steven"

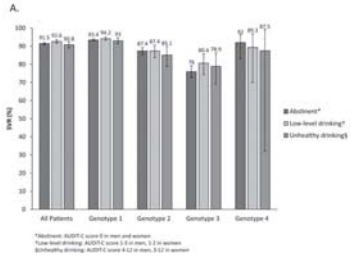


Case 1: "Steven"

- 4 week follow-up labs unremarkable, viral count now undetectable, has switched from beer to coffee
- Care manager calls weekly
- Follow-up visit 3 months after completion shows undetectable viral load
- Follow-up?

Does co-morbid alcohol use matter?

Rate of sustained virologic response (%) according to alcohol use, by genotype



Tsui, et al. *Drug Alcohol Depend*. 2016 December 01; 169: 101–109

Does active IVDU matter?

% Participants with SVR among people with a history of injection drug use	
Receiving OST, no recent injection use	94-97% (6 studies)
Receiving OST, with and without recent IVDU	76-100% (8 studies)
History of IVDU, with and without recent use	80-96% (8 studies)
Recent injection use	93-96% (2 studies)

Grebely et al. *Nat Rev Gastroenterol Hepatol.* 2017 Nov;14(11):641-651.

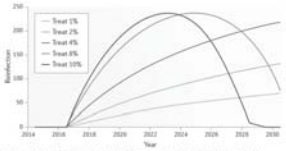
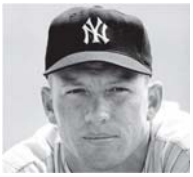


Figure 2 | **Modelling the effect of HCV treatment on reinfection in people who inject drugs.** Mathematical modelling was used to evaluate the effect of increased treatment on HCV reinfection among PWID in Australia. Each line represents the expected number of individuals with HCV reinfection (secondary infections, left axis) in each year, based on a given annual HCV treatment scenario. The coloured lines represent the annual proportion of PWID treated per year. Image and data presented[49] courtesy of H. Rajasvi.

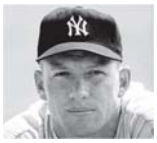
Case 2: "Mickey"

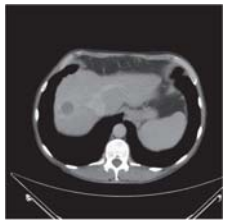
- 58 yo M, unremarkable PMH, with +HCV Ab on screening exam
- Viral count 2.2 million, genotype 3
- AFP 740



Case 2: "Mickey"

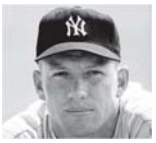
- Multiphase CT Liver:

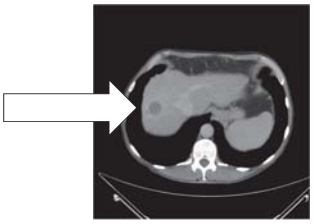




Case 2: "Mickey"

- Multiphase CT Liver:





Case 3: "Dave"

- 77 yo with a history of GERD, HLD and HCV
- Fibrosis stage 4, liver U/S without evidence of ascites or cirrhosis
- Mild transaminitis, INR 1.0, Cr 0.8
- No prior known history of varices or hepatic encephalopathy
- Next steps?

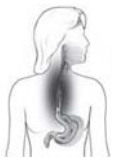
Case 3: "Dave"

- Child Pugh A
- Check for medication interactions: statin, PPI
- Will need longer duration of treatment (12 weeks)
- Will continue to need variceal screening, HCC screening and labs

Treatment-Naive Genotype 1a With Compensated Cirrhosis

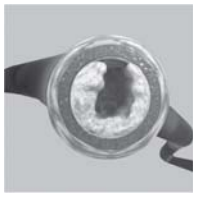
PPI's

- Increased gastric pH decreases solubility of velpatasvir and ledipasvir
- Separate antacids by 4 hours
- Administer H2RAs simultaneously with or 12 hours apart (max famotidine 40 mg BID)
- Avoid PPIs if possible. If medically necessary, omeprazole 20 mg may be administered:
  - Simultaneously with LDV/SOF under fasted conditions
  - 4 hours after SOF/VEL is taken with food – Simultaneously with SOF/VEL/VOX



Statins

- Rule of thumb
  - Monitor for statin-associated adverse events and risks (i.e. myalgia, myopathy, rhabdomyolysis)
  - Coadministration not recommended –
    - LDV/SOF: rosuvastatin
    - VEL/VOX/SO: rosuvastatin, pitavastatin
    - GCR/PBR: atorvastatin, lovastatin, simvastatin
  - Max doses
    - EBR/GZR: rosuvastatin 10 mg, atorvastatin 20 mg
    - VEL/SOF: rosuvastatin 10 mg
    - VEL/VOX/SOF: pravastatin 40 mg
    - GCR/PBR: rosuvastatin 10 mg



Sources and resources

- Hcvguidelines.org
- www.hep-druginteractions.org
- OHSU HCV Echo Program
  - https://www.ohsu.edu/xd/health/for-healthcare-professionals/telemedicine-network/for-healthcare-providers/ohsu-echo/heptitisc-and-liver-care/index.cfm
  - Special thanks to
    - Atif Zaman, MD; Lauren Myers, PA

Thank You

The Adult Psychiatry ECHO Program

Using Telementoring to Improve Community Mental Health Outcomes

Jonathan Betlinski M.D., Associate Professor of Psychiatry, OHSU School of Medicine
Ruth Tadesse R.N., M.S., Assistant Professor, OHSU School of Nursing
Alana Willman PharmD, Clinical Pharmacist, OHSU Department of Pharmacy
Anna Steeves-Reece, Research Associate, Oregon Rural Practice Research Network
Miriam Wolf, Program Coordinator, Oregon ECHO Network

Session Goals

1. Understand the ECHO "telementoring model" and how it differs from a traditional "telemedicine" model
1. Identify key benefits of practitioner participation in the Adult Psychiatry ECHO program
1. Know how to sign up for ECHO programs!

Oregon ECHO Network (OEN) Partners

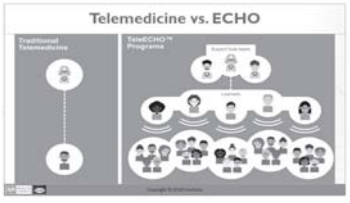
CareOregon
eocco
allcare health
health share
Health Share of Oregon
OHSU
PacificSource Community Solutions
PROVIDENCE Health & Services
DHS Oregon Department of Human Services
Oregon Health Authority
Trillium Community Health Plan

Project ECHO

(Extension for Community Healthcare Outcomes)
University of New Mexico – 2003

Project ECHO® Model Principles

1. Use technology to leverage scarce resources
2. Share "best practices" to reduce disparities
3. Case-based learning to master complexity
4. Program evaluation and data tracking



"All Teach, All Learn"

- Clinicians learn from specialists
- Clinicians learn from each other
- Specialists learn from practicing clinicians

Oregon ECHO Network (OEN)

Oregon Rural Practice-based Research Network

360
ECHO sessions have been delivered to learners

33
Oregon counties have had representation in an OEN program

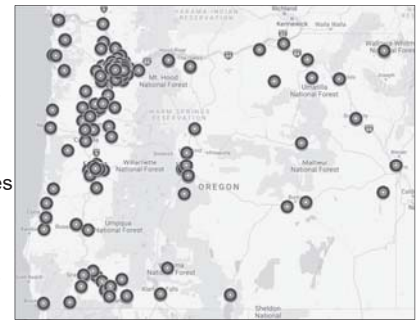
783
Learners across Oregon have participated in OEN programs

Map of Participating Spoke Sites Since 2014

Fall 2017 -
180 spoke sites

Fall 2018 -
240+ spoke sites

Winter 2019 –
350 spoke sites

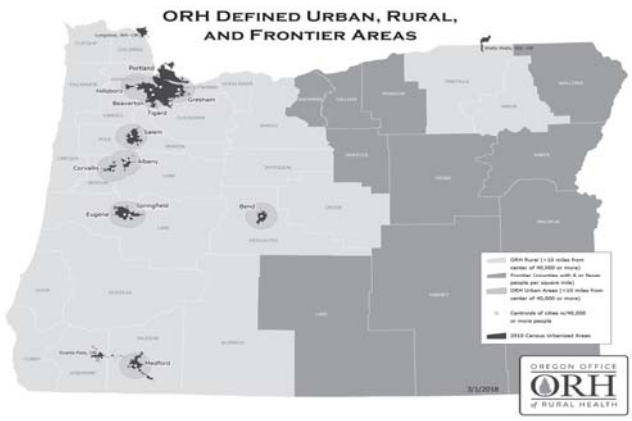


15 different ECHO topics have been offered in Oregon

Behavioral Health in Oregon

- 35% of Oregon's population lives in rural or frontier areas
- Reduced access to care and integration
  - Up to 6 month wait times
  - Shortage of clinicians
  - Lack of access to pediatric, adolescent, and geriatric behavioral health services

Source: 2017 Office of Rural Health Listening Tour



Adult Psychiatry

- First ECHO program in Oregon
- Offered every year since 2014
- Originally funded with grants from two CCOs
- Team includes Psychiatrist, PMHNP, Pharmacist, Coordinator, IT guru
- Started as a 40-week lunchtime curriculum covering Adult Psychiatry in Primary Care
- Evolved at year 4 into two 12-week cohorts that meet at 7:30 a.m.

"*I love the practical advice that I can't get by reading online. The closing statement really helped me to remember—even if I'm not a mental health specialist—to focus on the individual relationship to create comfort and the potential of being able to get a reluctant patient to a higher level of care down the road.*" – Participant from Adult Psychiatry II Fall 2018

Adult Psychiatry I

- Offered each Spring
- 12-session program that covers the diagnosis, pharmacological and non-pharmacological treatment of the following conditions:
  - Major Depressive Disorder
  - Bipolar Disorders
  - Anxiety Disorders
  - Obsessive-Compulsive Disorder
  - Posttraumatic Stress Disorder
  - Assessing for Risk of Suicide

"*Thank you for making this available! These sessions improve patient care and connection for providers.*" – Participant of Adult Psychiatry I, Spring 2019

Adult Psychiatry II

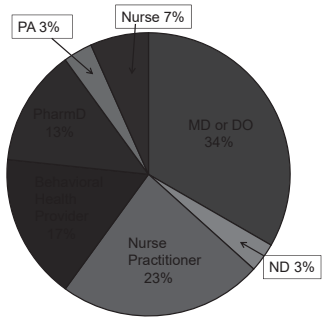
- Offered each Fall
- 12-session program that covers the diagnosis, pharmacological and non-pharmacological treatment of the following conditions:
  - Personality Disorders
  - Borderline Personality Disorder
  - Somatic Symptom Disorder
  - Psychosis and Schizophrenia
  - Dementia and Depression in the Elderly
  - Agitation in Dementia
  - Behavioral Health Concerns in Pregnant and Nursing Women
  - Adult Attention Deficit/Hyperactivity Disorder
  - Insomnia

Because of today's ECHO, "*I will be able to more accurately identify personality disorders and have more appropriate skills to manage patients with them*." – Participant of Adult Psychiatry II, Fall 2018

Key Benefits and Learning Attributed to Adult Psychiatry ECHO

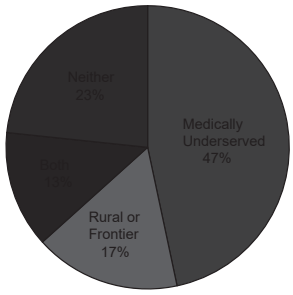
Spring 2019 Participation Sites Adult Psych I

Spring 2019 Breakdown



Clinic Role

Patient Population



Spring 2019 Post Session Surveys

Scale: 5= Excellent 4= Very Good 3= Good 2= Fair 1= Poor													
Attendance Each Session	22	23	25	28	25	27	26	19	19	24	22	16	
Post-Session Survey Questions	Session 1 n=18	Session 2 n=21	Session 3 N=18	Session 4 N=21	Session 5 N=16	Session 6 n=17	Session 7 n=16	Session 8 n=14	Session 9 n=13	Session 10 n=14	Session 11 n=15	Session 12 n=16	Average Rating Per Question Across Sessions
Date	4-Apr-19	11-Apr-19	18-Apr-19	25-Apr-19	2-May-19	9-May-19	16-May-19	23-May-19	30-May-19	6-Jun-19	13-Jun-19	20-Jun-19	
"Stated objectives were met."	4.61	4.62	4.50	4.52	4.19	4.41	4.44	4.14	4.46	4.36	4.53	4.00	**4.40**
"Delivered balanced and objective, evidence-based content."	4.67	4.70	4.56	4.57	4.50	4.47	4.44	4.14	4.54	4.36	4.60	4.00	**4.46**
"There were ample opportunities to ask questions"	4.50	4.67	4.44	4.38	4.50	4.35	4.50	4.21	4.38	4.36	4.60	4.00	**4.41**
"The pace of the session was..."	4.44	4.57	4.29	4.29	4.25	4.12	4.44	4.00	4.46	4.29	4.47	3.90	**4.30**
"The organization of the presenter's presentation was..."	4.67	4.67	4.56	4.52	4.50	4.35	4.44	4.23	4.54	4.50	4.40	3.90	**4.44**
"The relevance of the presentation to the activity's intended objective was ..."	4.72	4.70	4.56	4.57	4.50	4.59	4.38	4.21	4.62	4.43	4.43	4.00	**4.47**
"How would you rate your overall satisfaction with today's ECHO session?"	4.50	4.67	4.47	4.48	4.38	4.41	4.25	4.07	4.58	4.36	4.47	4.11	**4.39**

Spring 2019 Feedback

Changes providers shared as a result of ECHO sessions

- Using additional screening tools
- Providing more resources for patients with behavioral health disorders
- Adjusting prescribing practices
- Discussing non-medication options with increased frequency

"I was not aware of the GDS short-form, so will start using that in my geriatric patients." – Session 1

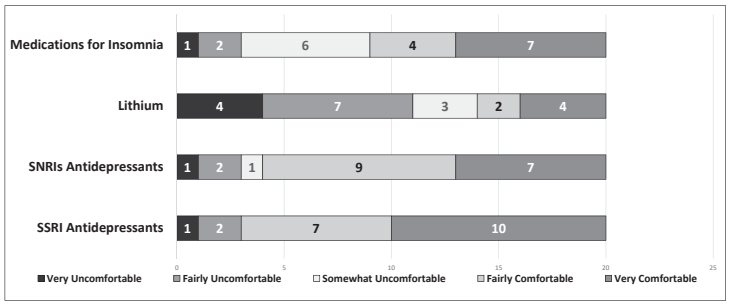
"Identifying how to access our standardized suicide risk assessment within the EHR. Add additional crisis numbers to the information I have been providing to patients at risk." – Session 2

"I will spend more time discussing exercise and sleep hygiene before initiating antidepressants." – Session 3

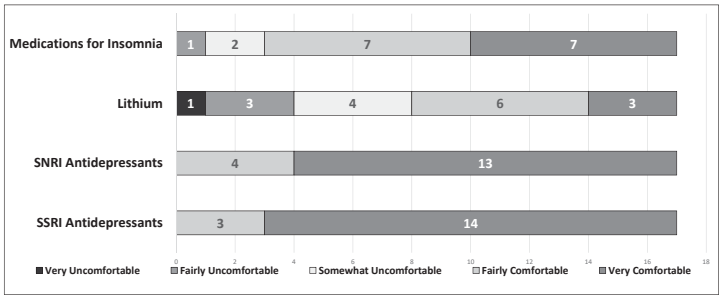
"Use non-pharmacological therapy for anxiety. Started today!" – Session 8

"Consider lithium when appropriate. Have the risk/benefit talk with more confidence." – Session 6

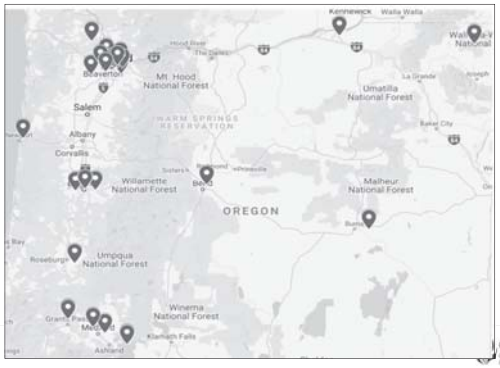
Pre-Survey: How Comfortable are you PRESCRIBING



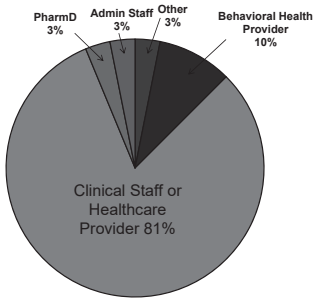
Post-Survey How comfortable are you PRESCRIBING



Fall 2019 Participation Sites Adult Psych II

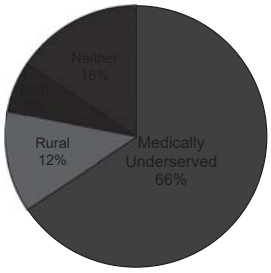


Fall 2019 Breakdown



Clinic Role

Patient Population



Fall 2019 Post Session Surveys

Scale: 5= Excellent 4= Very Good 3= Good 2= Fair 1= Poor

Attendance Each Session	25	20	22	20	21	20	18	20	19	16	18	18	
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Date	12-Sep-19	19-Sep-19	26-Sep-19	3-Oct-19	10-Oct-19	17-Oct-19	24-Oct-19	31-Oct-19	7-Nov-19	14-Nov-19	21-Nov-19	5-Dec-19	
"Stated objectives were met."	4.53	4.53	4.50	4.47	4.20	4.21	4.21	4.21	4.21	4.08	4.33	4.38	4.31
"Delivered balanced and objective, evidence-based content."	4.53	4.53	4.43	4.60	4.33	4.57	4.57	4.21	4.15	4.08	4.50	4.50	4.42
"There were ample opportunities to ask questions."	3.93	4.53	4.21	4.33	4.27	4.50	4.50	4.43	4.00	4.15	4.42	4.25	4.29
"The pace of the session was..."	3.93	4.47	4.14	4.27	4.00	4.21	4.21	4.14	4.23	4.15	4.33	4.38	4.21
"The organization of the presenter's presentation was..."	4.47	4.60	4.31	4.40	4.07	4.43	4.43	4.29	4.23	4.15	4.33	4.50	4.35
"The relevance of the presentation to the activity's intended objective was ..."	4.47	4.60	4.36	4.47	4.27	4.62	4.62	4.36	4.07	4.23	4.50	4.50	4.42
"How would you rate your overall satisfaction with today's ECHO session?"	4.33	4.43	4.21	4.47	4.20	4.54	4.54	4.23	4.14	4.08	4.42	4.38	4.33

Fall 2019 Feedback

Changes providers shared as a result of ECHO sessions

- Incorporated new screening tools and assessments
- Increased awareness around monitoring psychiatric medications
- More confidence in prescribing psychiatric medications

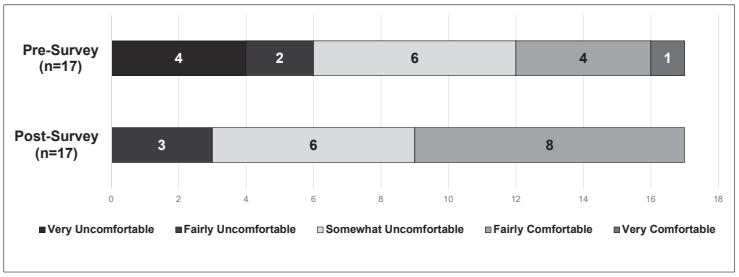
"I'm grateful for the mentorship and open-door feeling that was provided to reach out and ask for help as a PCP trying to adapt to the increasing needs and concerns of my patients to effectively diagnose and treat their mental health conditions…" – ND

"I feel more comfortable monitoring antipsychotics and starting/refilling when PMNHP is not available." – Session 5

"I will consider somatization disorders as a possible diagnosis for more of my patients and remember to use the techniques for coping with these patients." – Session 3

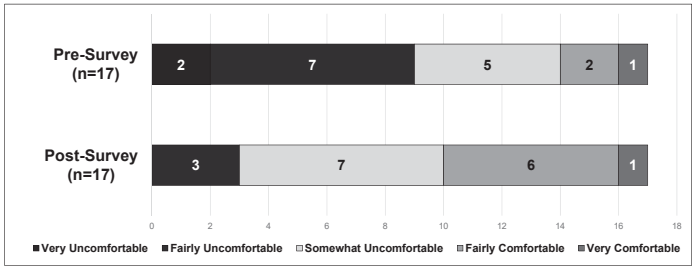
Fall 2019 Pre and Post Survey Results

How comfortable are you ASSESSING severe, non-psychotic mental health disorders?



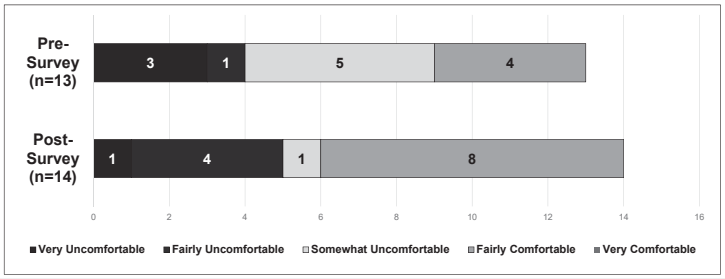
Fall 2019 Pre and Post Survey Results

How comfortable are you ASSESSING Somatization Disorder?



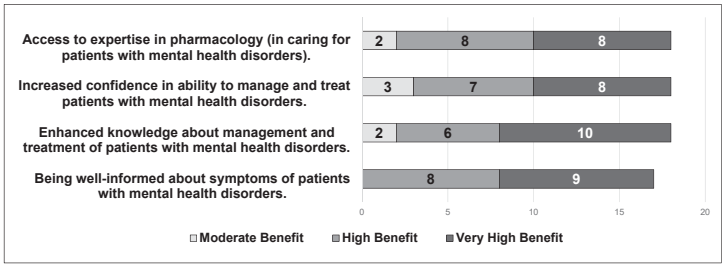
Fall 2019 Pre and Post Survey Results

How comfortable are you PRESCRIBING newer (atypical) antipsychotics?



Fall 2019 Survey Results

Areas where 100% of respondents reported Moderate to Very High Benefit



Fall 2019 Survey Results

Perceptions of ECHO in Clinic Setting – Both by respondents and other clinic staff ("All teach, all learn")

- 100% of post-survey respondents **MOSTLY AGREED** or **COMPLETELY AGREED** "Clinicians and staff at my practice have been supportive of my involvement in ECHO." (n=18)

- 100% of post-survey respondents **MOSTLY AGREED** or **COMPLETELY AGREED** "Participating and learning about Adult Psychiatry through ECHO is an effective way for our clinic to enhance its expertise." (n=18)

Case Presentation

Case Presentation Overview

- Cases submitted by participants and posted prior to each session for review by panel and other participants
- Participant presents case, open question period with other participants and panel, recommendations/insights provided by panel
- Formal case recommendations summarized and sent to presenter
- Additional education materials, journal articles, screening tools posted to session website

Adult Psychiatry II
Case Presentation Form

Please send completed form to wolfmi@ohsu.edu

Date: 10/22/19 **Presenter:** **Clinical Site:** Click here to enter text.

Check One: ☒ New Case or ☐ Follow-Up

De-identified Patient Information. Remember, no PHI.

Age: 62 **Gender:** ☐ Male or ☒ Female **Occupation:** Disabled

What is your main question about this patient? Next step medication options for bipolar I patient with severe, persistent depression but history of hospitalization for mania in past

Chief complaint / HPI / MSE: 62 y/o female with long history of Bipolar 1 disorder with several episodes of full mania resulting in extended hospital stay. Has been estranged from family for past 2+ years since last Manic episode and is just starting to reconnect again. (Both because of their fear of her impact on their families and her "respecting their choices"). She remains actively engaged in therapy and is compliant with meds and f/us.

Screening Tools: PHQ-9: 20-24 **GAD-7:** 11-12 **MDQ:** n/a **SAFE-T:** n/a

Proposed Treatment Plan: Continue therapy and maximize benefit with meds while minimizing risk of any manic destabilization. She reports that her greatest fear is another manic period and thus hesitates to take any meds that MIGHT push her manic. I have considered trying to push her Lithium up again and see if she can tolerate it (if she is willing – she does have a mild tremor now that may be Lithium induced)

Medical Problems/PMH: Urge incontinence

Current Medications (please include *all* medications currently prescribed along with dosage and directions): Lithium 600mg qhs, Lamotrigine 200mg qd, Abilify 10mg qd, Cymbalta 30mg qd (recent d/c of Wellbutrin XL 150mg qd.

Past Psychiatric Medications: very poor tolerance of Seroquel, and higher dose Lithium. No benefit with Mirtazipine, Zoloft in the past.

Labs:

Na/K: 141/4.4	**Cl/CO2: 106/26**	**BUN/Cr: 17/.91**	**Glu/Ca: 104/10**
AST/ALT: 17/22	**AP/Bili: 138/.7**	**Prot/Alb: 6.8/4.5**	**TSH: 1.46**
HbA1C: 5.6	**Pregnancy: neg**		
Cholesterol: 182	**TG: 2.3**	**LDL: 87**	**HDL: 74**
Hgb/Hct: 14.8/44.1	**MCV: 95.3**	**WBC: 7.3**	**ANC: 4.7**
Therapeutic Drug Levels: Click here to enter text.		**Other:** Click here to enter text.	

Physical Exam: Depressed appearing 62 y/o female with some mood reactivity noted. Appearance is well dressed and groomed. Speech clear with regular cadence, behavior WNL and non-agitated and fully cooperative and engaged in visit, thought content stable and non tangential. Demonstrates good insight and understanding of disease and medications.

Psychiatric history (diagnoses, treatment, hospitalization, suicidality: Previous Dx of Bipolar 1 with at least 2 hospital stays. Does report previous suicidal ideation with intent not to act.

Past psychiatric medications: See above

History of trauma: No Sig Hx of trauma

Social history: (legal/social issues, employment, housing, education, relationships): Has significant financial and housing issues since last manic episode a few years ago. Estranged from family, living on disability income in rented room where she feels uncomfortable leaving her room, so just sits on her bed all day. Has college level education but unable to work at this point.

Current/past drug use and treatment history: No SUD hx

Family history (substance use and/or psychiatric illness): Father with Bipolar 1

- Clarifying Questions from Participants
- Clarifying Questions from ECHO Panel
- Recommendations from Participants
- Recommendations from ECHO Panel
- Summary of Recommendations

Oregon ECHO Network
PATIENT RECOMMENDATION FORM

10/24/2019
Date

For ECHO Clinic: *Adult Psychiatry II*

After review of current lab values and discussion of this patient's case, the following recommendations have been made:

Initial Presentation X **Follow-up Presentation** _____

1. Given the patient's history and symptoms of bipolar disorder type I, agree with your choice to treat her mood symptoms with Lithium. If the patient is willing to consider dose increase, could consider increasing dose to 900 mg in the evening. Closely monitor lithium level (draw another level ~ 5 days after dose change). If patients tremor worsens or experiences more side effects fine to keep the dose at 600 mg every evening.

2. Manic episodes can be induced with the use of SNRIs, therefore, recommend tapering patient off from Cymbalta. Next step in medication therapy would be to increase Lamotrigine in increments of 50 mg every two weeks up to a max of 200 mg twice daily. Continue to monitor for side effects of rash, headache, nausea/vomiting. Ok for patient to be on both Lamotrigine and Lithium, combination therapy is often required for longstanding symptoms of bipolar disorder.

3. Agree with your recommendation for patient to stay in therapy. If it is feasible, patient may want to invite her family members to therapy sessions so they can learn about her disease process. Recommend patient to learn about diaphragmatic breathing and progressive muscle relaxation techniques in therapy sessions to help her manage her anxiety symptoms.

4. Encourage patient to keep a sleep and mood journal. Educating patient about the importance of sleep and exercise would also be beneficial. Sleep hygiene handout link is below.
www.cci.health.wa.gov.au/docs/fn5c-sleep%20hygiene.pdf

5. Screening for vit. d, b12, and folate deficiency and treating accordingly may help in managing her mood symptoms.

6. Patient will likely benefit from a referral to social worker to evaluate her housing situation.

Encouraging patient to start volunteering work will likely benefit patient and may give her something meaningful to do during the day.

You can also refer patient to Peer Support Specialist or Peer Wellness Specialist through Oregon Health Authority: https://traditionalhealthworkerregistry.oregon.gov/Search

Considerations/Additional Feedback

If it hasn't made a noticeable difference, consider tapering Aripiprazole.

Provider Signature/Role Jonathan Betlinski, MD

Provider Signature/Role: Ruth Tadesse, RN, MS

Provider Signature/Role: Rebecca M. Castner, PharmD, BCACP, AAHIVP

Provider Signature/Role: Alana Willman, PharmD

Date of Case Presentation 10/24/2019

CaseID# APII_102419

How do I participate?

Benefits of Participation

- Professional development
- Create community
- Participate from home or office
- No-cost CME and Maintenance of Certification credits
- Increased patient satisfaction
- Improves quality of care

Behavioral Health & Substance Use Disorder ECHOs

- Adult Psychiatry I
- Adult Psychiatry II
- Substance Use Disorders in Ambulatory Care
- Chronic Pain & Opioids
- Substance Use Disorders in Hospital Care
- Effective Systems for Treating Addiction in Primary Care
- Hepatitis C & Substance Use Disorders
- Child Psychiatry
- Integrated Behavioral Health for Pediatrics (New Program)
- Dementia 360
- Geriatrics Behavioral Health in an Age-Friendly Health Systems
- Nursing Facility Behavioral Health

Spring 2020 Program Offerings – Registration Open

- Adult Psychiatry I
- Child Psychiatry
- Substance Use Disorders in Hospital Care
- Chronic Pediatric and Adolescent Medical Conditions
- Pain Management and Substance Use Disorders
- Dental ECHO

oregonechonetwork.org

Conclusions

- Currently a need in Oregon for psychiatric care for rural/frontier and medically underserved patients
- Adult Psychiatry ECHO program can help bridge this gap by providing specialty topic focused didactics and complex case discussions
- Participants consistently report increased confidence in assessing psychiatric disorders and prescribing/monitoring psychiatric medications
- Specialist support and resources provided build a sense of community within primary care providers

Questions/Comments for ECHO Panel

Project ECHO®
Oregon ECHO Network

PRIMARY CARE MANAGEMENT OF HYPERMOBILITY DISORDERS

Sonia Sosa, MD
Assistant Professor
OHSU Department of Family Medicine

Objectives

- Define Ehlers-Danlos Hypermobile Type (Type 3) and explain how this differs from generalized hypermobility and also the other Ehlers-Danlos subtypes.
- Review the conditions which are most commonly associated with a diagnosis of Ehlers-Danlos hypermobile type.
- Describe the treatment options and exercise recommendations for patients with Ehlers-Danlos Hypermobile Type.

Disclosures

- I have no disclosures.

In the news…

- "Hey, I'm suffering with chronic pain, a neurological disease, ehlers danlos and I just wanted to say to those of you suffering from pain, whether physical or emotional, I love you, keep going. Life is (bleeping) hard. Pain is demoralizing, and you're not alone." –Sia
- What the headlines said:

  "Sia announces that she has a neurologic condition called Ehlers Danlos"

Rare?

Prevalence:
~1 in 2,500-5,000
*new registry is being used to get a more accurate prevalence

Often a delayed diagnosis

Ehlers-Danlos Syndromes

- Collection of heritable connective tissue disorders which include hypermobility, skin hyperextensibility and tissue fragility
  - *hypermobile Ehlers-Danlos syndrome (hEDS)*
  - *Classical Ehlers-Danlos syndrome: Skin hyperextensibility, atrophic scarring, generalized hypermobility*
  - *Classical-like Ehlers-Danlos syndrome: skin hyperextensibility, generalized joint hypermobility, easily bruised skin*
  - *Cardiac-valvular Ehlers-Danlos syndrome: cardiac-valvular problems, skin hyperextensibility, atrophic scarring, easy bruising, joint hypermobility*

- *Dermatosporaxis Ehlers-Danlos Syndrome: extreme skin fragility, craniofacial features*
- *Kyphoscoliotic Ehlers-Danlos Syndrome: congenital muscle hypotonia, kyphoscoliosis, generalized joint hypermobility with dislocations*
- *Brittle Cornea Ehlers-Danlos Syndrome: severe ocular manifestations, progressing to blindness*
- *Spondylodysplastic Ehlers-Danlos Syndrome: progressive short stature, hypotonia, bowing of limbs, skin hyperextensibility*
- *Musculocontractural Ehlers-Danlos Syndrome: adducted thumbs, club feet*

- *Vascular Ehlers-Danlos Syndrome: arterial rupture at young age, spontaneous colon perforation, spontaneous uterine rupture, carotid-cavernous sinus fistula*
- *Arthrochalasia Ehlers-Danlos Syndrome: congenital hip dislocation, generalized joint hypermobility, skin hyperextensibility*
- *Dermatosporaxis Ehlers-Danlos Syndrome: extreme skin fragility, craniofacial features*
- *Myopathic Ehlers-Danlos Syndrome: only 11 known cases, includes cardiomyopathy*
- *Periodontal Ehlers-Danlos Syndrome: early onset periodontitis leading to loss of teeth*

*** There are known gene mutations for most of the Ehlers-Danlos subtypes but there is not a single known gene mutation for hypermobile Ehlers-Danlos syndrome

Diagnosis of hEDS: 3 Criterion

- Criterion 1: Beighton Criteria (Generalized joint hypermobility)
  - *≥6 pre-pubertal children and adolescents*
  - *≥5 pubertal men and women to age 50*
  - *≥4 men and women over the age of 50*
  - *Total possible points=9*

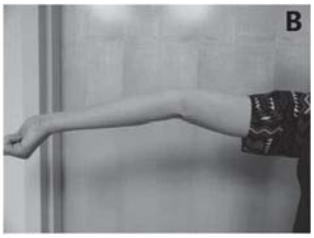
Hyperextension of the 5th digits

>90 degrees
1 point for each side

Thumb to forearm

1 point for each side

Hyperextension of the elbows



>10 degrees
1 point for each side

Hyperextension of the knees

>10 degrees
1 point for each side

Forward bend to the floor

1 point total

Additional Hypermobility criteria

1. Can you now (or could you ever) place your hands flat on the floor without bending your knees?
2. Can you now (or could you ever) bend your thumb to touch your forearm?
3. As a child, did you amuse your friends by contorting your body into strange shapes or could you do the splits?
4. As a child or teenager, did your shoulder or kneecap dislocate on more than one occasion?
5. Do you consider yourself "double-jointed"?

A "yes" answer to two or more questions suggests joint hypermobilit
with 80–85% sensitivity and 80–90% specificity

Criterion 2: 2 or more features positive (A, B, C)

- Feature A (five must be present):
  - *Unusually soft or velvety skin*
  - *Mild skin hyperextensibility*
  - *Unexplained striae distensae or rubae at the back, groin, thighs, breasts and/or abdomen in adolescents, men or pre-pubertal women without a history of significant gain or loss of body fat or weight*
  - *Bilateral piezogenic papules of the heels*
  - *Recurrent or multiple abdominal hernias*
  - *Atrophic scarring involving at least two sites and without the formation of truly papyraceous and/or hemosideric scars as seen in classical EDS*

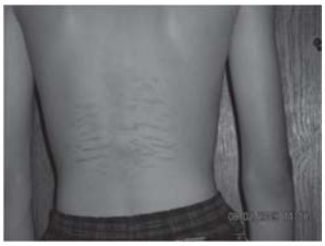
Feature A, cont.

- Pelvic floor, rectal, and/or uterine prolapse in children, men or nulliparous women without a history of morbid obesity or other known predisposing medical conditions
- Dental crowding AND high or narrow palate
- Arachnodactyly, as defined in one or more of the following signs:
  - *Positive wrist sign (Walker sign) on both sides*
  - *Positive thumb sign (Steinberg sign) on both sides*
- Arm span-to-height ration ≥1.05
- Mitral valve prolapse mild or greater based on strict echo criteria
- Aortic root dilation with Z score >+2

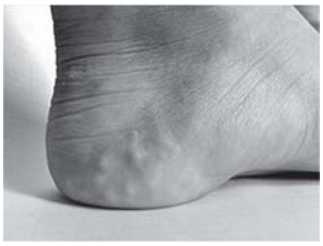
Skin stretch of ~1 inch

Skin stretches across the entire back of the hand.

VS



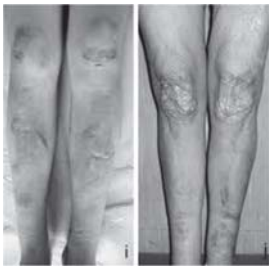
Striae distensae

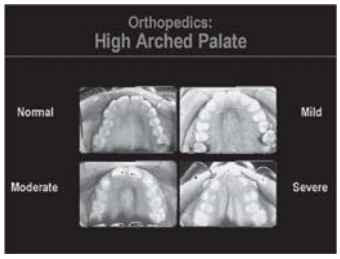


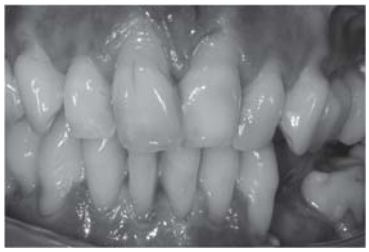
Piezogenic granules (check standing)

Atrophic scarring

VS



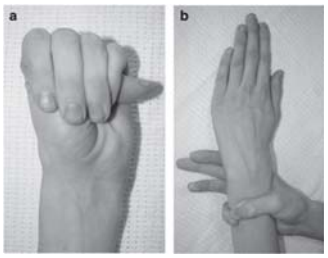




Periodontal EDS (Type VIII)

Arachnodactyly

Steinberg sign: distal thumb extends beyond palm



Walker sign: 1st and 5th digits overlap

- Feature B
  - *Positive family history; one or more first-degree relatives independently meeting the current criteria for hEDS*
- Feature C (must have at least one)
  - *Musculoskeletal pain in two or more limbs, recurring daily for at least 3 months*
  - *Chronic, widespread pain for ≥3 months*
  - *Recurrent joint dislocations or frank joint instability, in the absence of trauma*

Exclusion criteria: all of the following must be met

- Criterion 3
  - *Absence of unusual skin fragility, which should prompt consideration of the other types of EDS*
  - *Exclusion of other heritable and acquired connective tissue disorders, including autoimmune rheumatologic conditions. In patients with an acquired CTD (eg Lupus or Rheumatoid Arthritis, etc.), additional diagnosis of hEDS requires meeting both Feature A and B of Criterion 2. Feature C of Criterion 2 cannot be counted toward a diagnosis of hEDS in this case.*
  - *Exclusion of alternative diagnoses that may also include joint hypermobility by means of hypotonia and/or connective tissue laxity. Alternative diagnoses and diagnostic categories include, but are not limited to, neuromuscular disorders (e.g. Bethlem myopathy), other hereditary disorders of the connective tissue (e.g. other types of EDS, Loeys-Dietz syndrome, Marfan syndrome), and skeletal dysplasias (e.g. osteogenesis imperfecta). Exclusion of these considerations may be based upon history, physical exam, and/or molecular genetic testing, as indicated.*

Diagnostic Criteria for Hypermobile Ehlers-Danlos Syndrome (hEDS)

https://ehlers-danlos.com/wp-content/uploads/hEDS-Dx-Criteria-checklist-1.pdf

Marfan's Syndrome Diagnosis

Marfan's Systemic Score

POINTS	FEATURES
3	Wrist AND thumb sign (1 point for wrist OR thumb sign)
2	Pectus carinatum deformity (1 point for pectus excavatum or chest asymmetry)
2	Hindfoot deformity (1 point for plain pes planus)
2	Pneumothorax
2	Dural ectasia
2	Protrusio acetabuli
1	Reduced upper segment/lower segment ratio AND increased arm/height AND no severe scoliosis
1	Scoliosis or thoracolumbar kyphosis
1	Reduced elbow extension
1	3/5 facial features: dolichocephaly, enophthalmos, downslanting palpebral fissures, malar hypoplasia, retrognathia
1	Skin striae
1	Myopia > 3 diopters
1	Mitral valve prolapse (all types)

Maximum of 20 points. A score of ≥7 indicates systemic involvement. Adapted from Loeys et al.[9]

Ectopia lentis

Marfan's Syndrome Diagnosis

- **In the absence of family history:**
- **Aortic Root Dilatation Z score ≥ 2 AND Ectopia Lentis = Marfan syndrome -** The presence of aortic root dilatation (Z-score ≥ 2 when standardized to age and body size) or dissection and ectopia lentis allows the unequivocal diagnosis of Marfan syndrome, regardless of the presence or absence of systemic features except where these are indicative of Shprintzen Goldberg syndrome, Loeys-Dietz syndrome, or vascular Ehlers Danlos syndrome.
- **Aortic Root Dilatation Z score ≥ 2 AND FBN1 = Marfan syndrome -** The presence of aortic root dilatation (Z ≥ 2) or dissection and the identification of a bona fide FBN1 mutation are sufficient to establish the diagnosis, even when ectopia lentis is absent.[9,10]
- **Aortic Root Dilatation Z score ≥ 2 AND Systemic Score ≥ 7pts = Marfan syndrome -** Where aortic root dilatation (Z ≥ 2) or dissection is present, but ectopia lentis is absent and the FBN1 status is either unknown or negative, a Marfan syndrome diagnosis is confirmed by the presence of sufficient systemic findings (≥ 7 points, according to a scoring system) confirms the diagnosis. However, features suggestive of Shprintzen Goldberg syndrome, Loeys-Dietz syndrome, or vascular Ehlers Danlos syndrome must be excluded and appropriate alternative genetic testing (TGFBR1/2, SMAD3, TGFB2, TGFB3, collagen biochemistry, COL3A1, and other relevant genetic testing when indicated and available upon the discovery of other genes) should be performed.
- **Ectopia lentis AND a FBN1 mutation associated with Aortic Root Dilatation = Marfan syndrome -** In the presence of ectopia lentis, but absence of aortic root dilatation/dissection, the identification of an FBN1 mutation previously associated with aortic disease is required before making the diagnosis of Marfan syndrome.

- **In the presence of family history:**
- **Ectopia lentis AND Family History of Marfan syndrome (as defined above) = Marfan syndrome -** The presence of ectopia lentis and a family history of Marfan syndrome (as defined in 1-4 above) is sufficient for a diagnosis of Marfan syndrome.
- **A systemic score ≥ 7 points AND Family History of Marfan syndrome (as defined above) = Marfan syndrome -** A systemic score of greater than or equal to 7 points and a family history of Marfan syndrome (as defined in 1-4 above) is sufficient for a diagnosis of Marfan syndrome. However, features suggestive of Shprintzen Goldberg syndrome, Loeys-Dietz syndrome, or vascular Ehlers Danlos syndrome must be excluded and appropriate alternative genetic testing (TGFBR1/2, SMAD3, TGFB2, TGFB3 collagen biochemistry, COL3A1, and other relevant genetic testing when indicated and available upon the discovery of other genes) should be performed.
- **Aortic Root Dilatation Z score ≥ 2 above 20 yrs. old, ≥ 3 below 20 yrs. old + Family History of Marfan syndrome (as defined above) = Marfan syndrome -** The presence of aortic root dilatation (Z ≥ 2 above 20 yrs. old, ≥ 3 below 20 yrs. old) and a family history of Marfan syndrome (as defined in 1-4 above) is sufficient for a diagnosis of Marfan syndrome. However, features suggestive of Shprintzen Goldberg syndrome, Loeys-Dietz syndrome, or vascular Ehlers Danlos syndrome must be excluded and appropriate alternative genetic testing (TGFBR1/2, SMAD3, TGFB2, TGFB3, collagen biochemistry, COL3A1, and other relevant genetic testing when indicated and available upon the discovery of other genes) should be performed.

Hypermobility Spectrum Disorders

ICD10
Q79.6 Ehlers-Danlos Syndrome
M35.7 Hypermobility syndrome

- Asymptomatic generalized joint hypermobility (G
- Asymptomatic peripheral joint hypermobility (PJH)
- Asymptomatic localized joint hypermobility (LJH)
- Generalized hypermobility spectrum disorder (G-HSD): +Beighton criteria, 1+ musculoskeletal manifestations
- Peripheral hypermobility spectrum disorder (P-HSD): hypermobility in extremities only, 1+ musculoskeletal manifestations
- Localized hypermobility spectrum disorder (L-HSD)
- Historical hypermobility spectrum disorder (H-HSD)
- hEDS

Types of Hypermobility

- Bony hypermobility
  - *Shallow joint sockets that easily dislocate*
  - *Less generalized hypermobility*
- Collagen-related hypermobility
  - *More likely hormonally dominant*
  - *Stretchy skin*
  - *More likely to have problems with bladder, lungs, bowels*
- Neuropathic
  - *Poor core stability, clumsy gait*
  - *Proprioceptive defects*

Variability of expression

- Ethnicity
- Biologic sex/hormone status
- Age: hypermobility>pain>stiffness
- Physical characteristics- build, strength, muscle tone, general health
- Psychological characteristics
- Sports/work activities
- Dietary habits
- Traumas/surgeries/periods of immobility

Biologic sex

- Female>male
- Generally more inherent joint stability in presence of testosterone
- Hormonal influences:
  - *Testosterone increases muscle bulk around joints which creates more stability*
  - *Progesterone dominance> joint instability*

Age

- Hypermobility phase (childhood):
  - *Distribution equal between males and females*
  - *Sprains and dislocations*
  - *"growing pains"*
  - *Pain with repetitive tasks such as handwriting*
  - *Easy fatigability*
  - *Developmental dyspraxia (clumsiness) with mild hypotonia*

- Pain phase (20-40s)
  - *Generalized and chronic pain; often diagnosed with fibromyalgia*
  - *Headaches*
  - *Fatigue*
  - *Functional GI disorders*
  - *Autonomic dysfunction*
- Stiffness phase
  - *Seen significantly more in females than males*
  - *Disabling pain and fatigue*
  - *Reduced muscle mass and weakness*
  - *Diminished proprioception*

Comorbidities

- Sleep disturbance- insomnia, broken sleep, RLS
- Fatigue
- Cardiovascular autonomic dysfunction- POTS
- Functional gastrointestinal disorders
- Depression/Anxiety
- Mechanical and neuropathic bowel dysfunction
- Chiara type 1 malformation

Comorbidities, cont.

- Tethered cord syndrome
- Complex regional pain syndrome
- Temporomandibular joint syndrome
- Postural kyphosis and scoliosis
- Cranio-cervical instability
- Myopia/astigmatism
- Poor response to anesthetics
- Pelvic floor weakness, urinary incontinence

Comorbidities, cont.

- Early onset of osteoarthritis
- Menorrhagia/metrorrhagia
- Musculoskeletal and pelvic complications of pregnancy
- Mast cell activation syndrome (can contribute to bowel and bladder inflammation)*
- Celiac*
- Eosinophilic esophagitis*

***not statistically proven comorbidities

Musculoskeletal manifestations

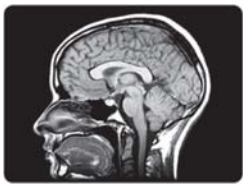
- Bursitis
- Sprains
- Tendonitis/tendinopathy/tendon rupture
- Plantar fasciitis
- Pes planus
- Muscle spasms

Dermatologic manifestations

- Skin fragility
- Wider scars
- Delayed wound healing
- Easy bruising
- Striae in adolescence but not during pregnancy

Chronic headaches

- Increased frequency of migraines
- Cervical spine hypermobility> cervicogenic and chiari-like headaches
- Areas of further research: Spontaneous CSF leak, tethered cord, pseudotumor cerebri, Chiari 1
- Imaging:
  - *Standing MRI?*
  - *Supine MRI*
  - *Flexion/extension x-rays or MRI*
  - *Rotational MRI*
  - *CT cisternogram*
  - *CT myelogram*



Fatigue

- Early muscle fatigue
  - *Repetitive tendon stretch causes micro-traumas*
  - *Micro-traumas don't heal quickly causing pain degeneration and physical fatigue*
  - *Lax joints that are not well supported by musculature may generate additional muscle fatigue with increased workload*
- Mental fatigue
  - *Autonomic dysfunction*
  - *Poor sleep*
- Chronic fatigue: overwhelming fatigue for >6 months

Cardiovascular

- Mild dilation of the aortic arch noted in 1/3 of children or young adults but is unlikely to progress to clinically significant disease
- Baseline ECHO not recommended for hEDS alone with no other risk factors/signs/symptoms- will get one in cases which involve syncope, palpitations, chest pain, +family history
- Mitral valve prolapse once considered a hallmark of EDS may no longer be clinically significant with change in MVP criteria

Autonomic Dysfunction

- Parasympathetic (rest and digest), Sympathetic (fight or flight), enteric
- Severity=degree of hypermobility
- Symptoms: dizziness, rapid HR, exercise intolerance, gastroparesis, gut dysmotility, urinary problems
- Origin? Sympathetic neurogenic dysfunction, connective tissue laxity> LE vascular stretch
- Postural Orthostatic Tachycardia Syndrome (POTS)
  - *Dx: HR increase ≥30bpm from supine to standing within 10 min in absence of orthostatic hypotension +symptoms, +tilt table test*
- Order= autonomic function testing

Management

- PHYSICAL THERAPY
- PHYSICAL THERAPY
- PHYSICAL THERAPY
- Occupational Therapy
- *Make sure that the therapist knows and understands hypermobility*
  - *Kinesiophobia*
  - *Good Health PT (in Portland)*

Movement

- Ok to allow controlled joint hyperextension
- Possibly limit high impact and resistance exercise
- Stabilize joints
  - *resting muscle tone*
  - *proprioception*
- Progressive resisted exercise
- Water based exercise
- Graded medical exercise
- Pelvic physical therapy

Bracing/Splinting/Taping

- Use judiciously
- Should facilitate participation in things that the individual wouldn't otherwise be able to do



Medications

- Acetaminophen
- Ibuprofen
- Topical NSAIDS, lidocaine patches, capsaicin patches, salonpas patches
- Limited muscle relaxers, consider magnesium
  - *Magnesium (Natural Calm): ~400mg per day to help with pain, sleep, HA, constipation*
- Neuropathic pain: TCAs, gabapentin
- Limit opiates and benzos
- Low dose naltrexone: start with 1.5mg per day, max 4.5mg per day
- Consider pain clinic referrals

Cognitive Behavioral Therapy

- Pain= physical and psychological factors
- Challenge negative thought patterns, actions and behaviors
- Replace with adaptive behaviors and positive functioning

Manual therapies and mindfulness

- Massage
- Myofascial release
- Gentle manipulation
  - *Strain-counterstrain*
  - *Muscle energy*
  - *Craniosacral*
- Feldenkrais or Alexander technique: address posture
- Pilates
- Mindfulness
  - *Apps: Calm, Insight Timer, Headspace, Breath, 4/7/8 breath*
- Acupuncture

POTS treatment

- Boluses of water: start first thing in the AM
- Salt: 2 teaspoons per day
- Compression- stockings, tights, abdominal binder
- Elevate head of bed
- Calf raises
- POTS exercise protocol: CHOP
- Medications: midodrine, fludrocortisone, pyridostigmine, beta blocker

Irritable Bowel Syndrome

- Fiber
- FODMAP diet/elimination diet
- Increase GI motility: bitters
- Probiotics to restore normal flora which can be altered with slow motility
- Enteric coated peppermint oil- helps with bloating
- Mindful eating: https://www.thecenterformindfuleating.org

Mast cell activation syndrome (MCAS)

- Unproven association
- Increased # of mast cells or increased mast cell mediators
- Symptoms: flushing, pruritis, hypotension, asthma, diarrhea, abdominal bloating, cramping, food sensitivities, fatigue
- Dx: elevated tryptase level during reaction, symptom list
- Treatment: H1 and H2 blockers (ranitidine and cetirizine), mast cell stabilizers (cromolyn, quercetin), ketotifen, montelukast, Xolair, low histamine diet?

Support Groups

- Ehlers-Danlos Society Community Resources
- Good Health Physical Therapy in Portland
- Official Oregon Area Ehlers-Danlos Syndrome Support Group on Facebook
- EDS Life Hacks on Facebook
- Ehlers Danlos Society on Facebook
- Dysautonomia International on Facebook

Resources

- The Ehlers-Danlos Society: www.ehlers-danlos.com
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Chronic Peripheral Vascular Disease and Limb Preservation:
51st Annual Primary Care Review : Feb 2020

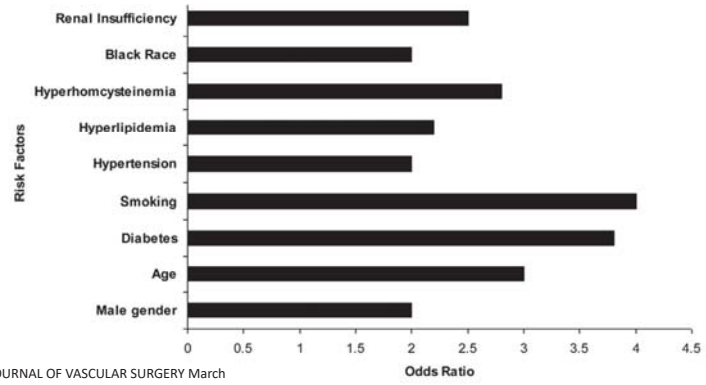
- Dr Cherrie Abraham
- Oregon Health and Sciences University and Knight Cardiovascular Institute
- Vascular and Endovascular Surgeon, OHSU
- Director Aortic Center, OHSU
- Associate Professor of Surgery, OHSU

Disclosures

- No relevant disclosures pertinent to this presentation.
- Consultant Cook Medical- Advanced Aortic Intervention
- Consultant Medtronic – Aortic Advisory Board

PVD

- Although PAD is characterized by a slow and low rate of local symptoms and complications, it is also characterized by ongoing atherogenesis in other vascular beds and a very high rate of mortality
- 25%-30% mortality within 5 years for patients with symptomatic PAD due mainly to stroke and myocardial infarction



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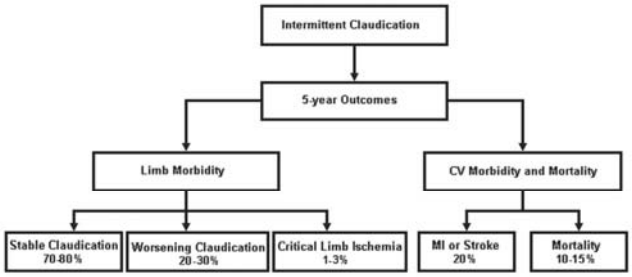

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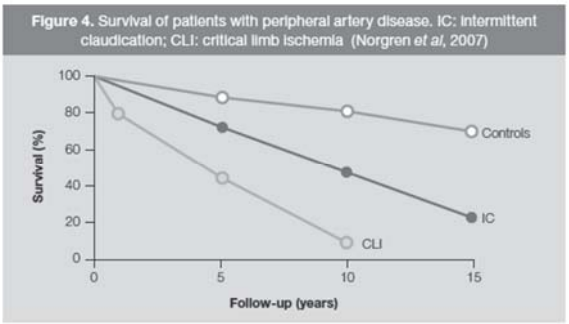
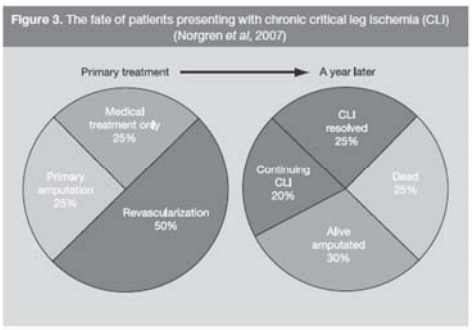




History

- HPI – Claudication, Rest Pain,
- Risk Factors – Smoking, Diabetes, Hypercholesterolemia
- Review of Symptoms – CV system

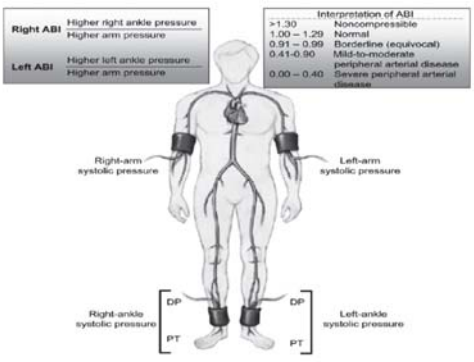
Physical Exam

- Loss of Hair Lower Ext
- Dependant Rubor, Elevation Pallor
- Ischemic Ulceration/Tissue Loss
- Non-healing wound
- Check webspaces

Pulse Examination

- Femoral
- Popliteal
- Dorsalis Pedis
- Posterior Tibial
- Grading of Pulses, +4, +3, +2, +1, 0
- Compare legs

Ankle Brachial Index



The diagnostic value of ABI measurements[1]:

- An ABI of ≤0.90 is considered abnormal
- The ABI of patients with IC typically lies between 0.50 and 0.90
- Patients with an ABI of ≤0.90 have a 3–6-fold increased risk of cardiovascular mortality
- Patients with very high ABI (>1.40) may have calcified arteries and require further assessment (for example, toe systolic pressures)

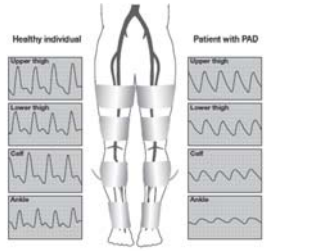
TBI

Patients with long-standing diabetes, renal failure and other disorders with vascular calcification can develop incompressible tibial arteries, resulting in false high systolic pressures.

- Toe pressure is normally approximately 30 mmHg less than ankle pressure
- An abnormal TBI is <0.70

PVR

Figure 2. Pulse volume recordings (PVRs) in a healthy individual (left) and in a patient with PAD (right)



In the presence of arterial disease, the slope of the waveforms flattens, the pulse width widens, and the dicrotic notch is lost

The currently available techniques for imaging are[1]:

- Angiography
- Color-assisted duplex ultrasonography
- Magnetic resonance angiography (MRA)
- Computed tomography angiography (CTA)

Medical Treatment

Lipid lowering agents
Diabetic Control
Antiplatelet agents
Smoking Cessation

Recommendations: Diagnosis of peripheral arterial disease (*PAD*)

		Grade	*Level of evidence*
2.1.	We recommend using the ABI as the first-line noninvasive test to establish a diagnosis of PAD in individuals with symptoms or signs suggestive of disease. When the ABI is borderline or normal (>0.9) and symptoms of claudication are suggestive, we recommend an exercise ABI.	1	A
2.2.	We suggest against routine screening for lower extremity PAD in the absence of risk factors, history, signs, or symptoms of PAD.	2	C
2.3.	For asymptomatic individuals who are at elevated risk, such as those aged >70, smokers, diabetic patients, those with an abnormal pulse examination, or other established cardiovascular disease, screening for lower extremity PAD is reasonable if used to improve risk stratification, preventive care, and medical management.	2	C
2.4.	In symptomatic patients who are being considered for revascularization, we suggest using physiologic noninvasive studies, such as segmental pressures and pulse volume recordings, to aid in the quantification of arterial insufficiency and help localize the level of obstruction.	2	C
2.5.	In symptomatic patients in whom revascularization treatment is being considered, we recommend anatomic imaging studies, such as arterial duplex ultrasound, CTA, MRA, and contrast arteriography.	1	B

ABI, Ankle-brachial index; *CTA,* computed tomography angiography; *MRA,* magnetic resonance angiography.

JOURNAL OF VASCULAR SURGERY March Supplement 2015

Smoking Cessation

- In observational studies, continued smoking is associated with higher rates of amputation, death, and myocardial infarction in patients with PAD compared with those who have quit.
- Continued smoking has been associ- ated with a twofold to threefold increase in the rate of lower extremity bypass graft failure compared with nonsmokers

Lassila R, Lepantalo M. Cigarette smoking and the outcome after lower limb arterial surgery. Acta Chir Scand 1988;154:635-40.
Willigendael EM, Teijink JA, Bartelink ML, Peters RJ, Buller HR, Prins MH. Smoking and the patency of lower extremity bypass grafts: a meta-analysis. J Vasc Surg 2005;42:67-74

Antiplatelets

- Numerous studies have demonstrated the benefit of antiplatelet therapy, especially aspirin, in doses of 75 to 325 mg/d in reducing rates of myocardial infarction, stroke, and vascular-related deaths in individuals with symptomatic lower extremity atherosclerosis.

Antithrombotic Trialists' Collaboration. Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients. BMJ 2002;324: 71-86.

Recommendations: Medical treatment for intermittent claudication (*IC*)

		Grade	*Level of evidence*
4.1.	We recommend multidisciplinary comprehensive smoking cessation interventions for patients with IC (repeatedly until tobacco use has stopped).	1	A
4.2.	We recommend statin therapy in patients with symptomatic PAD.	1	A
4.3.	We recommend optimizing diabetes control (hemoglobin A_{1c} goal of <7.0%) in patients with IC if this goal can be achieved without hypoglycemia.	1	B
4.4.	We recommend the use of indicated β-blockers (eg, for hypertension, cardiac indications) in patients with IC. There is no evidence supporting concerns about worsening claudication symptoms.	1	B
4.5.	In patients with IC due to atherosclerosis, we recommend antiplatelet therapy with aspirin (75-325 mg daily).	1	A
4.6.	We recommend clopidogrel in doses of 75 mg daily as an effective alternative to aspirin for antiplatelet therapy in patients with IC.	1	B
4.7.	In patients with IC due to atherosclerosis, we suggest against using warfarin for the sole indication of reducing the risk of adverse cardiovascular events or vascular occlusions.	1	C
4.8.	We suggest against using folic acid and vitamin B_{12} supplements as a treatment of IC.	2	C
4.9.	In patients with IC who do not have congestive heart failure, we suggest a 3-month trial of cilostazol (100 mg twice daily) to improve pain-free walking.	2	A
4.10.	In patients with IC who cannot tolerate or have contraindications for cilostazol, we suggest a trial of pentoxifylline (400 mg thrice daily) to improve pain-free walking.	2	B

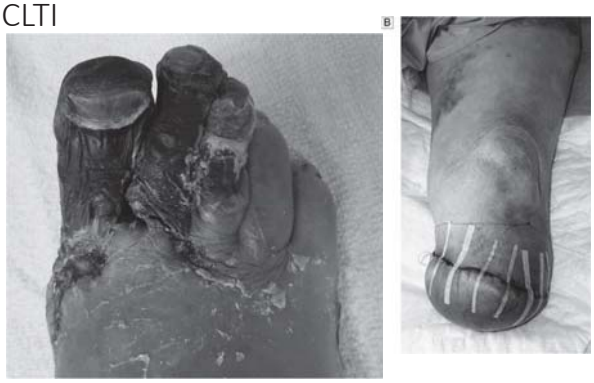
ACEI, Angiotensin-converting enzyme inhibitor; *PAD*, peripheral arterial disease.
A recommendation (4.11) for using ramipril in IC was originally made but subsequently deleted (see Supplementary Material on page 41S.e1, online only).

Exercise Therapy

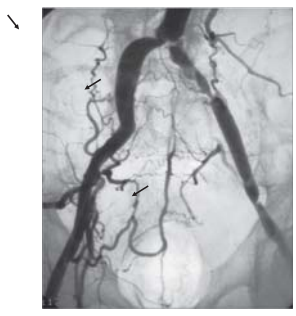
- Exercise programs for patients with IC have been found to increase the distance to onset of claudication and increase the distance to maximum claudication pain
- A meta-analysis of 1200 patients determined exercise therapy, compared with placebo or usual care, provides an overall improvement in walking ability of 50% to 200%, with improvements main- tained for up to 2 years

Watson L, Ellis B, Leng GC. Exercise for intermittent claudication. Cochrane Database Syst Rev 2008;(4):CD000990

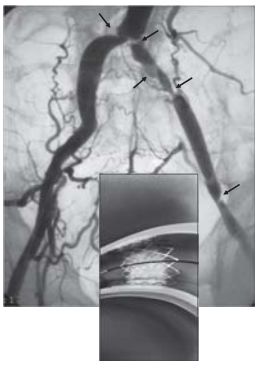
CLI - CLTI

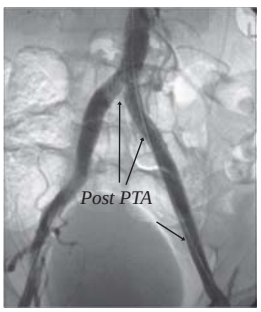


Diagnostic Angiogram

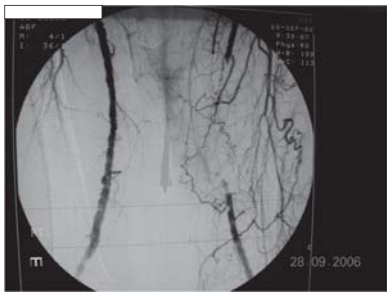


Angiointervention



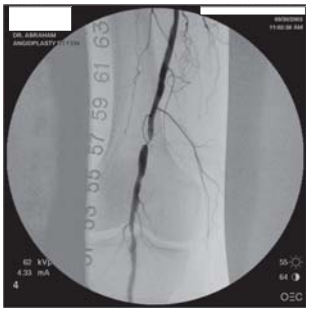


Angiogram



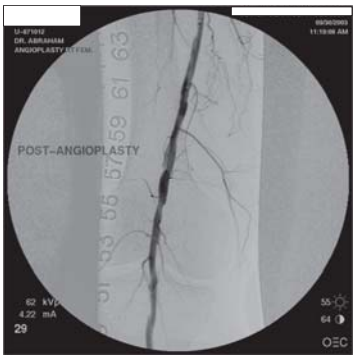
Popliteal Intervention

- 71 yo male
- Severe claudication right leg
- Sept 2003



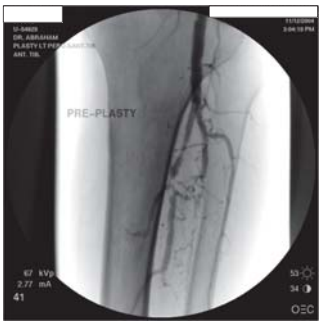
Popliteal Intervention

- Cutting Balloon Angioplasty ???
- No Claudication
- F/U 2007



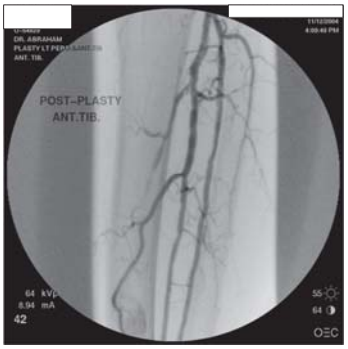
Tibial Intervention

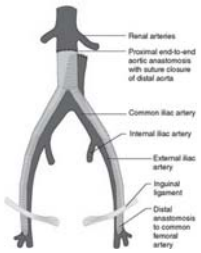
- 73 yo male DM, rest pain left foot
- Nov 2004
- No vein

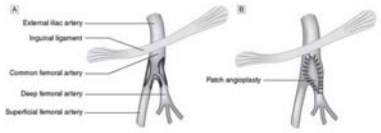


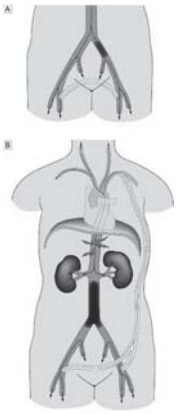
Tibial Intervention

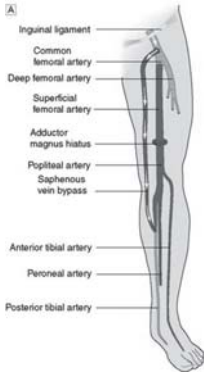
- F/U 2007
- No symptoms, 2007









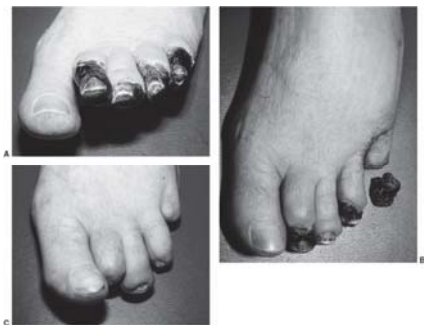


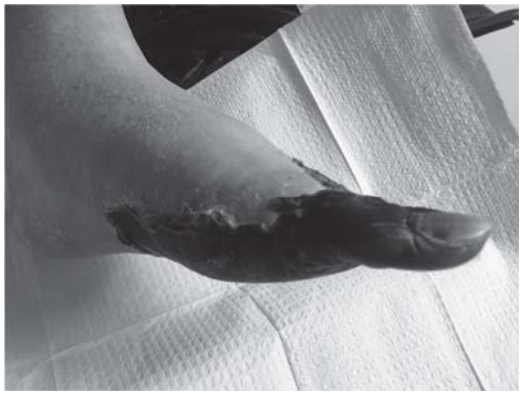
Operative Risks

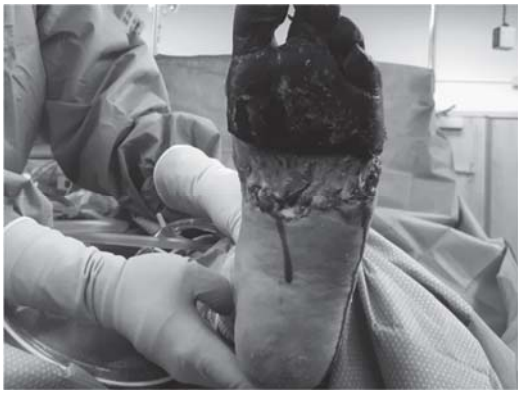
Table 24. Vascular Surgical Procedures for Outflow Improvement

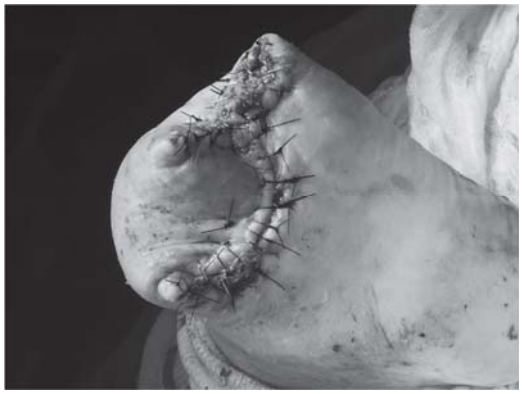
Outflow Procedure	Operative Mortality (%)	Expected Patency Rate (%)
Fem-AK popliteal vein	1.3 to 6.3	66 (5 years)
Fem-AK popliteal prosthetic	1.3 to 6.3	47 (5 years)
Fem-BK popliteal vein	1.3 to 6.3	66 (5 years)
Fem-BK popliteal prosthetic	1.3 to 6.3	33 (5 years)
Fem-Tib vein	1.3 to 6.3	74 to 80 (5 years)
Fem-Tib prosthetic	1.3 to 6.3	25 (3 years)
Composite sequential bypass	0 to 4	28 to 40 (5 years)
Fem-Tib blind segment bypass	2.7 to 3.2	64 to 67 (2 years)
Profundaplasty	0 to 3	49 to 50 (3 years)

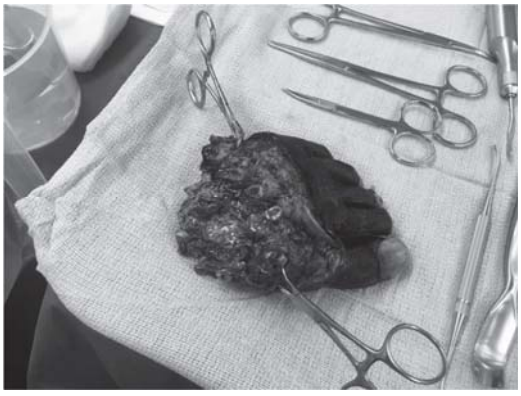
Role for Conservative Therapy ?

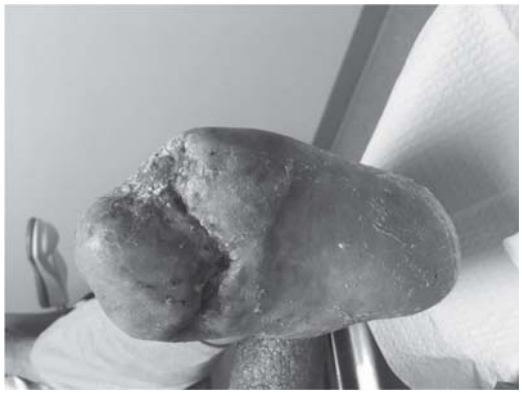












Conclusions

- History and Physical exam should be used for the detection of PAD - Ask specific questions to define high-risk groups, and initiate early therapy to maintain functional independence and decrease the risk of heart attack, stroke and death,
- Increased risk of mortality with PAD
- Treatment of underlying risk factors should be aggressive: Hypertension, Dyslipidemia, Diabetes, Tobacco use

Conclusions

- Antiplatelet therapy should be used in all patients with PAD who do not have a specific contraindication. Aspirin is the preferred antiplatelet drug because it is effective and inexpensive. Clopidogrel is safer than ticlopidine and slightly more effective than aspirin, but it is much more expensive.

Conclusions

- Endovascular techniques can be used for aortoiliac disease and femoral disease for claudication
- Operative intervention for claudication must be weighed against the risks
- Endovascular techniques can and should be considered for critical limb ischemia. Open bypass is the gold standard though.

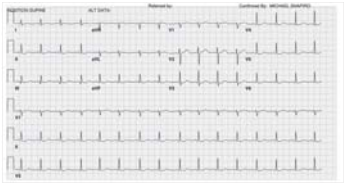
Referral

- Lifestyle Limiting Claudication
- Wet and Dry gangrene
- Ischemic Ulceration
- Rest Pain
- Non-healing wound

Thank you!

ECG PARTICIPATORY WORKSHOP- BUILDING YOUR CONFIDENCE

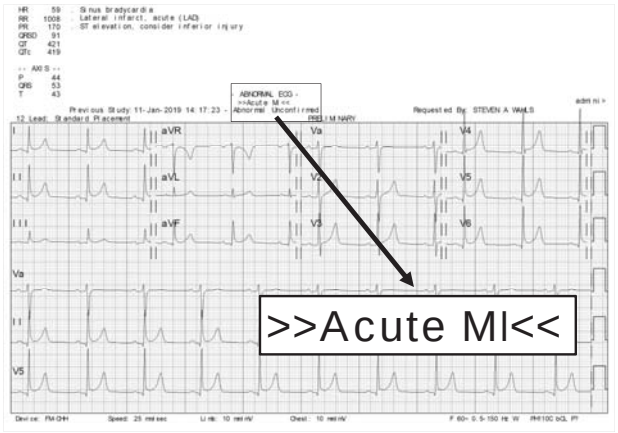
51st Annual Primary Care Review
February 11, 2020
Sentinel Hotel, Portland, OR



Steven A. Wahls, MD, FAAFP
Assistant Professor
Resident Focused Faculty
OHSU Department of Family Medicine

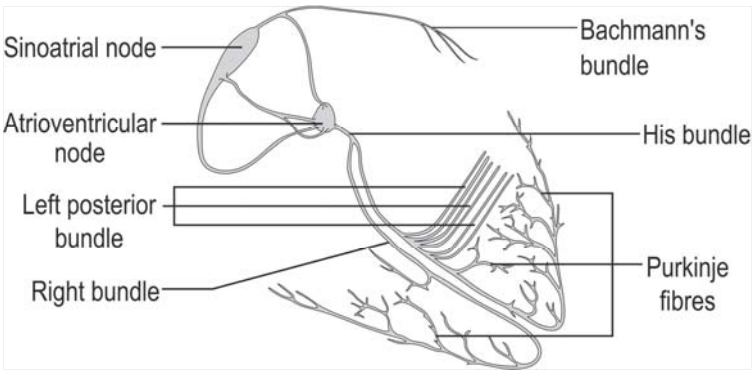
CONFLICT OF INTEREST:

- I have fun pondering ECGs!
- No personal financial benefits.

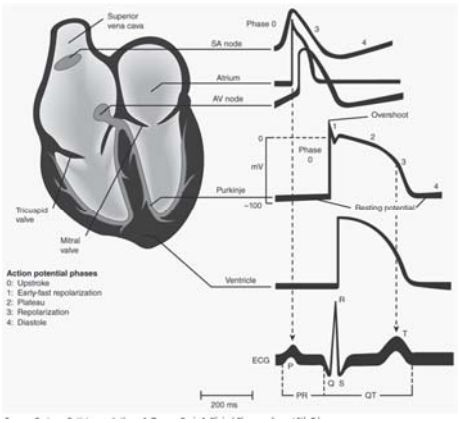


GOALS/ LEARNING POINTS

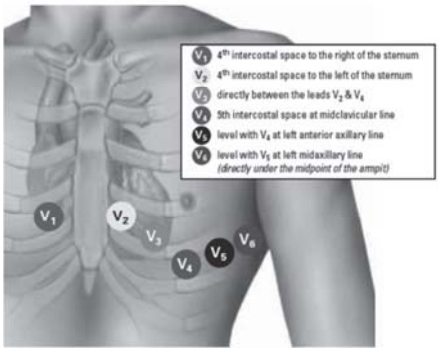
1. Reminder of underlying physiology
2. Read ECGs <u>together!</u>
   1. Remember your flow
   2. Commit yourself to an interpretation
   3. Have fun!
3. Recognize several different ECG abnormalities with implications for clinical care.

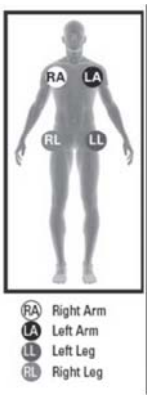


https://commons.wikimedia.org/wiki

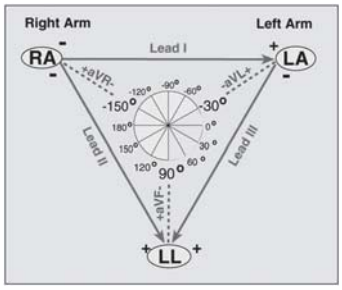


From: Katzung B, Trevor, A: Basic & Clinical Pharmacology, 13th Ed. McGraw-Hill
www.accesspharmacy.com



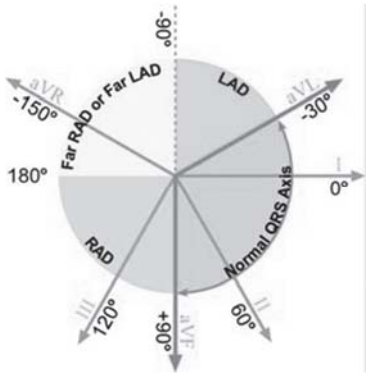


Pinterest: Demystifying the 12 Lead ECG



http://www.frca.co.uk

LITFL
https://lifeinthefastlane.com



WHAT AFFECTS THE ECG?

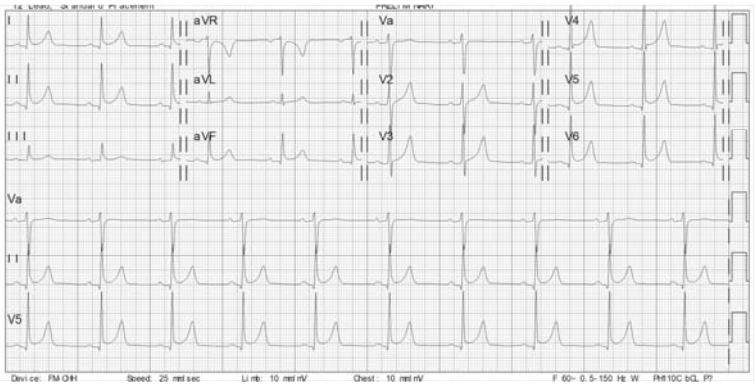
Chest anatomy
Lead Placement
Sick heart/Cardiomyopathy
Conduction system disease
- Delays/ blocks
- Reentry/ tachyarrhythmias
- Escape rhythms
- Enhanced automaticity
- Pacemakers

Chamber Hypertrophy
Hypoxia/ ischemia

Environment:
- Electrolytes
- Drugs
- Body temperature/ hypothermia
- Pericardial disease
- Pulmonary disease

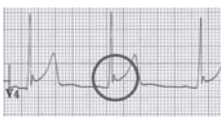
Athletic training
Artifact

BACK TO OUR RESIDENT'S PATIENT…



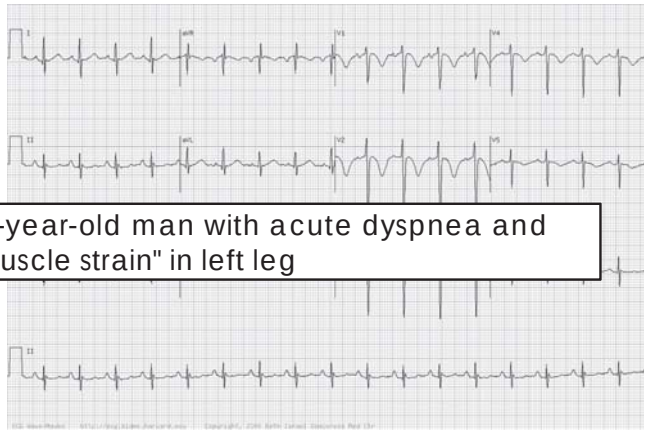
NONSPECIFIC ST-T WAVE CHANGES (BENIGN EARLY REPOLARIZATION)

Common in young healthy patients <50 yo, rare over 70 yo.
Etiology not well understood; not indicative of Cardiac disease



LITFL

- Widespread concave ST Elevation, especially mid to left precordial leads.
- Notching/ slurring at J point
- Prominent, asymmetrical TW concordant with QRS complexes
- Modest ST elevation compared to TW amplitude, < 2 mm in precordial leads, <.5 mm limb leads.
- No reciprocal ST depression.
- Stable over time.

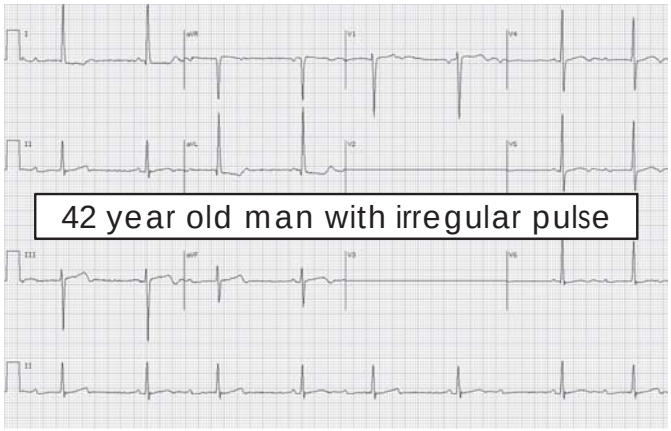


39-year-old man with acute dyspnea and "muscle strain" in left leg

ACUTE RV STRAIN/ PULMONARY EMBOLI

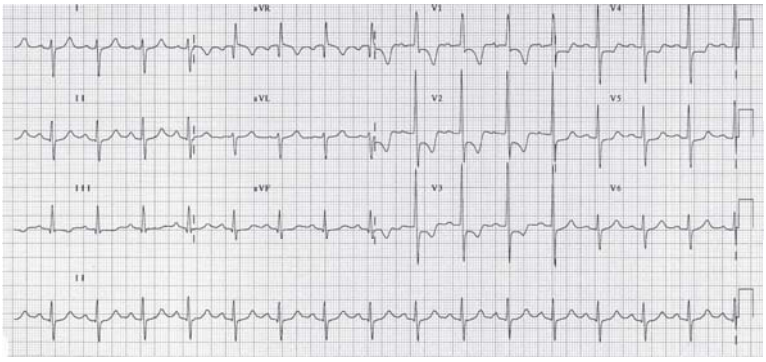
- S1Q3T3: S Lead I, Q & Inverted T Lead III
- Present in 15-25% of patients diagnosed with PE
- Nonspecific: any cause for acute Cor Pulmonale
  - PE
  - Acute Bronchospasm
  - Acute Pneumothorax
- Tachycardia
- New RBBB
- Right Axis Deviation
- ST Elevation V1, aVR
- And others

Perm J. 2011 Fall; 15(4): 75.
Published online Fall 2011. doi: 10.7812/tpp/11-112



Wave-Maven

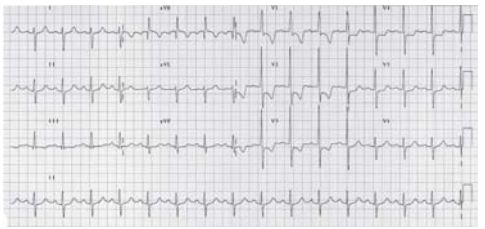
67 YEAR OLD MAN WITH CHRONIC SHORTNESS OF BREATH



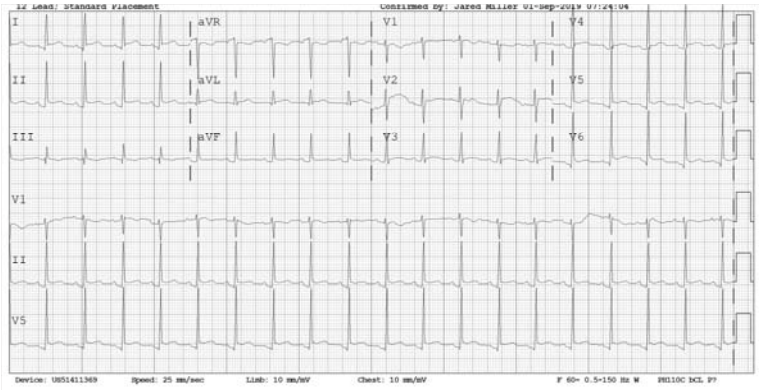
https://litfl.com/right-ventricular-hypertrophy-rvh-ecg-library/

- Right axis deviation (+150 degrees).
- Dominant R wave in V1 (> 7 mm tall; R/S ratio > 1)
- Dominant S wave in V6 (> 7 mm deep; R/S ratio < 1).

RVH Criteria

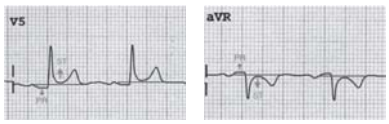


19 YO WOMAN WITH CHEST PAIN



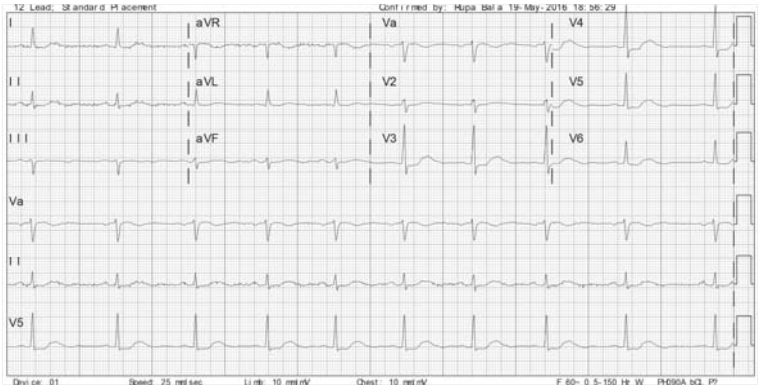
RECOGNIZING PERICARDITIS

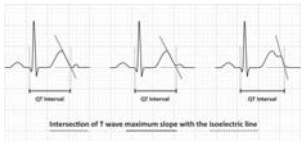
- Widespread concave ST elevation and PR depression throughout most of the limb leads (I, II, III, aVL, aVF) and precordial leads (V2-6).
- Reciprocal ST depression and PR elevation in lead aVR (± V1).
- Sinus tachycardia is also common in acute pericarditis due to pain and/or pericardial effusion.



http://lifeinthefastlane.com/ecg-library/basics/pericarditis/

59 YO WOMAN WITH ABNORMAL LAB TEST





THE NORMAL QT…

Bazett's formula: $QT_C = QT / \sqrt{RR}$ (in seconds)
(over-corrects HR > 100 bpm, under-corrects at HR < 60 bpm)

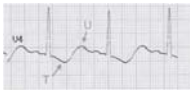
Normal QTc values:

- QTc is prolonged if > 440ms in men or > 460ms in women
- QTc > 500 is associated with increased risk of torsades de pointes
- QTc is abnormally short if < 350ms
- A useful rule of thumb is that a normal QT is less than half the preceding RR interval

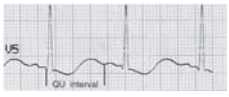
http://lifeinthefastlane.com/ecg-library/basics/qt_interval/

ECG IN HYPOKALEMIA

- Increased amplitude and width of the P wave
- Prolongation of the PR interval
- T wave flattening and inversion
- ST depression
- Prominent U waves (best seen in the precordial leads)
- *Apparent* long QT interval due to fusion of the T and U waves
- SV & Ventricular arrhythmias

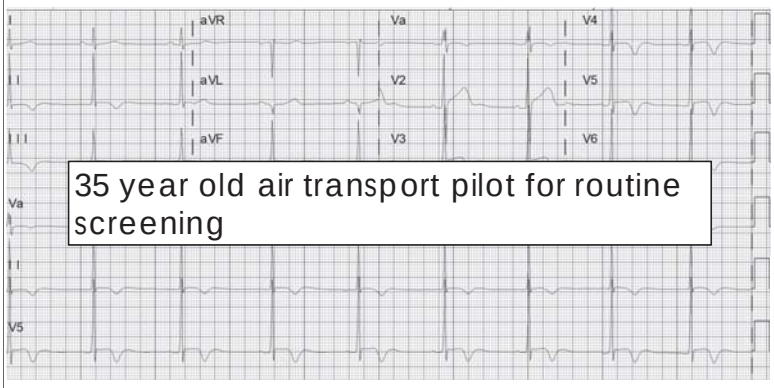


T wave inversion and prominent U waves in hypokalemia



Long QU interval in hypokalemia

https://litfl.com/hypokalaemia-ecg-library/

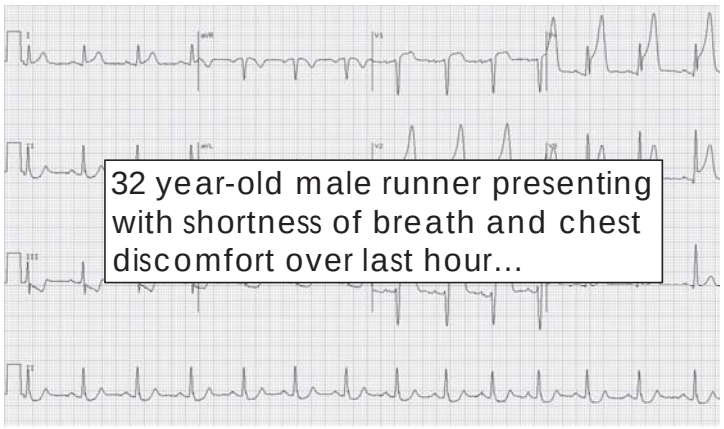


35 year old air transport pilot for routine screening

ECG CHANGES IN ATHLETES

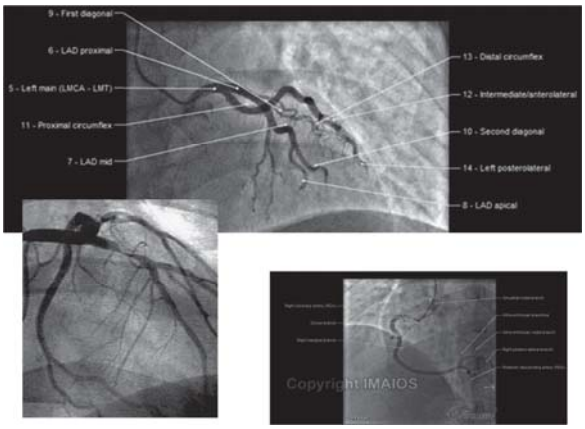
- Sinus bradycardia (≥30 bpm)
- Sinus arrhythmia
- Ectopic atrial rhythm
- Junctional escape rhythm
- First-degree AV block
- Mobitz type I (Wenckebach) second-degree AV block
- Incomplete RBBB
- Isolated QRS voltage criteria for LVH
- Early repolarization (ST elevation, J-point elevation, J waves, or terminal QRS slurring)
- Convex ST segment elevation & T wave inversion V1–V4

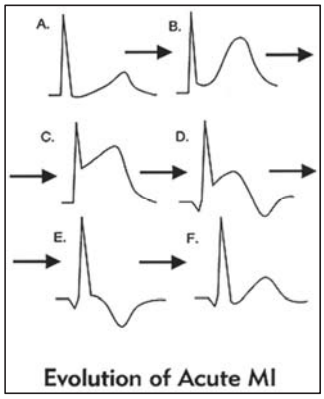
http://bjsm.bmj.com/content/47/3/125



32 year-old male runner presenting with shortness of breath and chest discomfort over last hour…

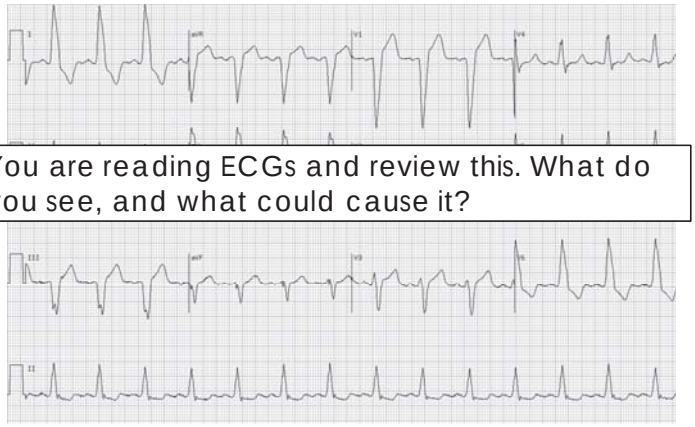
Wave-Maven





ECG PROGRESSION WITH MYOCARDIAL INFARCTION

[Diagram: Stages of Acute Q-Wave MI-KH]{Frank G. Yanowitz, M.D.}



You are reading ECGs and review this. What do you see, and what could cause it?

Wave-Maven

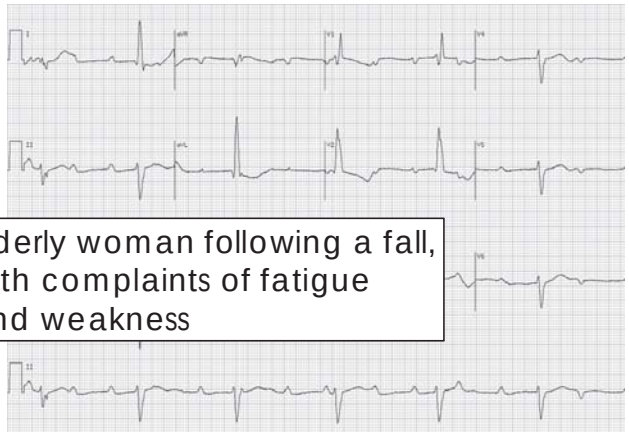
LEFT BUNDLE BRANCH BLOCK

CRITERIA

QRS duration of > 120 ms
Dominant S wave in V1
Broad monophasic R wave in lateral leads (I, aVL, V5-V6)
Absence of Q waves in lateral leads (I, V5-V6; small Q waves OK in aVL)
Prolonged R wave peak time > 60ms in left precordial leads (V5-6)

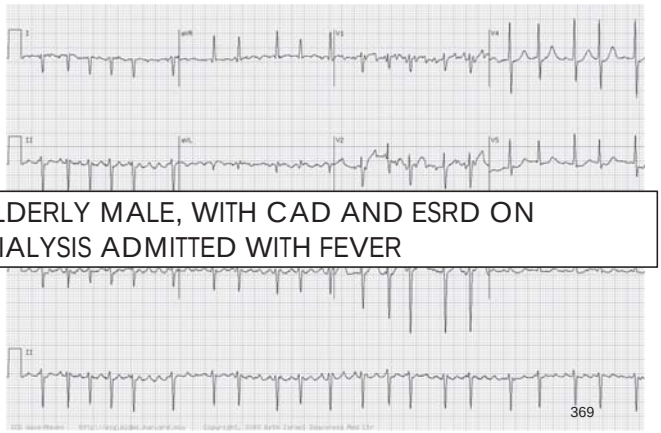
CAUSES

- Pressure/ Volume overload states:
  - Hypertension
  - Aortic stenosis
  - Aortic Insufficiency
- Sick myocardium
  - Dilated cardiomyopathy
  - Myocardial infarction/ CAD
  - Primary conduction system disease
  - Acquired conduction system disease (e.g. Lyme disease)

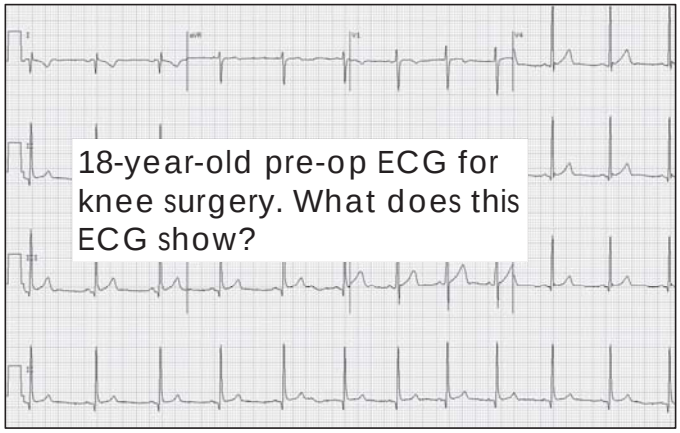


Elderly woman following a fall, with complaints of fatigue and weakness

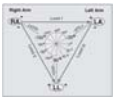
Wave-Maven



ELDERLY MALE, WITH CAD AND ESRD ON DIALYSIS ADMITTED WITH FEVER

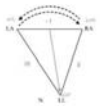


CLUES TO LIMB LEAD REVERSAL

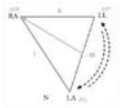


http://www.frca.co.uk

Wilson's central terminus
•This directionless "zero lead" lead is calculated as the average input from the three limb leads: WCT = 1/3 (RA + LA + LL).

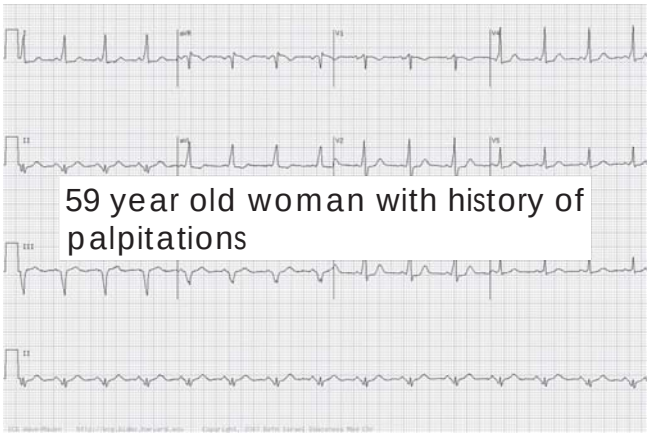


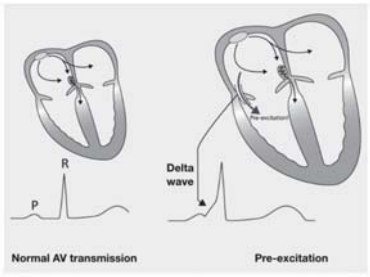
Quick guide to spotting LA/RA reversal
•Lead I is completely inverted (P wave, QRS complex and T wave).
•Lead aVR often becomes positive.
•There may be marked right axis deviation.



Quick guide to spotting LA/LL reversal
•Lead III is completely inverted (P wave, QRS complex and T wave)
•The P-wave is unexpectedly larger in lead I than lead II (it is usually the other way around).

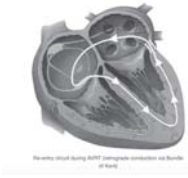
LITFL
https://lifeinthefastlane.com





https://lifeinthefastlane.com

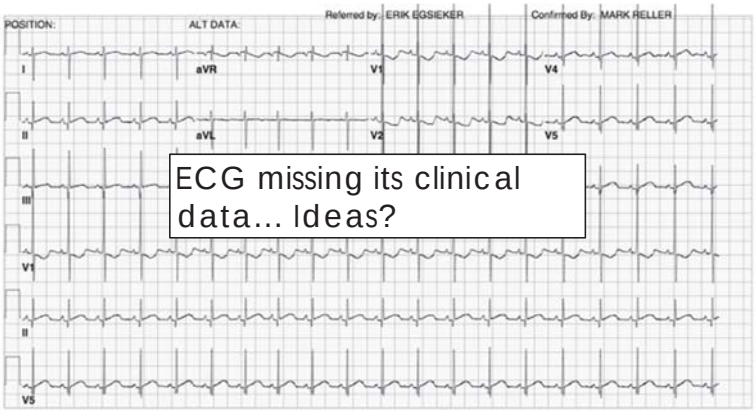
- Accessory pathway allows AVN bypass & ventricular preexcitation
- AVRT triggered by PAC/ PVC
- With tachyarrhythmias, delta wave often not seen.
- 0.1-3.0/ 1000
- Small risk of sudden cardiac death

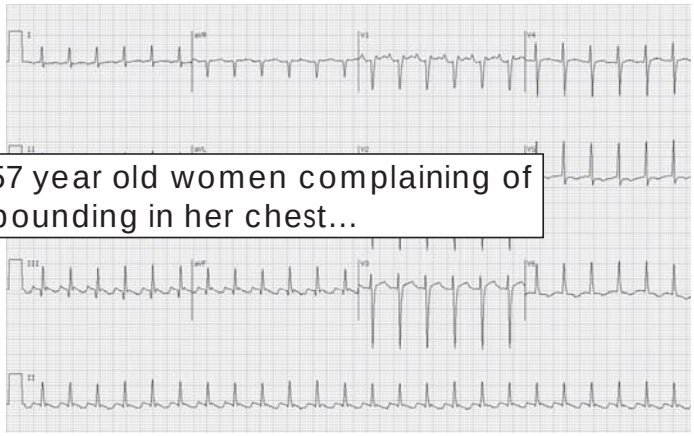


Bypass Tract Physiology

FIGURING OUT ARRHYTHMIAS…

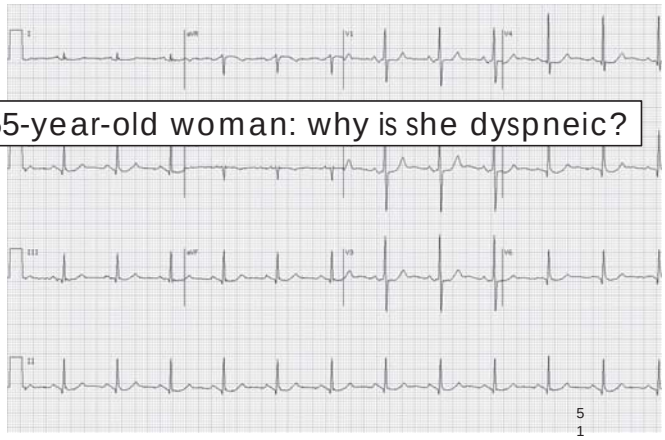
1. Where does it start?
2. Where does it go?
3. How does it get there?





57 year old women complaining of pounding in her chest…

Wave-Maven



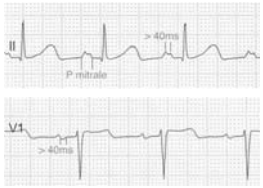
55-year-old woman: why is she dyspneic?

Wave-Maven

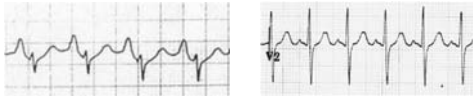
5
1

ATRIAL ENLARGEMENT…

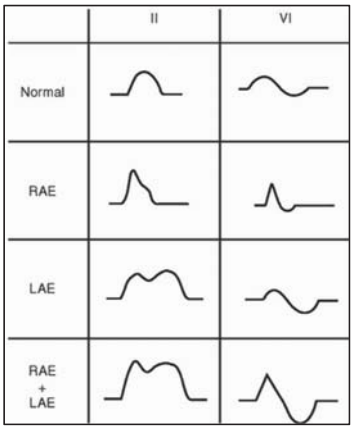
LAE produces a broad, bifid P wave in lead II (P *mitrale*) and enlarges the terminal negative portion of the P wave in V1



RAE produces a peaked P wave (*P pulmonale*) with amplitude:

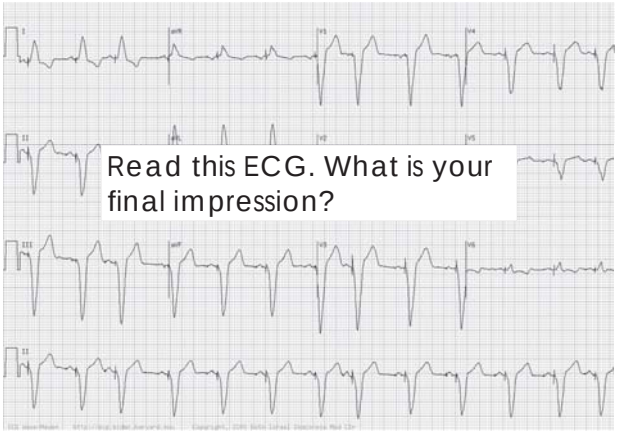


http://lifeinthefastlane.com/ecg-library/basics



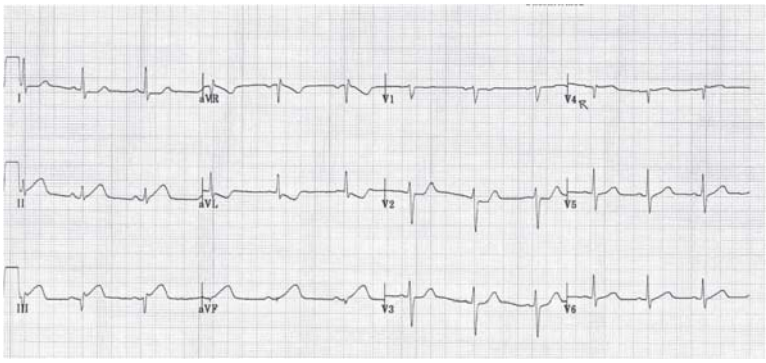
LITFL

Wagner et al. (2007)



Read this ECG. What is your final impression?

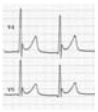
Wave-Maven

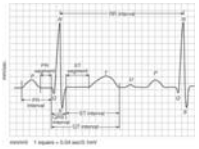


http://lifeinthefastlane.com/ecg-library/

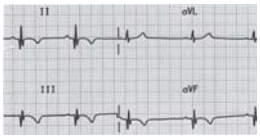
DIFFERENTIAL DX OF ST ELEVATION

- **Ischemic heart disease-** ST usually convex upward, or straight
- Acute pericarditis
- Others
  - LVH (R precordial leads large S waves)
  - LBBB (R precordial leads large S waves)
  - Advanced Hyperkalemia
  - Hypothermia (J- waves or Osborne waves)





WHAT'S A PATHOLOGICAL Q WAVE?

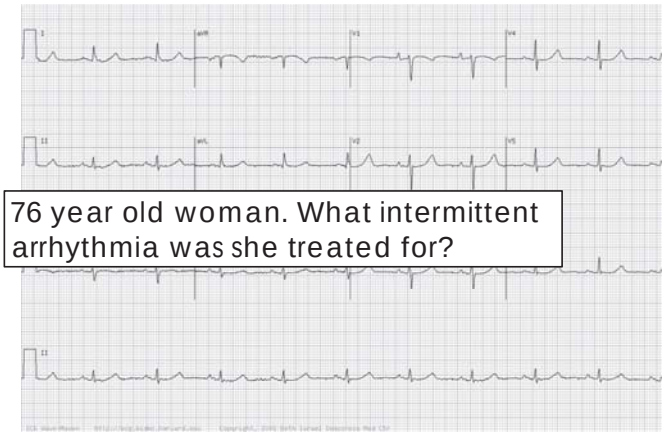


LITFL

Q waves are considered pathological if:

- > 40 ms (1 mm) wide
- > 2 mm deep
- > 25% of depth of QRS complex
- Seen in leads V1-3

https://litfl.com/q-wave-ecg-library/



76 year old woman. What intermittent arrhythmia was she treated for?

ANTIARRHYTHMIC DRUG ACTIONS

Vaughn-Williams Class	DRUG	ECG Changes	CHANNELS Ca^{++}	CHANNELS Na^{+}	CHANNELS K^{+}	RECEPTORS α	RECEPTORS β	RECEPTORS ACh	RECEPTORS Ado	Clinical Effects Pro Arrhy	Clinical Effects Extra Cardiac	Clinical Effects LV FX	Clinical Effects Heart Rate
A	Quinidine	A		↓	↓	↓		↓		↑	↑		
A	Procainamide			↓	↓					↑	↑		
A	Disopyramide			↓	↓			↓		↑	↑	↓↓	
IB	Lidocaine	B		↓						↓	↓		
IB	Mexiletine			↓						↓	↑		
IC	Propafenone	C		↓			↓			↑	↓	↓↓	↓
IC	Flecainide			↓						↑	↓	↓↓	
II	β-Adrenergic antagonists						↓			↓	↓	↓	↓↓
III	Dronedarone		↓	↓	↓	↓	↓	↓		↑	↑	↓	↓
III	Amiodarone		↓	↓	↓	↓	↓	↓		↑	↑	↓	↓
III	Sotalol			△	↓		↓			↑	↓	↓	↓
III	Ibutilide				↓					↑	↓		
III	Dofetilide				↓					↑	↓		
IV	Verapamil		↓							↓	↓	↓↓	↓
IV	Diltiazem		↓							↓	↓	↓	↓
Misc	Adenosine								△	↓	↓		↓

Antagonist relative potency
L = Low
M = Moderate
H = High

△ = Agonist
● = ECG Changes related to Ca^{++} channel block
◍ = ECG Changes related to Na^{+} channel block
● = ECG Changes related to K^{+} channel block

ACh$-$Acetylcholine$
Ado$-$Adenosine$
Pro$Arrhy$-$Proarrhythmia$potential$
Extra$Cardiac$-$Extracardiac$toxicity$potential$
LVFX-$Left$ventricular$function$
Heart$Rate$-$Bradycardia$potential$

https://crediblemeds.org/files/7413/9568/0020/Antiarrhythmic_drug_actions.pdf

ST-T AND U ABNORMALITIES:

Basic Concept:
The *specificity* of ST-T and U wave abnormalities is provided more by the *clinical circumstances* in which the ECG changes are found than by the particular changes themselves.

- Drugs (e.g., digoxin, quinidine, tricyclics, and many others)
- Electrolyte abnormalities of potassium, magnesium, calcium
- Metabolic factors
- Neurogenic factors
- Intrinsic myocardial disease
- Atrial repolarization
- Ventricular conduction abnormalities and rhythms originating in the ventricles

http://ecg.utah.edu/

Sources & Resources...

- Nathanson L A, McClennen S, Safran C, Goldberger AL. ECG Wave-Maven: Self-Assessment Program for Students and Clinicians.
  - http://ecg.bidmc.harvard.edu
- Yanowitz, F G. ECG Learning Center.
  - http://ecg.utah.edu
- Life in the Fast Lane
  - http://lifeinthefastlane.com/ecg-library
- The clinical exercise physiology consortium
  - http://www.cardiology.org/tools/
- ECGPEDIA
  - http://en.ecgpedia.org/wiki/Case_100

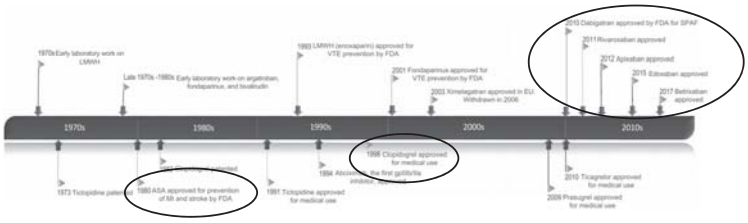
The Role of the Antiplatelet and Anticoagulation Combination: When are Risks worth the Benefit?

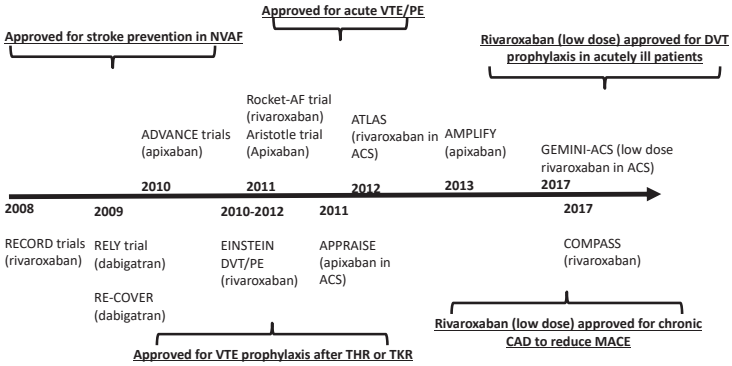
MEGAN HERINK, PHARMD
CLINICAL ASSISTANT PROFESSOR
OSU COLLEGE OF PHARMACY
OREGON HEALTH & SCIENCE UNIVERSITY

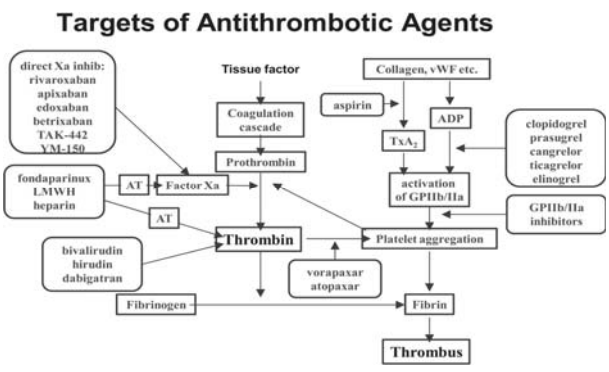
Objectives

1) Understand the risks, benefits and current role of combination therapy with an antiplatelet and anticoagulant.

2) Identify common clinical scenarios that are appropriate to consider stopping unnecessary combination therapy or initiate combination therapy.

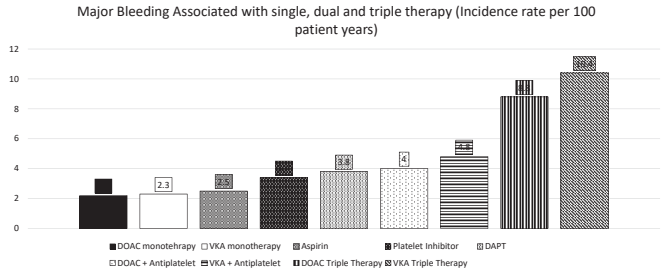






Circulation 2011;123:1833-35

Bleeding Risk: Less might be more



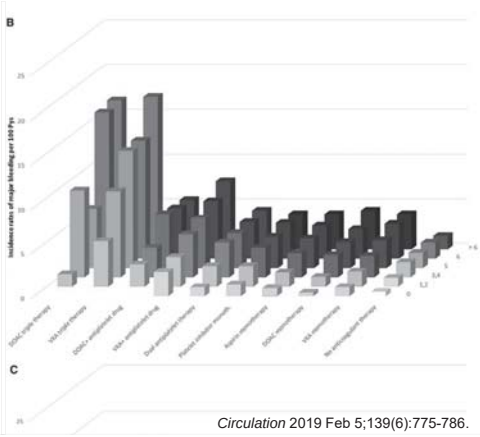
Circulation 2019 Feb 5;139(6):775-786.

Table 1: Stroke and bleeding risk stratification with the CHA_2DS_2-VASc and HAS-BLED schemas

CHA_2DS_2-VASc	Score	HAS-BLED	Score
Congestive heart failure/LV dysfunction	1	Hypertension i.e. uncontrolled BP	1
Hypertension	1	Abnormal renal/liver function	1 or 2
Aged ≥75 years	2	Stroke	1
Diabetes mellitus	1	Bleeding tendency or predispos	1
Stroke/TIA/TE	2	Labile INR	1
Vascular disease [prior MI, PAD, or aortic plaque]	1	Age (e.g. >65)	1
Aged 65-74 years	1	Drugs (e.g. concomitant aspirin or NSAIDSs) or alcohol	1
Sex category [i.e. female gender]	1		
Maximum score	9		9

American College of Cardiology

Figure 1. Incidence rates per 100 person-years of major bleeds by CHA2DS2-VASc score



Circulation 2019 Feb 5;139(6):775-786.

RH is a community dwelling 72 y/o female with well controlled diabetes and a remote history of smoking .

She has been taking a baby aspirin for over 30 years with no history of a major adverse cardiovascular event.

PMH: HTN, HLD, diabetes,

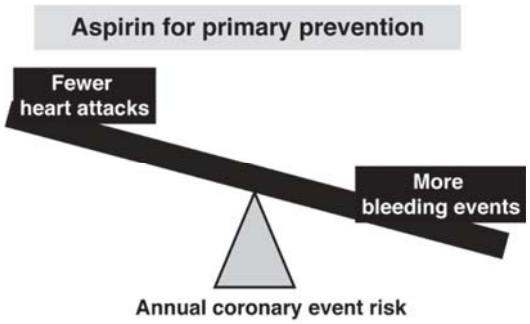
Meds: **aspirin 81 mg,** atorvastatin 20 mg, lisinopril 5 mg, metformin

Should Aspirin Be Used for Primary Prevention in the Post-Statin Era?

NNT (per year): 673 vs. NNH (per year): 823

ARRIVE	ASCEND	ASPREE
Moderate Risk (ASCVD > 20%)	Adults with Diabetes	Adults > 70 y/o
↔ MACE	↓ MACE	↔ MACE
↑ Bleeding	↑↑ Bleeding	↑ Bleeding
		↑ Mortality

Lancet 2018; 392: 1036–46
N Engl J Med 2018; 379:1529-1539
N Engl J Med 2018; 379:1509-1518



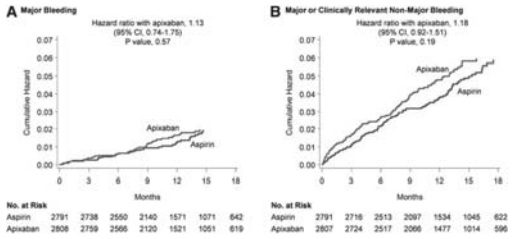
Case, Continued…….

Aspirin was continued and 6 months later, RH develops atrial fibrillation (CHA_2DS_2VASc of 4 and HAS-BLED of 1). Her sister had an awful time managing warfarin therapy years ago and she is nervous about "blood thinners".

"There are no good data to support aspirin in the prevention of stroke in atrial fibrillation"

		RECOMMENDATIONS
I	A	1. For patients with AF and an elevated CHA_2DS_2-VASc score of 2 or greater in men or 3 or greater in women, oral anticoagulants are recommended. Options include: ▪ Warfarin (LOE: A) (S4.1.1-5-S4.1.1-7) ▪ Dabigatran (LOE: B) (S4.1.1-8) ▪ Rivaroxaban (LOE: B) (S4.1.1-9) ▪ Apixaban (LOE: B) (S4.1.1-10), or
IIa	B	12. For patients with AF (except with moderate-to-severe mitral stenosis or a mechanical heart valve) and a CHA_2DS_2-VASc score of 0 in men or 1 in women, it is reasonable to omit anticoagulant therapy (S4.1.1-24, S4.1.1-25). MODIFIED: Exclusion criteria are now defined as moderate-to-severe mitral stenosis or a mechanical heart valve. (Section 4.1. in the 2014 AF Guideline)

2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation



Significant reduction in stroke with apixaban vs. aspirin (ARR 2%/NNT 50)

Bleeding During Treatment With Aspirin Versus Apixaban in Patients With Atrial Fibrillation Unsuitable for Warfarin

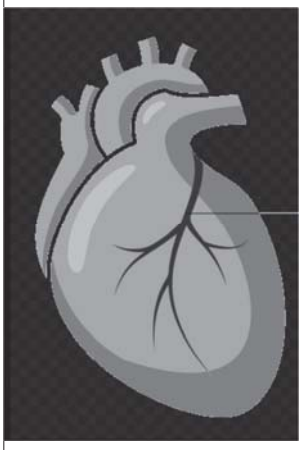
Stroke. 2012;43:3291-3297

Case, Continued…….

Aspirin was continued and 6 months later, RH develops atrial fibrillation (<u>CHA_2DS_2VASc of 4 and HAS-BLED of 1</u>). Her sister had an awful time managing warfarin therapy years ago and she is nervous about "blood thinners".

1. Stop aspirin (no benefit in primary prevention and ↑ risk of bleeding from 1.8% to 3.4%)
2. Start DOAC
3. Consider increasing statin to high intensity (diabetes with ASCVD risk > 20%)

N Engl J Med 2011; 365:981-992



The Plot Thickens…….

Same patient…but on aspirin 81mg for 4 years due to <u>stable CAD (no prior PCI).</u> Now with new atrial fibrillation (<u>CHA_2DS_2VASc of 5 and HAS-BLED of 2</u>).

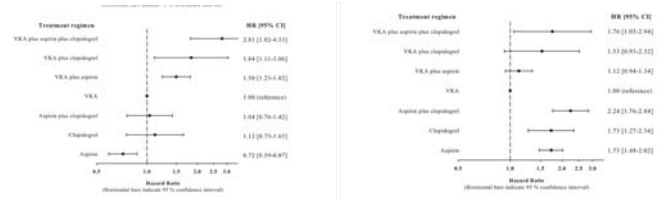
N Engl J Med 2011; 365:981-992

Antithrombotic Therapy for Atrial Fibrillation

CHEST Guideline and Expert Panel Report

***31. For patients with AF and stable coronary artery disease (eg, no acute coronary syndrome within the previous year) and who choose oral anticoagulation, we suggest OAC with either an <u>NOAC</u> or adjusted-dose <u>VKA</u> therapy <u>alone</u> (target international normalized ratio [INR] range, 2.0-3.0) rather than the combination of OAC and aspirin** (Weak recommendation, low quality evidence).

CHEST 2018; 154(5):1121-1201



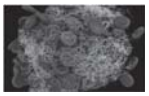
Risk of MI | Risk of Bleeding

Antiplatelet Therapy for Stable Coronary Artery Disease in Atrial Fibrillation Patients Taking an Oral Anticoagulant A Nationwide Cohort Study

Circulation. 2014;129:1577-1585.)

Non-Vitamin K Antagonist Oral Anticoagulants and Antiplatelet Therapy for Stroke Prevention in Patients With Atrial Fibrillation

A Meta-Analysis of Randomized Controlled Trials



Thromboembolic events occurred in 3.8% of patients treated with NOACs and antiplatelet drugs compared with 3.4% of patients treated with NOACs alone (RR, 1.16 [95% CI, 1.05–1.29], P = 0.005

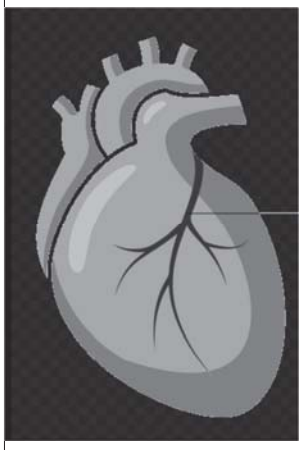
Patients on anticoagulation and antiplatelet therapy had higher rates of bleeding than those on anticoagulation alone [overall RR, 1.31 (95% CI, 1.25–1.37)

(Cardiology in Review 2016;24: 218–223)

<u>stable CAD.</u> Now with new atrial fibrillation

The Plot Thickens…….

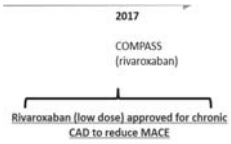
1. Not well studied. Should be patient specific decision.
2. Consider stopping aspirin (↑ risk of bleeding >>> benefit)
3. Start DOAC
4. Consider increasing statin to high intensity (diabetes with ASCVD risk > 20%)
5. Aggressive risk factor modification
6. Consider new diabetes medications if indicated (SGLT2 inhibitors or GLP-1 agonists)



What about just stable CAD?????? (no AF)

Same patient…but on aspirin 81mg for 4 years due to <u>stable CAD (no prior PCI).</u> Her cardiologist recently started her on rivaroxaban 5 mg BID.

Should a patient with stable CVD every be on BOTH aspirin AND an oral anticoagulant?????



The NEW ENGLAND JOURNAL of MEDICINE

OCTOBER 5, 2017

The Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) trial

Rivaroxaban with or without Aspirin in Stable Cardiovascular Disease

Average age 68
Previous MI 62%

5 mg BID

2.5 mg BID

Table 2. Efficacy Outcomes.*

Outcome	Rivaroxaban plus Aspirin (N=9152)	Rivaroxaban Alone (N=9117)	Aspirin Alone (N=9126)	Rivaroxaban plus Aspirin vs. Aspirin Alone		Rivaroxaban Alone vs. Aspirin Alone	
				Hazard Ratio (95% CI)	P Value	Hazard Ratio (95% CI)	P Value
	number (percent)						
Primary outcome: CV death, stroke, or myocardial infarction†	379 (4.1)	448 (4.9)	496 (5.4)	0.76 (0.66–0.86)	<0.001	0.90 (0.79–1.03)	0.12

ARR 1.3%
NNT 77 for 2 years

N Engl J Med 2017; 377:1319-1330

The NEW ENGLAND JOURNAL of MEDICINE

OCTOBER 5, 2017

The Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) trial

Rivaroxaban with or without Aspirin in Stable Cardiovascular Disease

Table 3. Bleeding Events and Net Clinical Benefit.*

Outcome	Rivaroxaban plus Aspirin (N=9152)	Rivaroxaban Alone (N=9117)	Aspirin Alone (N=9126)	Rivaroxaban plus Aspirin vs. Aspirin Alone		Rivaroxaban Alone vs. Aspirin Alone	
				Hazard Ratio (95% CI)	P Value	Hazard Ratio (95% CI)	P Value
	number (percent)						
Major and minor bleeding							
Major bleeding	288 (3.1)	255 (2.8)	170 (1.9)	1.70 (1.40–2.05)	<0.001	1.51 (1.25–1.84)	<0.001
Fatal bleeding†	15 (0.2)	14 (0.2)	10 (0.1)	1.47 (0.67–3.23)	0.32	1.40 (0.62–3.15)	0.41
Nonfatal symptomatic ICH†	21 (0.2)	32 (0.4)	19 (0.2)	1.10 (0.59–2.04)	0.77	1.69 (0.96–2.98)	0.07
Nonfatal, non-ICH, symptomatic bleeding into critical organ†	42 (0.5)	45 (0.5)	29 (0.3)	1.43 (0.89–2.29)	0.14	1.57 (0.98–2.50)	0.06
Other major bleeding†	210 (2.3)	164 (1.8)	112 (1.2)	1.88 (1.49–2.36)	<0.001	1.47 (1.16–1.87)	0.001

ARI 1.2%
NNT 83 for 2 years

N Engl J Med 2017; 377:1319-1330

The NEW ENGLAND JOURNAL of MEDICINE

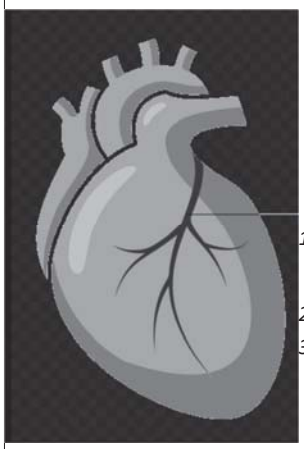
OCTOBER 5, 2017

The Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) trial

Rivaroxaban with or without Aspirin in Stable Cardiovascular Disease

<u>In the subgroup of patients > 75 years old, there was no significant difference in the primary outcome and a higher risk of bleeding (NNH 37)</u>

N Engl J Med 2017; 377:1319-1330



What about just stable CAD?????? (no AF)

Same patient…but on aspirin 81mg for 4 years due to stable CAD (no prior PCI). Her cardiologist recently started her on rivaroxaban 5 mg BID.

1. *Could consider combination of rivaroxaban + aspirin in patients at HIGH risk of ischemic events and LOW risk of bleeding*
2. *Avoid in patients > 75 y/o*
3. *Rivaroxaban dose should be 2.5 mg BID when used in combination with aspirin*

N Engl J Med 2011; 365:981-992

Is there a role for oral anticoagulant after ACS without AF?

DOAC (full dose) + DAPT
- Dabigatran: RE-DEEM
- Apixaban: APPRAISE
- Rivaroxaban: ATLAS 1

→ **↑ bleeding risk**
Possible ↓ ischemic events

DOAC (low dose) + DAPT
- Dabigatran: RE-DEEM
- Apixaban: APPRAISE
- Rivaroxaban: ATLAS

→ **↑ bleeding risk**
Possible ↓ ischemic events

DOAC (low dose) + SAPT
- Rivaroxaban: GEMINI ACS *(Rivaroxaban 2.5 mg + clopidogrel 75 mg daily)*

→ **No ↑ bleeding risk**
TBD effect on ischemic events

Is there a role for oral anticoagulant after ACS without AF?

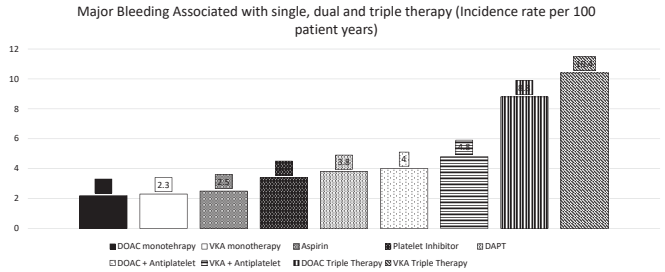
- ❑Higher risk derives net clinical benefit
- ❑Bleeding outweighs benefit in lower risk
- ❑Triple therapy after aCS is at least a triple threat in regard to bleeding
- ❑OAC + SAPT with $P2Y_{12}$ should be explored further to determine best agent and dose for best ischemic and safety outcomes
- ❑Aspirin remains standard of care with added $P2Y_{12}$ inhibition

Moving on…….

Patient on aspirin and clopidogrel (DAPT) with recent PCI and DES 3 months ago. Admitted for new onset atrial fibrillation with rapid ventricular response and is started on rivaroxaban 20 mg daily. Should AG continue DAPT on top of rivaroxaban?

When should I worry if my patient is on triple therapy?????????

"Triple Threat"



Circulation 2019 Feb 5;139(6):775-786.

Triple therapy (TT) vs. Double Therapy (DT)

- ❑Triple therapy (TT) vs. Double Therapy (DT)
  - WOEST (Dewilde 2013), 573 patients
  - PIONEER AF PCI (Gibson 2016), 2124 patients
  - RE-DUAL PCI (Cannon 2017), 2725 patients
  - AUGUSTUS (Lopez 2019), 4614 patients
- ❑All trials dropped ASA in the DT arm, but at various times
- ❑No trial was powered to detect *efficacy* outcomes
- ❑Questions?
  - Which anticoagulant should be used?
  - Which antiplatelet should be discontinued (and when) after stenting?
  - What is the optimal duration of TT vs. DT after stenting?

2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation

If triple therapy (oral anticoagulant, aspirin, and P2Y12 inhibitor) is prescribed for patients with AF at increased risk of stroke (based on CHA2 DS2 -VASc risk score of 2 or greater) who have undergone percutaneous coronary intervention (PCI) with stenting for ACS, it is reasonable to choose clopidogrel in preference to prasugrel

European Guideline **contraindicates prasugrel AND ticagrelor** with OAC.

January CT et al. *J Am Coll Cardiol.* 2019;

2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation

In patients with AF at increased risk of stroke (based on CHA2 DS2 -VASc risk score of 2 or greater) who have undergone PCI with stenting for ACS, double therapy with a P2Y12 inhibitor (clopidogrel or ticagrelor) and dose-adjusted vitamin K antagonist is reasonable to reduce the risk of bleeding as compared with triple therapy → WOEST

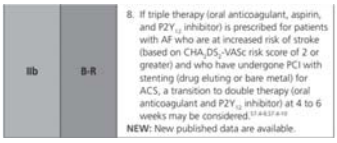
PIONEER

In patients with AF at increased risk of stroke (based on CHA2 DS2 -VASc risk score of 2 or greater) who have undergone PCI with stenting for ACS, double therapy with P2Y12 inhibitors (clopidogrel) and low-dose rivaroxaban 15 mg daily OR dabigatran 150 mg twice daily is reasonable to reduce the risk of bleeding as compared with triple therapy

RE-DUAL

January CT et al. *J Am Coll Cardiol.* 2019;

When to drop TT?



"A DT regimen immediately after hospital discharge should be considered for most patients, whereas extending the use of ASA beyond hospital discharge (i.e. TT) should be considered only for patients at high ischemic/thromotic and low bleeding risks for a limited period of time (eg, 1 month)."

January CT et al. *J Am Coll Cardiol.* 2019;

Moving on……. When should I worry if my patient is on triple therapy?????????

- ❑Triple therapy = triple threat
- ❑Bleeding is a factor of both anticoagulant and antiplatelet and length of therapy
- ❑When indicated, use DOAC over warfarin and clopidogrel as antiplatelet
- ❑Drop ASA as soon as feasible (at discharge to ~1 month)
- ❑Avoid NSAID use
- ❑Consider PPI

Individualized Risk: Benefit

ISCHEMIC FEATURES	BLEEDING FEATURES
• Prior stent thrombosis on adequate antiplatelet	• Short life expectancy
• Stenting last remaining patent artery	• Ongoing malignancy with high bleeding potential
• Diffuse multivessel disease	• Poor expected adherence
• Chronic Kidney Disease	• Poor mental status
• At least 3 stents implanted	• End stage renal failure
• Bifurcation with 2 stents implanted	• Advanced age
• Total stent length > 60 mm	• Prior major bleeding/prior hemorrhagic stroke
• Treatment of chronic total occlusion	• Chronic alcohol abuse
	• Anemia
	• Clinically significant bleeding on DAPT
	• High HAS-BLED score

Practical Tips

- As event rates have decreased with the widespread use of statins, the absolute benefit of aspirin in primary prevention is small and comes with an increased risk of bleeding
  - Re-evaluating aspirin in ALL patients who are using it for primary prevention
- If started on a DOAC for AF:
  - Drop aspirin if using it for primary prevention
  - Consider dropping aspirin if stable CAD
- There is an evolving role of anticoagulants (DOACs) for use in ACS due to residual risk with DAPT
  - Still learning about optimal dose, drug and duration
  - Antiplatelet remains the cornerstone of treatment
  - More data may support LOW DOSE DOAC (rivaroxaban 2.5 mg BID) + aspirin in stable CAD at low risk of bleeding
  - If a patient is on triple therapy……always look again due to significantly increased risk of bleeding and lack of data for long term use
  - Check dose of DOAC

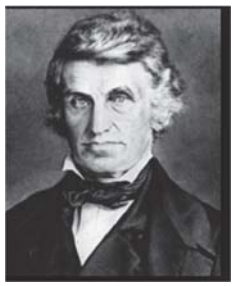
Any Questions?

THANK YOU

Feeling the Burn: The Benefits and Risks of Long-term PPI Use

Sarah Diamond MD
Assistant Professor of Medicine
Division of Gastroenterology and Hepatology

- No relevant disclosures



Dr. William Beaumont

Alexis St. Martin

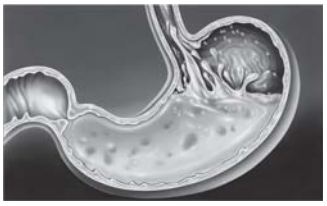
Father of Gastric Physiology

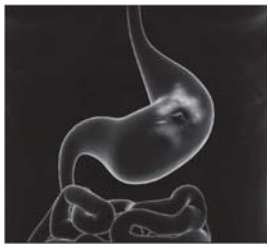
On August 1, 1825, Dr. Beaumont "introduced through the perforation into the stomach" various foods tied to a silk string and carefully observed how long it took each to become completely digested. "Fresh eggs hard boiled take 3 hours and 30 minutes…soft boiled take 3 hours…fresh eggs roasted take two hours and 15 minutes…baked custard…carrot…oyster soup"

… "a clear transparent liquor…tasted a little saltish and acid when applied to the tongue…[he removed] 1.5 ounces of gastric juice fresh from the stomach put into it 12 drams of recently salted beef boiled…digestion commenced!"

Beaumont, Experiments and Observations on the Gastric Juice and Physiology of Digestion, 1833.

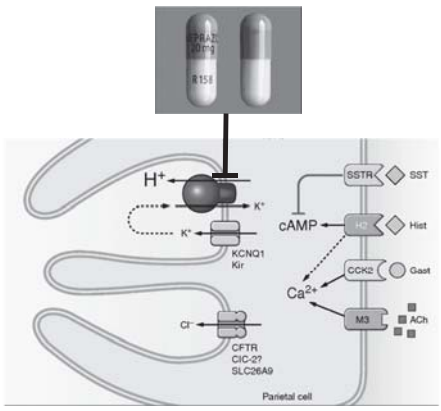
Acid-related diseases





10-20% of the
Western population

1988



Third most frequently prescribed medication in the US

> 119 million Rx last year in the US

$13.9 billion sales per year

$24 billion globally

Inappropriate use of PPIs is common

27-81% of Rx

$3 million to $1.5 billion annually

36-63% of Rx

Savarino, European Journal of Internal Medicine 2017

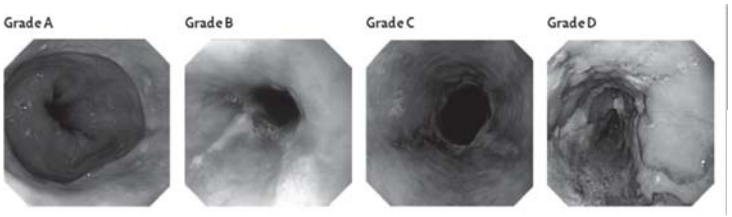
Outline

- Review the strong indications for long term PPI therapy
- Summarize available data on risks of PPI therapy
- Outline approach to discontinuation of PPI therapy

Case

65 yo man with longstanding GERD, prior endoscopy with LA grade C esophagitis that healed with 8 weeks of twice daily PPI, presenting with dysphagia after self-discontinuation of his meds

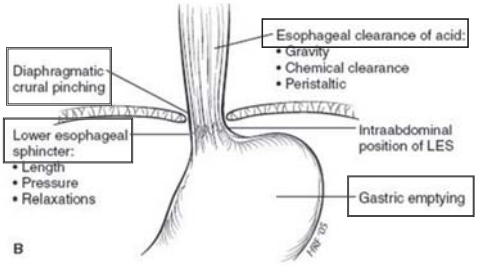
LA Grade Classification is used to endoscopically grade reflux



One small break < 5mm

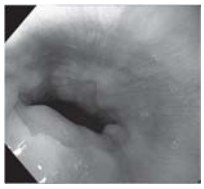
Larger breaks >75% circumference

GERD is esophageal reflux leading to troublesome symptoms or complications

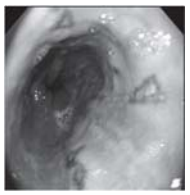


Barriers to acid reflux

Complications of GERD

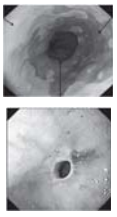


Non-erosive reflux disease (NERD) (65%)



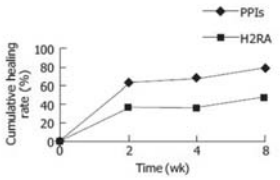
Reflux esophagitis (30%)

Barrett's esophagus



Peptic stricture

Daily PPI heals erosive esophagitis and reduces recurrence



- Esophagitis will recur in up to 80% of patients when PPI is discontinued
- PPIs were superior to H2 blockers in reducing recurrence of esophagitis

Wang, World J Gastroenterol. 2005.

Case

65 yo man with longstanding GERD, prior endoscopy with LA grade C esophagitis that healed with PPI presenting with dysphagia after self-discontinuation of his meds.

☑ Patients with complicated GERD (esophagitis, stricture) should remain on PPI therapy at lowest dose that manages symptoms

☑ Patients with non-erosive reflux disease can be on the lowest dose (including on-demand dosing) that manages symptoms

Other Indication for long term PPI Use

- Barrett's esophagus
- Peptic ulcer disease and its complications
- Primary prophylaxis for NSAID-induced ulcers
- Hypersecretory states (Zollinger-Ellison Syndrome)

Freedberg Gastroenterology 2017

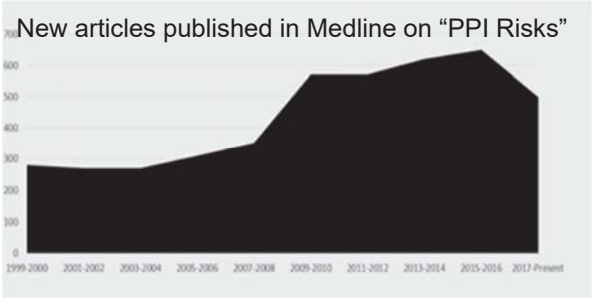
Proper administration is essential to efficacy

- Optimal acid suppression is achieved when taken 30 minutes before meal
- No data that any PPI is superior to others
- Individual variability in effectiveness and tolerability
- Switching PPIs may be reasonable for inadequate response or side effects
- Other anti-secretory drugs can be used *with* a PPI assuming sufficient time interval between their administration

Another Case

72 yo woman with obesity and gastroesophageal reflux disease who stopped her Prilosec because she heard on the news that proton pump inhibitors cause Alzheimer's

Media attention is driven by surge in studies



Adapted from Freedberg, D et al, Gastroenterology 2017

Risks of long-term PPI therapy

- Extraintestinal Complications
  - Dementia
  - Kidney disease
  - Pneumonia
- Enteric infections
- Abnormalities of absorption
- Changes to structure and function of stomach
- Medication interaction

Data associating PPIs with dementia are controversial

- Theoretical risk
  - Build-up of amyloid-β protein predisposes to Alzheimer's disease
  - PPI enhance amyloid-β production in mice brains
- Observational cohort study from Germany showed association of incident dementia with PPI therapy
- OR 1.44, 95% CI 1.36-1.52

Gomm JAMA Neurol 2016.

PPI users had higher baseline rates of depression, ischemic heart disease, polypharmacy

Table 1. Characteristics of Proton Pump Inhibitor (PPI) Users and Nonusers for Cox Regression With Time-Dependent Covariates

Characteristic	Incident Dementia,[a] No. (%)		P Value[b]
	No PPI Use	PPI Use	
PPI use[c]	70 729 (96.0)	2950 (4.0)	
Age,[d] mean (SD), y	83.0 (5.6)	83.8 (5.4)	<.001
Female sex	52 042 (73.6)	2298 (77.9)	<.001
Depression	9849 (13.9)	592 (20.1)	<.001
Diabetes	23 063 (32.6)	979 (33.2)	.51
Stroke	2661 (3.8)	151 (5.1)	<.001
Ischemic heart disease	26 739 (37.8)	1286 (43.6)	<.001
Polypharmacy[e]	37 565 (53.1)	2316 (78.5)	<.001

Exclusion of these confounders resulted in slightly higher hazards ratio (HR 1.66, 95% CI 11.57-1.76)

Gomm JAMA Neurol 2016.

Case-control study of German primary care patients: PPIs users had reduced risk of dementia

Table 2. Multivariate logistic regression model for development of dementia in primary care patients (11,956 dementia patients and 11,956 controls without dementia)

VARIABLES	HAZARD RATIO (95% CI)	p VALUE
Diabetes	1.18 (1.12–1.25)	< 0.0001
Hypertension	1.04 (0.97–1.10)	0.2723
Obesity	0.94 (0.84–1.04)	0.2148
Hyperlipidemia	1.06 (1.00–1.13)	0.0604
History of stroke	1.69 (1.58–1.80)	< 0.0001
Parkinson's disease	1.90 (1.64–2.19)	< 0.0001
Coronary heart disease	1.07 (1.01–1.14)	0.0258
Mild cognitive impairment	2.12 (1.81–2.48)	< 0.0001
Mental and behavioral disorders due to alcohol use	1.95 (1.49–2.56)	< 0.0001
Intracranial injury	1.31 (1.00–1.71)	0.0480
[illegible]	[illegible]	[illegible]
Proton-pump inhibitors	0.94 (0.90–0.97)	0.0008
Antihypertensive drugs	0.96 (0.94–0.99)	0.0070

Booker, A Int. Psychogeriatr, 2016.

Recent studies found no association

- Nationwide population based cohort in Korean claims database
- 2002-2013
- 70, 529 participants with 1,297 incident cases of dementia
- H2 blockers were associated with increased risk of incident dementia but not PPIs

Hwang American Journal of Geriatric Pyschiatry 2018

Systematic Review and Meta-analysis

- 11 observational studies comprising 642,949 subjects, mostly short term data (5-10 years)
- Pooled HR
- All causes of dementia 1.10 (0.88–1.37)
- Alzheimer dementia only 1.06 (0.72–1.55)

Khan, et al Am J Gastro 2020.

72 yo woman with obesity and gastroesophageal reflux disease who stopped her Prilosec due to news about proton pump inhibitors causing Alzheimer's

☑ No causal relationship established between PPIs and dementia
☑ Any associated risk is modest or even reduced
☑ Assess proper indication and reassure patients

E-consult

60 yo woman with hypertension, GERD with hiatal hernia and osteopenia has tried to taper off her PPI therapy but symptoms of pyrosis and odynophagia recur off therapy. She would like to continue therapy.

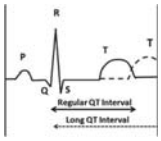
What monitoring does she require on long-term PPI therapy?

Absorption of protein-bound B12 and minerals ingested as salts

- Gastric acid is needed for the release of Vitamin B12 from ingested nutrients
- Parietal cells are the source of intrinsic factor needed for B12 binding
- In a Kaiser study in Northern CA, prescriptions for PPI longer than 2 years were associated with increased risk of Vitamin B12 deficiency
- (OR 1.65, 95% CI 1.58-1.73)

Lam JAMA 2013

Hypomagnesemia was first described in 2006

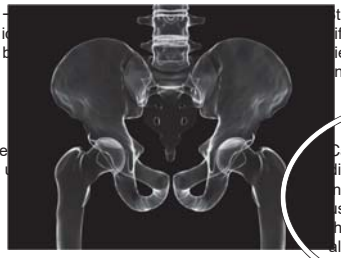


- Magnesium homeostasis is maintained by intestinal absorption and renal excretion
- Chronic renal insufficiency and diuretic therapy increase the importance of intestinal absorption
- Observational studies have shown positive association (pooled RR 1.43, 95% CI 1.08-1.88) between long-term PPI use and low magnesium
- FDA warning 2011

Epstein NEJM 2006.
Cheumgpasitporn, Ren Fail 2015.

Hypocalcemia

Reduced gastric acid → decreased release of i… Ca from Ca salts and b… proteins



…tudy in young men no …ifference in absorption of …ietary calcium in patients …n full dose PPI vs controls

Randomized cross-ove… trial, women > 65 who … PPIs had significant reduction in calcium carbonate absorption

…Calcium absorption may be …disrupted but there is …nsufficient evidence for …se of supplements beyond …he recommended daily …llowance (RDA)

Kerzner, Am J Med. 2005.
Voytko D, J Am Coll Nutr. 1995.

Association of PPIs and Fractures

Reference	End point of the study and results	Type of study
Yang et al.[108]	• Risk of hip fractures • OR 1.44 (95% CI 1.30–1.59); older patients (>65 years); duration of PPI intake >1 year • Dose- and time-dependent effects: adjusted OR 2.65 (95% CI 1.8–3.90)	Observational, case–control study
Vestergaard et al.[109]	• Risk of hip fractures • OR 1.45 (95% CI 1.28–1.65) for PPI intake within the last year • OR 0.69 (95% CI 0.57–0.84) for H_2 receptor antagonist intake within the last year	Observational, case–control study
Targownik et al.[111]	• Risk of hip fractures • OR 1.62 (95% CI 1.02–2.58); only in patients on PPIs >6 years • No risk for patients on PPIs <6 years	Observational, case–control study
Ye et al.[112]	[illegible]	Meta-analysis, seven observational studies
Ngamruengphong et al.[113]	• Risk of hip fractures • OR 1.25 (95% CI 1.14–1.37)	Meta-analysis, ten observational studies
Corley et al.[114]	• Risk of hip fractures • OR 1.30 (95% CI 1.21–1.39); on PPIs and H_2 receptor antagonists; only in the presence of other risk factors (that is, pre-existing osteoporosis or chronic steroid therapy)	Observational, case–control study
Kaye & Jick[115]	• Risk of hip fractures • No risk in the absence of other risk factors	Observational, case–control study
Targownik et al.[116]	• Risk of osteoporotic changes and bone mineral density loss • No effect of PPIs on bone mineral density	Observational, case–control study
Chen et al.[117]	• Risk of osteoporosis • HR 1.5 (95% CI 1.39–1.62) for osteoporosis • No risk of fractures	Observational, case–control study

No risk to OR 2.5

- Countless observational studies
- No risk to modest increased risk
- Highest in groups with preexisting risk for fracture

Malfertheiner Nature Reviews 2017

Iron Deficiency

- Case-control study in Kaiser patients, prescriptions > 2 years for PPI were associated with increased risk of iron deficiency (OR 2.49, 95% CI 2/35-2.65)
- Case-control study of UK primary care database, PPI use > 1 year was associated with 3-fold increased risk of iron deficiency

Lam Gastroenterology 2017
Tran-Duy Journal of Internal Medicine 2018

Kidney disease in PPI users

- AKI associated with PPI use was first reported in 1992
- Mechanism of injury was acute interstitial nephritis
- Idiosyncratic reaction that could progress to chronic kidney disease
- Prospective cohort of 10,400 patients, self-reported PPI use was associated with increased risk of CKD development
  - HR 1.5, 95% CI 1.14-1.96
  - NNH= 30
  - Risk was higher among twice daily users compared to daily users

Geevasinga Clin Gastroenterol Hepatol 2006.
Lazarus JAMA Intern. Med. 2016.

- Graded association between duration of exposure and risk of renal outcomes ranging from 30 days to 2 years
- The association seemed to diminish after 2 years

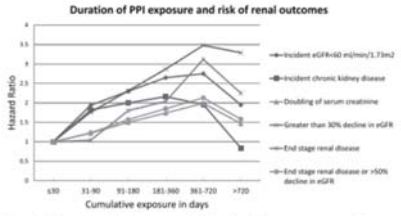


Figure 2. Duration of PPI exposure and risk of renal outcomes among PPI users (n=173,321).

Xie, J Am Soc Nephrol 2016

- Thought provoking analyses with rigorous statistical methods
- Inherent limitations
- Uncaptured baseline differences between users and non-users
- No consensus recommendations
- Awareness of PPIs as a potential cause of renal disease is important

E-consult

60 yo woman with hypertension, GERD with hiatal hernia and osteopenia has tried to taper off her PPI therapy but symptoms of pyrosis, dysphagia and odynophagia recur off therapy. What monitoring does she require on long-term PPI therapy?

☑ Monitor B12 levels particularly if patient has dietary restrictions
☑ Monitor magnesium levels in patients with CKD or chronic diuretics
☑ Supplement RDA of calcium (and Vit D) for patients with osteoporosis or other risk factors for fracture
☑ Consider monitoring renal function in high risk patients

Risks of long-term PPI therapy

- Extraintestinal Complications
  - Dementia
  - Kidney disease
  - Pneumonia
- Enteric infections
- Abnormalities of absorption
- Changes to structure and function of stomach
- Medication interaction

Gastric acid is a host defense mechanism against enteric infection

- At pH < 4, gastric acid has bactericidal effect
- PPI use has been associated with increased risk of enteric infections
  - Salmonella, Campylobacter, E.coli, Shigella
  - Magnitude of risk is heterogeneous depending on the study

Malfertheiner Nature Reviews 2017
Arriola Infect. Control Hosp Epidemiol 2016.

C. difficile infection

1-2 fold increased risk*

Spontaneous bacterial peritonitis

2 fold relative risk

Small intestinal bacterial overgrowth

2-20 fold relative risk

*PPIs plus antibiotics have an additive risk

C.Dif and Enteric Infections

- Prospective RCT comparing pantoprazole to placebo
- >17,000 patients followed for 3 years
- Pantoprazole compared to placebo
  - 1.33x more likely to develop enteric infection (p= 0.04)
  - 2.26x more likely to develop C.dif (p=0.18)*

*N=13

Moayyedi et al Gastro 2019; 157: 682-691

Pneumonia

- Observational studies have shown an association with short term PPI use (7-30 days) and an increased risk of community acquired pneumonia (CAP)
- Retrospective analysis of 24 RCTs of patients receiving esomeprazole, there was no association between treatment with PPI and community-acquired respiratory tract infection, including pneumonia
- RCT of pantoprazole vs placebo for stress ulcer prophylaxis, no difference in clinically important infections such as pneumonia and C.dificile

Estborn Aliment. Pharmacol. Ther. 2015.
Krag NEJM 2018

Infection risk

☑ Reduced gastric acid modestly increases risk of enteric infections
☑ Co-administration of PPIs with antibiotics increases risk of C.difficile
☑ No clear association between long term PPI use and pneumonia

Acid suppression leads to structural and functional changes in the stomach

- Initial response is increase in gastrin
- Compensatory mechanism to stimulate oxyntic gland production of acid
- Results in cellular increase (parietal cells and enterochromaffin-like cells)

Fundic Gland Polyps

4x more likely in PPI users

To date, 11 cases of carcioid tumors in patients on acid suppressive therapy have been reported

Observational cohort studies have suggested an association between PPI use and gastric cancer but the incidence of cancer was highest among PPI users who had received H. pylori eradication

Drug-drug interactions

- Omeprazole may interfere with clopidogrel
- PPIs are metabolized by CYP450 enzymes
- Drug-drug interactions are possible
- Choose esomeprazole or pantoprazole if possible
- Separate drugs by 12 hours
- Other drugs that may be affected include HIV protease inhibitors and methotrexate

Summarizing evidence for causality

Causal Relationship

- AKI
- Structural/ functional changes of gastric mucosa
- Enteric infections

Low evidence

- CKD
- C. dif infection
- Vitamin B12 deficiency
- Hypomagnesemia
- Hypocalcemia
- Iron deficiency

Insufficient evidence

- SIBO
- Dementia
- Malignancy
- Pneumonia
- Osteoporosis
- Fractures

Long term adverse events were similar with pantoprazole compared to placebo in an RCT with 53,000 patient-years of follow up

Table 3. Other Prespecified Safety Outcomes

Outcome	Incident events, n (%)		Pantoprazole, 40 mg od, vs placebo	
	Pantoprazole, 40 mg od (n = 8791)	Placebo (n = 8807)	OR (95% CI)	*P* value
Gastric atrophy	19 (0.2)	26 (0.3)	0.73 (0.40–1.32)	.30
Clostridium difficile	9 (0.1)	4 (<0.1)	2.26 (0.70–7.34)	.18
Other enteric infection	119 (1.4)	90 (1.0)	1.33 (1.01–1.75)	.04
Chronic kidney disease	184 (2.1)	158 (1.8)	1.17 (0.94–1.45)	.15
Dementia	55 (0.6)	46 (0.5)	1.20 (0.81–1.78)	.36
Pneumonia	318 (3.6)	313 (3.6)	1.02 (0.87–1.19)	.82
Fracture	203 (2.3)	211 (2.4)	0.96 (0.79–1.17)	.71
COPD	146 (1.7)	124 (1.4)	1.18 (0.93–1.51)	.17
Diabetes mellitus	513 (5.8)	532 (6.0)	0.96 (0.85–1.09)	.56

COPD, chronic obstructive pulmonary disease; od, once daily.

Moayyedi et al Gastro 2019; 157: 682-691

Case

36 yo woman with uncomplicated GERD has tried to stop her Nexium in the past but symptoms of heartburn always recur. She does not want to have to “be on medications for ever.”

Risk mitigation

- Medication reconciliation
- Ensure PPI is still indicated!
- Dose reduce
  - 50% dose reduction every 2 weeks
  - 30% of pts with uncomplicated GERD could be reduced from PPI to H2 blocker
  - 16% could be taken off all together
- In non-erosive disease, on demand therapy can be considered

Inadomi Gastro 2001

Case

36 yo woman with uncomplicated GERD has tried to stop her Nexium in the past but symptoms of heartburn always recur. She does not want to have to “be on medications for ever.”

☑ Reinforce lifestyle modifications
☑ Consider dose reduction: halve the dose every 1-2 weeks
☑ Use the lowest dose that controls symptoms
☑ Consider on demand therapy for non-erosive disease

Conclusions

- ☑ PPIs have revolutionized the treatment of acid-related disorders
- ☑ Over-utilized and inappropriately prescribed
- ☑ Baseline differences between PPI users and non-users limit the value of retrospective analysis
- ☑ Despite large numbers of studies, the quality of evidence for adverse events is low

Conclusions (cont'd.)

- ☑ We should be aware of the potential risks and be judicious when prescribing
- ☑ When prescribed appropriately, benefit likely > risk
- ☑ PPIs should be administered at the lowest possible dose
- ☑ Unnecessary medications, including PPIs, should be discontinued

Feeling the Burn: The Benefits and Risks of Long-term PPI Use

Sarah Diamond MD
Assistant Professor of Medicine
Division of Gastroenterology and Hepatology

Risk assessment of NSAID-induced ulcers

Table 1. **Patients at increased risk for NSAID GI toxicity**

High risk	
1.	History of a previously complicated ulcer, especially recent
2.	Multiple (>2) risk factors
Moderate risk (1–2 risk factors)	
1.	Age >65 years
2.	High dose NSAID therapy
3.	A previous history of uncomplicated ulcer
4.	Concurrent use of aspirin (including low dose) corticosteroids or anticoagulants
Low risk	
1.	No risk factors

H. pylori is an independent and additive risk factor and needs to be addressed separately (see text and recommendations).

Lanza, Am J Gastroenterol. 2009; 104 (3): 728.

- High risk patients
  - Avoid NSAIDs
  - Use PPI co-therapy
- Moderate risk patients
  - COX2 inhibitor alone or NSAID + PPI
- Low risk
  - No protective measures

INTEGRATIVE TEAM BASED APPROACH TO MENTAL HEALTH IN THE UNDERSERVED

REBECCA CASTER, PHARM D (NOT PRESENTING)
MYONG O, MSW
SONIA SOSA, MD
ELLIOT TAXMAN, ND, MS
OHSU FAMILY MEDICINE AT RICHMOND CLINIC

- We have no disclosures

OBJECTIVES

- List the key components of an integrative medicine team workup and treatment plan
- Identify common integrative treatments for depression and anxiety

RICHMOND AT A GLANCE

- Almost 14, 000 patients use Richmond as their primary medical home
- Average of 210 patient visits per day
- Generally low income inner city residents, many of whom have mental health needs
  - 75% of patients have incomes below 200% of the federal poverty level
  - 23% have issues with substance abuse
  - 10% speak languages other than English as their primary language
- 44% Medicaid, 17% Medicare, 8% uninsured, 31% commercial insurance
- Became a FQHC look alike in 2004 and a full FQHC in 2012
- Pioneers in the Patient Centered Primary Care Medical Home Model
- Pharmacy, Radiology and Phlebotomy on site
- Teaching clinic: home for approximately 12 Family Medicine residents, we regularly have students from a multitude of different programs including: MD, NP, PA, RN, MA, ND and Masters level psychologists

INTEGRATIVE MEDICINE AT RICHMOND

- Embedded Behavioral health
- Mindfulness, wellness and Art therapy groups
- Acupuncture/Chinese Medicine
- Integrative movement therapy (yoga)
- Inter-professional Integrative medicine consult clinic
- Manipulation visits
- Cooking Matters course
- Community Supported Agriculture boxes
- Community Garden
- MAT (Medication Assisted Treatment) for opioid dependence
- Embedded IPV (Intimate partner violence) advocates and Community Health Workers
- Medical Legal Project (MLP)
- Specialty Clinics within Richmond: Pain, Orthopedics, Cardiology, ENT, Psychiatry, Geriatrics, Sports Medicine

Cooking Matters!!

WHAT EMBEDDED BH SERVICES LOOK LIKE:

- Warm Hand Offs: BHCs consisting of LCSWs keep a limited number of scheduled pts and mostly open schedule for in the moment BH support before/during/after PCP appointments
- Depending on how much time is available, can offer Safety planning, providing resources, brief support etc.
- If enough time, can start BH intake for biopsychosocial assessment where we assess the following Social Determinants of Health:
  - Housing:
  - Work/Finances/Childcare:
  - Family/Social/Support:
  - Food security/nutrition:
  - Transportation:
  - Education/literacy:
  - Legal:
  - Mental Health:
  - Trauma/Abuse:
  - Substances:
  - Physical Health: (including sleep habits, regular physical activity)
  - Strengths/Assets:

FRUIT AND VEGGIES FROM OUR GARDEN

BH SPECIALTY TREATMENTS: ACCELERATED RESOLUTION THERAPY (ART)

- Richmond serves many patients who have trauma history and struggle with PTSD/anxiety.
- ART is an eye movement therapy (similar to EMDR) but very appropriate for primary clinic setting because it only takes 1-5 sessions for significant relief from symptoms and can function as a complementary treatment to other therapeutic approaches.
- Case examples: 59 y/o female with 56 items on her Problem List including complex PTSD (from years of childhood trauma), fibromyalgia, diabetes, morbid obesity.
- Subjective Units of Distress (SUD 0-10): 1st session: 8→2, 2nd session: 8 →0, 3rd session: 10→1
- PHQ9=18 GAD= 15 (when I first met her)
- PHQ9=15 GAD=9 (last time I saw her in Dec '19)

2 MINDFULNESS GROUPS— ONE FOCUSED ON THE "CRAVING BRAIN"

PATIENT RESPONSE TO MINDFULNESS GROUPS

- "I've learned how to better communicate with my daughter."
- "I've learned that deep breathing and mindfulness practice really are calming."
- I've learned not to judge myself."
- "I've learned how to stay in the moment."
- "I've learned a lot about how your brain works which helps me understand myself better."
- "Not looking too far into the future or too far back into the past."
- "It has helped me with my anxiety by keeping (me) in the moment. I use the deep breathing the most."

CONTINUED

- “I was directed to the Mindfulness Group by my PCP and MH counselor almost two years ago to help me address anxiety and depression. I was a wreck. Sleepless, agitated and chewing my fingernails to the quick. I was angry all the time and my life was horrible. Today I can sleep, am cheerful, did have a full set of fingernails for the first time in 70 years.”

IF YOUR CLINIC DOESN’T HAVE FUNDING FOR BHCS:

- At minimum, create a Smart phrase with Mental Health resources that patients can utilize later with following information:
  1. Crisis line number for 24/7 support (ie 503-988-4888)
  2. In PDX, Unity Center (ED for Mental Health crisis assessment and treatment)
  3. Instructions on how to find psychotherapists (https://www.psychologytoday.com/us/therapists/oregon)
  4. 211 for all social services

INTER-PROFESSIONAL INTEGRATIVE MEDICINE CONSULT CLINIC

- Built on the model of other specialty consult clinics
- Collaboration between NUNM and OHSU
- Started in 2017
- Inter-professional players: MD/DOs, NDs, PharmDs, RNs, MSW, MAs

MODEL FOR INTER-PROFESSIONAL INTEGRATIVE CLINICAL CARE

- Clinic Model:
  - Visit Length: 60 min new patient appointment, 30 min follow up appointment
  - How many patients per session? ~6
  - Which patients can be seen? No specific criteria, all diagnoses are seen, patients must have a willingness to try lifestyle changes and non-allopathic modalities
  - Patients seen in inter-professional couplets or teams:
    - Family Medicine resident + ND resident are the first to see the patient
    - Presented to inter-professional team, social work or RN is engaged if needed
    - Referrals made to: acupuncture, chiropractor, massage, medical legal team, outside mental health teams, other specialties
  - Follow up- MyChart, Clinic visit, RN- case management

REACTIONS TO MODEL

- ***Patient responses:***
  - Follow up visit after starting turmeric: “I feel so much better!!”
  - “I feel heard. I’ve never spent a full hour with a doctor before.”
  - “I wish that this was available everywhere.”
  - “You meant it when you said that there would be a lot of questions.”
  - “She is compassionate and extremely knowledgeable regarding the rare diagnoses that I have. It is clear that she has spent considerable time learning about Ehlers-Danlos Syndrome and its comorbidities in the area of dysautonomia. Dr. Sosa listens carefully to everything I tell her and never once has she been dismissive of my symptoms or intuition about my body. While her practice has a foundation of evidence-based medicine, she also is willing to think outside the box when necessary. I am thankful that she teaches medical students so that more healthcare professionals can learn how to diagnose and treat those of us with rare chronic illnesses.”

- ***Resident responses:***
  - Residents have really enjoyed working with residents outside of their own disciplines.
  - They appreciate having time to really get to know the patients.
  - Most come away with many new ideas and questions for how to get more information.

PRESS GANEY RESULTS

- **N=3**
- >94%tile when compared to other providers at this site and within OHSU for the following questions:
  1) Provider explained in a way you understand
  2) Provider listened carefully to me
  3) Given easy to understand instructions
  4) Provider showed me respect
  5) Provider spent enough time with me

CASES

- 40yo male
- Chief complaint: major depressive disorder with anxiety
- Problem list: cerebral palsy, epilepsy, obstructive sleep apnea, hyperlipidemia, GERD, chronic constipation, hypertension
- HPI:
  - Long history of depression. In recent years anxiety has been most prominent although at this time depression is worse
  - Was recently started on sertraline by PCP
  - Sees a mental health therapist regularly

- Social:
  - Exercise: walks 6 miles per day
- Diet:
  - eating meat but higher quality and leaner
  - Breakfast: grain with greens, 2x water than previously, only vegan milks. Organic when can afford to. Chlorella drinks that are whole food based.
  - Lunch: Fast food - tries to choose fish option. When at home, chooses healthier organic products. Bought over $100 in vitamins recently (high quality and vegan) - fish oil w coq10, vitamin D daily (10,000 units?), garlic capsules occasionally, chlorella blend, probiotic 50 billion CFU x 2 daily, enzymes with each meal (doesn't need to take omeprazole)
  - Dinner: Prepackaged usually - Amy's meals

- Treatments tried:
  - Pyrroloquinoline quinone: supports cognitive performance, including memory and attention
  - 5-hyroxytryptopan: used to increase serotonin levels
  - L-theanine: relaxation without sedation
  - Ashwagandha: reduce insomnia, fatigue and symptoms of depression
  - Rhodiola: reduce fatigue, may help cognition
  - Medicinal mushrooms

- Labs:
  - Hct 41
  - Ferritin 168
  - B12 346
  - TSH 3
  - Na 136/K 3.6 (low)/Glucose 106/Creatinine 0.99/AST 21/ALT 27
  - Vit D 25

- Recommendations:
  - 1) Lavela or Calm Aid: these are forms of oral lavender to help with both anxiety and depression, take this once daily
    - https://www.amazon.com/Natures-Way-non-drowsy-clinically-gluten-free/dp/B007TYY2JA
    - You can take this along with an anti-depressant
    - Since sertraline was just started will wait before starting anything else specifically for depression
  - 2) Magnesium: 400-600mg of natural calm once nightly before bed
  - 3) Look for an art meet up group or open studio, we will look for one as well (*engaged Richmond Clinic Resource specialist to help with this)

- 4) Sleep:
  - go to bed ideally at 10pm, go to bed a the same time each day
  - keep the temperature of your room at 65 or less
  - ear plugs
  - mask
  - keep your cat out of the bedroom
  - use a fan as well as the white noise
- 5) Acupuncture: schedule visits here (at Richmond) or you can be referred to the Pain center for acupuncture

- 6) Diet:
  - cook meals at home whenever possible instead of packaged meals
  - bring food from home when possible instead of fast food
  - try cooking once weekly and save some for left overs
- 7) Exercise: keep up the walking
  - try yoga here at Richmond on Tuesdays
- 8) Continue to follow up with neurology to discuss the stimulator

LAVENDER OIL EXTRACT (SILEXAN) - OVERVIEW

- Anxiolytic effects demonstrated in several studies
  - Has been studied previously for sub-syndromal anxiety disorder (restlessness, agitation, and disrupted sleep)
  - Compared with lorazepam in patients with GAD
    - Both reduced HAM-A total score reduction over 6 weeks.
- Has been prescribed in Germany, Silexan 80 mg daily for restlessness related to anxious mood.

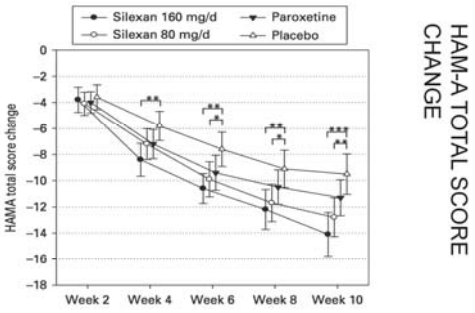
SILEXAN STUDY

- Population: Adults 18-65 yo with GAD
- Intervention:
  - 80 mg lavender oil (Silexan)
  - 160mg mg lavender oil (Silexan)
  - Paroxetine (Paxil) 20mg
- Comparison: Silexan compared to Paroxetine and Placebo
- Outcome: Effectiveness of Silexan in reducing anxiety

Lavender Oil Preparation Silexan is effective in generalized anxiety disorder- A Randomized, Double comparison to placebo and Paroxetine By Kasper et al.International Journal of Neuropsychopharmacology, 2014

SILEXAN STUDY

- The average score reductions between the beginning and end of randomized treatment:
  - 14.1 ± 9.3 points for Silexan 160 mg/d
  - 12.8±8.7 points for Silexan 80mg/d
  - 11.3±8.0 points for paroxetine



HAM-A TOTAL SCORE CHANGE

Fig. 2. HAMA total score change (full analysis set, means and S.D., last observation carried forward; HAMA: Hamilton Anxiety Scale; two-sided *t*-tests: *$p<0.05$, **$p<0.01$, ***$p<0.001$, angle brackets indicate which group was compared to placebo).

- Silexan 160 mg/d group:
  - 73 of 121 participants (60.3%) were classified as responders
  - 56 (46.3%) were in remission
- Silexan 80 mg/d group:
  - 70 of 135 participants (51.9%) were classified as responders
  - 45 (33.3%) were in remission
- Paroxetine group:
  - 5 of132 participants (43.2%) were classified as responders
  - 45 (34.1%) were in remission
- Placebo group:
  - 51 of 135 participants (37.8%) were classified as responders
  - 40 (29.6%) were in remission

CONCLUSIONS

- Silexan is efficacious in treating GAD
- Silexan is well tolerated by patients with GAD
- Silexan can be used in a range of doses 80 - 160mg/d
- No need for titration as there are no withdrawal symptoms with Silexan

ADVERSE EVENTS

- Compared to paroxetine the rates of patients with AEs were:
- 15.9% (4.5–26.6%) lower for 160 mg/d Silexan dosing
- 6.1% (−5.4–17.3%) lower for 80 mg/d Silexan dosing
- Unlike paroxetine, the observed AE rates for Silexan did not exceed those reported during treatment with placebo.

RHODIOLA

- Two review articles (2011 and 2012): 15 studies including 575 people.
  - May **enhance physical performance** and **ease mental fatigue**
  - limited quantity and quality of available evidence did not allow firm conclusions to be made
  - Hung SK, Perry R, Ernst E. The effectiveness and efficacy of Rhodiola rosea L.: a systematic review of randomized clinical trials. *Phytomedicine.* 2011;18(4):235-244.
  - Ishaque S, Shamseer L, Bukutu C, et al. Rhodiola rosea for physical and mental fatigue: a systematic review. *BMC Complementary and Alternative Medicine.* 2012;12:70.
- A small, NCCIH-supported study tested rhodiola against the drug sertraline and a placebo (2015)
  - Included **mild-to-moderate major depressive disorder**
  - all were **similarly effective in reducing depressive symptoms**
  - people who took rhodiola had fewer side effects
  - More powerful studies needed
  - Mao JJ, Xie SX, Zee J, et al. Rhodia rosea versus sertraline for major depressive disorder: a randomized placebo-controlled trial. *Phytomedicine.* 2015;22(3):394-399.

CASE 2

- 61yo female
- Chief Complaint: anxiety
- Problem list: cervical spondylosis, hypothyroidism, osteoporosis, PTSD and generalized anxiety
- HPI: Patient with a long history of anxiety that has been worsening lately. She was sexually abused for an extended period as an adult and is still dealing with this now. Panic attacks that improve with meditation. She has a really hard time sleeping, goes to bed quite late and then sleeps in. She experiences significant fatigue, chronic constipation and headaches. She is followed by a psychiatrist who is currently weaning her risperidone.

- Social:
  - Energy Level: Dragging ("whip and chain to get going") while doing the exercise, feel mildly better afterwards.
  - Stress Level: Money is a stress, business is stressful "getting clients", harder now because used to advertise on Craigslist but not able to do that anymore (1 year ago). "It's scary". Has food stamps, $650/mo for housing, feels that's fairly stable.
  - Activity: goes to the gym, feels "I was addicted to exercise, exercising too much". Was doing 2 hrs, 3x/week, would walk ~50 mins on other days. Now walking ~30 mins on alternate days, 20 mins on treadmill and 10 mins on arm bike every other day. Feels is able to get up earlier with slight decrease in exercise.
  - Sleep Habits: See above, difficulty falling asleep, light sleeper.

- Diet History: Hx bulemia and anorexia. Now tries to eat healthy - mainly vegetables, some meat (mostly turkey, sardines, occasional red meat, difficult to eat meat given low income). Yesterday's meal recall below:
  - Breakfast: berries, protein powder, green banana flower, chia seeds, flaxseeds. Hot chocolate.
  - Lunch: cooked carrots, riced cauliflower, wedge laughing cow cheese
  - Dinner: salad (pumpkin seeds, tomatoes, olives, cucumber, balsamic vinegar)
  - Second dinner: Broccoli, cauliflower
  - Snacks: occasional nuts (peanuts/walnuts/almonds), seeds (sunflower)
  - Drinks: herbal teas (peppermint), no coffee. "Ice" beverages - 1/4 at night.

- Mindfulness/Spiritual History: Meditation. Connection with Jesus is really important to her, doesn't like the dogma of church, "I like the heart connection with Jesus". Considers self a Christian.
- Hobbies/leisure: 2x/mo goes to hear blues and dancing with a friend. Hangs out with a friend every Saturday - watch movies.
- Stress management: Meditation, counseling. Tried deep breathing exercises.

- **Supplements:**
  - Probiotic
  - Multivitamin
  - Calcium
  - Vitamin D
  - Amino acid complex - thyroid support, originally prescribed when she was having eating disorder and ND was concerned that she wasn't getting enough meat
  - Turmeric - taking for inflammation (torn TFCC in R wrist, when don't take turmeric wrist throbs, bulging discs in cervical region, stenosis in neck)
  - Iron - Takes with multivitamin

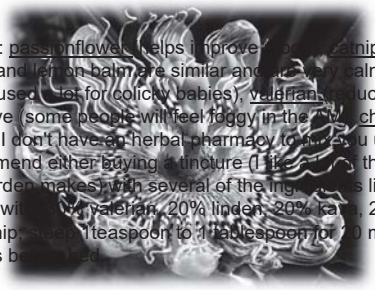
- **Medications:**
  - Armor thyroid
  - Risperidone
  - Belsomra PRN

RECOMMENDATIONS

- **Sleep:**
  - Have a sleep ritual:
    - take a warm bath or shower
    - go to bed at the same time and wake at the same time
    - turn down the lights in the house
    - drink tea, consider Nighty Night by Traditional Medicinals
    - read
  - Environment:
    - keep your bed room cool, dark and quiet
    - consider white noise
    - no electronics in the bedroom (and no screens 30 min before bed)

- **Sleep, cont.**
  - Try meditation or progressive relaxation before you sleep
  - Get out of bed if you are not asleep within 30 min or are awake in the middle of the night for more than 30 min
  - Keep a journal- write down the things that you are worried about and set the intention that you will come back to this in the morning after your set wake up time
  - Exercise during the day (not right before bed)
  - No caffeine after 12pm
  - Melatonin: 1.25 mg 30 min before bed; if you take 1mg you can re-dose if you are still having a hard time falling asleep; max 3mg and don't take more after 3am. Try moving it 15 minutes earlier per night as tolerated.
  - Magnesium (Natural Calm brand) : Powder, start at 200 mg in water, increase to 400 or 600 if needed.

- **Sleep, cont.**
  - Helpful herbs: passionflower (helps improve sleep), catnip, lemon balm (catnip and lemon balm are similar and are very calming, reduce anxiety, also used a lot for colicky babies), valerian (reduces anxiety and is a mild sedative (some people will feel foggy in the AM), chamomile, linden flower: Since I don't have an herbal pharmacy to make you up a tincture I would recommend either buying a tincture (I like Herb Pharm) the formulations that Wish Garden makes with several of the ingredients listed above or making a tea with 20% valerian, 20% linden, 20% catnip, 20% chamomile and 10% catnip: steep 1 teaspoon to 1 tablespoon for 10 min and drink 1 cup 2-3 hours before bed.



- **GI distress**
  - Mental health is a very important aspect of treatment for GI disorders:
    - we recommend that you continue your regular counseling
    - we recommend daily mindfulness- there are several apps that can be used to access mindfulness routines: Insight Timer, Breath, Calm, Buddhify, Headspace
  - Supplements:
    - Find a probiotic containing the strain *Lactobacillus Casei Shirota* - helps with anxiety and digestive difficulties
    - enteric coated peppermint oil, start with 1 tablet three times a day between meals (make sure that it is enteric coated); this is helpful for intestinal cramping
    - try adding bitters such as iberogast or swedish bitters (helpful for digestion)

- **Anxiety:**
  - Try GABA 1 capsule before bedtime, can increase to 3 if needed
  - CalmAid (lavender oil) twice daily
  - 4-7-8 breathing / 4-4-4 breathing (see below)

THE 4-7-8 (OR RELAXING BREATH) EXERCISE

- This breathing exercise is utterly simple, takes almost no time, requires no equipment and can be done anywhere. Although you can do the exercise in any position, sit with your back straight while learning the exercise. Place the tip of your tongue against the ridge of tissue just behind your upper front teeth, and keep it there through the entire exercise. You will be exhaling through your mouth around your tongue; try pursing your lips slightly if this seems awkward.
- Exhale completely through your mouth, making a whoosh sound.
- Close your mouth and inhale quietly through your nose to a mental count of four.
- Hold your breath for a count of seven.
- Exhale completely through your mouth, making a whoosh sound to a count of eight. Picture blowing a ping pong ball slowly across a table.
- This is one breath. Now inhale again and repeat the cycle three more times for a total of four breaths.

- Note that you always inhale quietly through your nose and exhale audibly through your mouth. The tip of your tongue stays in position the whole time. Exhalation takes twice as long as inhalation. The absolute time you spend on each phase is not important; the ratio of 4:7:8 is important. If you have trouble holding your breath, speed the exercise up but keep to the ratio of 4:7:8 for the three phases. With practice you can slow it all down and get used to inhaling and exhaling more and more deeply.
- This exercise is a natural tranquilizer for the nervous system. Unlike tranquilizing drugs, which are often effective when you first take them but then lose their power over time, this exercise is subtle when you first try it but gains in power with repetition and practice. Do it at least twice a day. You cannot do it too frequently. Do not do more than four breaths at one time for the first month of practice. Later, if you wish, you can extend it to eight breaths. If you feel a little lightheaded when you first breathe this way, do not be concerned; it will pass.
- Once you develop this technique by practicing it every day, it will be a very useful tool that you will always have with you. Use it whenever anything upsetting happens - before you react. Use it whenever you are aware of internal tension. Use it to help you fall asleep. This exercise cannot be recommended too highly. Everyone can benefit from it.

https://www.drweil.com/videos-features/videos/breathing-exercises-4-7-8-breath/

- **Meal recommendations:**
  - Try to include more healthy fats in your meals - olive oil, fish, avocado, nuts, seeds, nut butters
  - Try to have fats and protein with each meal

META-ANALYSIS EVALUATING SILEXAN

- Data collected from study inception- December 2017.
- Goal to evaluate effectiveness of Silexan vs placebo and other medicinal products in anxiety disorders and its adverse effects.
- Outcomes measured
  - Hamilton Anxiety Scale (HAMA)
  - Safety and tolerability
- Five studies identified (6-10 week trials)
  - 524 participants receiving Silexan 80mg
  - 121 participants receiving 160mg

Yap WS, Dolzhenko A V., Jalal Z, Hadi MA, Khan TM. Efficacy and safety of lavender essential oil (Silexan) capsules among patients suffering from anxiety disorders: A network meta-analysis. *Sci Rep*. 2019;9(1):18042. doi:10.1038/s41598-019-54529-9

RESULTS OF META-ANALYSIS

- Silexan superior to placebo.
- Silexan 160 mg -4.963 (-7.17- -2.76), P≤0.001
- Silexan 80 mg -3.820 (-5.26- -2.38), P≤0.001
- Paroxetine 20mg -3.72 (-7.44,-0.01)
- Placebo -2.76 (-4.99,- 0.53)
- Lorazepam 0.5 mg – Not effective in reducing HAMA score

SAFETY OF SILEXAN

- Adverse events:
  - GI (Nausea, eructation or breath odor, diarrhea.
  - Headaches
  - % of patients that experienced any side effects at all were very low.
  - No serious adverse events have been linked to Silexan use.

DISCUSSION

- Silexan 160mg was the most effective anxiolytic intervention used in these studies.
- Silexan 80mg was similar to 20mg of Paroxetine in reducing HAMA scores.

SILEXAN STUDIES

- Yap WS, Dolzhenko A V., Jalal Z, Hadi MA, Khan TM. Efficacy and safety of lavender essential oil (Silexan) capsules among patients suffering from anxiety disorders: A network meta-analysis. *Sci Rep*. 2019;9(1):18042. doi:10.1038/s41598-019-54529-9
- •Kasper S, Gastpar M, Müller WE, et al. Lavender oil preparation Silexan is effective in generalized anxiety disorder--a randomized, double-blind comparison to placebo and paroxetine. Int J Neuropsychopharmacol. 2014;17(6):859-869.
- •Kasper S, Gastpar M, Müller WE, et al. Silexan, an orally administered Lavandula oil preparation, is effective in the treatment of "subsyndromal" anxiety disorder: a randomized, double-blind, placebo controlled trial. Int Clin Psychopharmacol. 2010;25(5):277-287.
- •Woelk H, Schläfke S. A multi-center, double-blind, randomised study of the Lavender oil preparation Silexan in comparison to Lorazepam for generalized anxiety disorder. Phytomedicine. 2010;17(2):94-99.

MAGNESIUM

- Summary of Effects of Mg in Anxious Samples:
  - modest support that Mg intake confers benefits for individuals with pre-existing mild to moderate levels of anxiety.
  - Four out of eight studies reported positive effects of Mg intake on anxiety outcomes. (Not all studies were robust)
  - Doses used 200-300mg
  - Doses we most often use: 200-600mg
  - Boyle, N. B., Lawton, C., & Dye, L. (2017). The Effects of Magnesium Supplementation on Subjective Anxiety and Stress-A Systematic Review. *Nutrients*, *9*(5), 429. doi:10.3390/nu9050429

COMMONALITIES IN ALL TREATMENT PLANS

- Must address:
  - Mental health
  - Mindfulness
  - Nutrition/digestive health
  - Sleep
  - Exercise/physical therapy

REGULATION OF NATURAL PRODUCTS AND SUPPLEMENTS – DSHEA

- Dietary Supplement Health and Education Act of 1994
  - Supplements released before 1994 were "grandfathered," after are considered New Dietary Ingredients and must be reviewed for evidence of safety, or reasonable expectations of safety, before marketing (important: reviewed, not approved)
- Supplements are considered category of food
- FDA is responsible for taking action against unsafe products AFTER it reaches the market
- Manufacturer's responsibility:
  - Facilities are registered with the FDA
  - Must comply with Current Good Manufacturing Practices (cGMP) for quality control
  - Safety of the product
  - Labeling are truthful and not misleading
  - Submit to the FDA all serious adverse event reports

SUPPLEMENT LABELING REQUIREMENTS

- Three types of claims allowed:
  - Structure/function claim
  - Nutritional content claim
  - General health support
- Also must be included in labeling:
  - Standard of Identity
  - Container Count
  - Serving Size and Servings Per Container
  - Other Ingredients
  - Amount per Serving
  - Daily Value
  - Manufacture Date/Lot
  - Item Number

Supplement Facts

Serving Size 1 Tablet
Servings Per Container 60

Amount Per Serving		% Daily Value
Vitamin A	900 mcg	100%
Vitamin C	90 mg	100%
Vitamin D	20 mcg (800 IU)	100%
Vitamin E	15 mg	100%
Thiamin	1.2 mg	100%
Riboflavin	1.3 mg	100%
Niacin	16 mg	100%
Vitamin B6	1.7 mg	100%
Folate	680 mcg DFE (400 mcg folic acid)	170%
Vitamin B12	2.4 mcg	100%
Biotin	30 mcg	100%
Pantothenic Acid	5 mg	100%
Choline	550 mg	100%
Fluoride	20 mg	†

† Daily Value not established

THIRD PARTY QUALITY AND PURITY TESTING FOR NATURAL SUPPLEMENTS

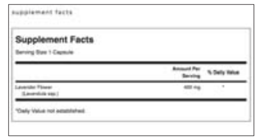
- USP (https://www.quality-supplements.org/)
  - Samples provided by manufacturer
  - Analysis of identity (active ingredient[s]), strength, purity (free of harmful levels of contaminants), and disintegration
  - Ensures products are made according to FDA and USP Good Manufacturing Practices
  - Free online listing of USP verified products
- NSF (http://info.nsf.org/certified/dietary/)
  - Samples provided by manufacturer
  - Analysis of identity (active ingredient[s]) and purity (free of undeclared ingredients and unacceptable levels of contaminants), toxicology review of product formulation
  - Free searchable database of NSF certified dietary supplements
- Consumer Lab (https://www.consumerlab.com/)
  - Does not accept samples from manufacturers
  - Analysis of identity (active ingredient[s]), strength, purity (free of contaminants), and disintegration
    - Product Reviews (CL-initiated)
    - Quality Certification Program (Manufacturer-initiated)
  - Requires subscription to view results

SO, IF A SUPPLEMENT IS VERIFIED BY USP, NSF, OR CONSUMERLAB.COM, IT'S GOOD – RIGHT?

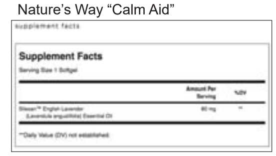
A supplement's labeling might be "accurate," but might not be a "good" supplement

- Correct standardization of products
  - Botanical products = appropriate plant species and parts
  - Non-botanical = appropriate salt forms

Swanson "Full Spectrum Lavender Flower"



Nature's Way "Calm Aid"



https://www.swansonvitamins.com/swanson-premium-full-spectrum-lavender-flower-400-mg-60-caps?SourceCode=INTL4071&DFA=1&UTM_Medium=Shopping&UTM_Source=GOOGLE&UTM_Campaign=SWAN_National_Gen_Shopping_Null_Null_All+Products+4055-01+Stress+and+Mood&UTM_Content=PRODUCT_GROUP&SourceCode=INTL4071&ds_rl=1262629&ds_rl=1263854&ds_rl=1262629&gclid=Cj0KCQiA2b7uBRDsARIsAEE9XpEuvjgCqSsea1FhztKfWkwZ8IbFVVqi00ofXTSRzV8fJ6gN66FrYgoaAjsyEALw_wcB
https://www.swansonvitamins.com/natures-way-calmaid-30-sgels?SourceCode=INTL4071&DFA=1&UTM_Medium=Shopping&UTM_Source=GOOGLE&UTM_Campaign=SWAN_National_Gen_Shopping_Null_Null_All+Products_Medium+4055-01+Stress+and+Mood&UTM_Content=PRODUCT_GROUP&SourceCode=INTL4071&ds_rl=1262629&ds_rl=1263854&ds_rl=1262629&gclid=Cj0KCQiA2b7uBRDsARIsAEE9XpFwl4W9GbLmB3YPrWdhAjYJYARri-3Empp9Rv_V0GIeUam5yz91kf0aAp6jEALw_wcB

RESOURCES USED AT CLINIC

- Natural medicines database
  - https://naturalmedicines-therapeuticresearch-com.nunm.idm.oclc.org
- Examine.com
  - https://examine.com
- Consumer Lab
  - www.consumerlab.com
- University of Wisconsin Integrative Medicine
  - https://www.fammed.wisc.edu/integrative/resources/modules/
- Rakel, D. (2018). *Integrative medicine*. Philadelphia: Elsevier.
    - Excellent integrative medicine textbook; available as hard copy or eBook. May be available through your institution's library resources.

QUESTIONS?

Updates on Evidence-based Smoking Cessation Interventions in Primary Care

DATE: February 11, 2020 PRESENTED BY: Joan Fleishman PsyD, Moira Ray MD, MPH, Steffani Bailey PhD

Conflict of Interest

- We have no relevant financial conflicts to disclose.

Agenda

- Current state of tobacco use in the U.S.
- Screening Recommendations
- Pharmacologic Management
- Behavioral Interventions
- Conclusions
- Questions?
- Resources

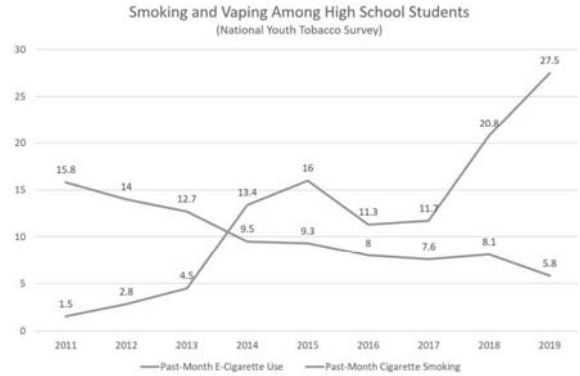
Acknowledgment

- Rx for Change
- https://rxforchange.ucsf.edu/

13.7% in 2018

Adult Smoking 2017

CDC. https://www.cdc.gov/media/releases/2018/p0118-smoking-rates-declining-infographic.html



https://theglobepost.com/2019/10/18/evali-vaping-disease/

Both smoking & vaping are not safe.

We know a lot more about smoking...

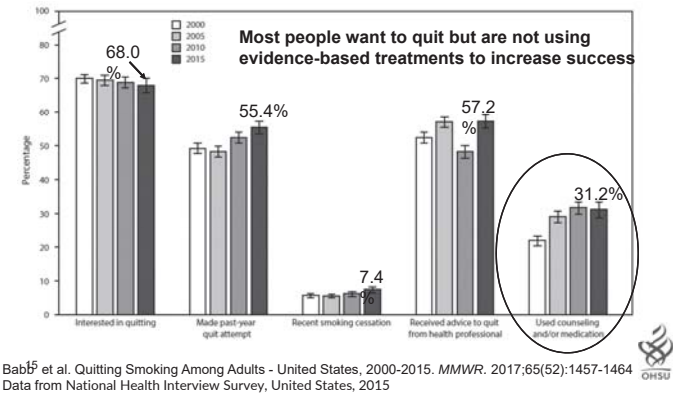
Compounds in Tobacco Smoke

An estimated 4,800 compounds in tobacco smoke, including 16 proven human carcinogens

Gases	Particles
▪ Carbon monoxide	▪ Nicotine
▪ Hydrogen cyanide	▪ Nitrosamines
▪ Ammonia	▪ Lead
▪ Benzene	▪ Cadmium
▪ Formaldehyde	▪ Polonium-210

Nicotine is the addictive component of tobacco products, but it does NOT cause the ill health effects of tobacco use.

How do we help?



Babb et al. Quitting Smoking Among Adults - United States, 2000-2015. *MMWR*. 2017;65(52):1457-1464
Data from National Health Interview Survey, United States, 2015

Ask about smoking and let them know you have effective tools to help them quit.

The 5 A's Model

- **ASK** about tobacco
- **ADVISE** to quit
- **ASSESS** willingness to make a quit attempt
- **ASSIST** in quit attempt
- **ARRANGE** follow-up

Fiore, M. C., Jaen, C. R., & Baker, T. B. (2008). A clinical practice guideline for treating tobacco use and dependence: 2008 update a U.S. public health service report. American Journal of Preventive Medicine, 35(2), 158-176. doi: 10.1016/j.amepre.2008.04.009

Brief Counseling: Ask, Advise, Connect

- Brief interventions shown to be effective
- In the absence of time or expertise in cessation counseling, connect patient to:
  - A behavioral health specialist, nurse, pharmacist, or other clinician, for additional counseling
  - A local group program
  - The toll-free telephone quit line:
    1-800-QUIT-NOW

Brief interventions can be achieved in minutes

Tobacco Dependence: A Two-Part Problem

Tobacco Dependence

Physiological	**Behavioral**
The addiction to nicotine	The habit of using tobacco
↓ Treatment	↓ Treatment
Medications for cessation	Behavior change program

Treatment should address the physiological **and** the behavioral aspects of dependence.

Nicotine Withdrawal Symptoms

- Irritability/frustration/anger
- Anxiety
- Difficulty concentrating
- Restlessness/impatience
- Depressed mood/depression
- Insomnia
- Impaired performance
- Increased appetite/weight gain
- Cravings

Most symptoms manifest within the first 1–2 days, peak within the first week, and subside within 2–4 weeks.

Pharmacotherapy

"Clinicians should encourage *all patients* attempting to quit to use *effective medications* for tobacco dependence treatment, except where contraindicated or for specific populations* for which there is insufficient evidence of effectiveness."

** Includes pregnant women, smokeless tobacco users, light smokers, and adolescents.*

Medications significantly improve success rates.

Fiore et al. (2008). *Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline.* Rockville, MD: USDHHS, PHS, May 2008.

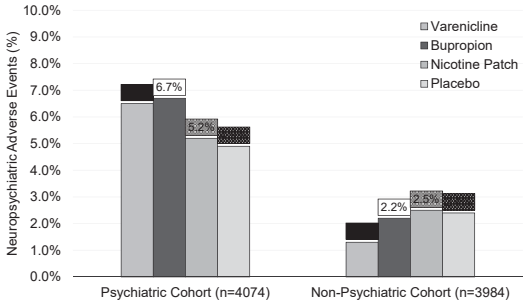
FDA-Approved Cessation Medications

Nicotine Replacement Therapy:
Patch
Gum
Lozenge
Spray
Inhaler

Non-nicotine agents:
Bupropion SR (Zyban)
Varenicline (Chantix)

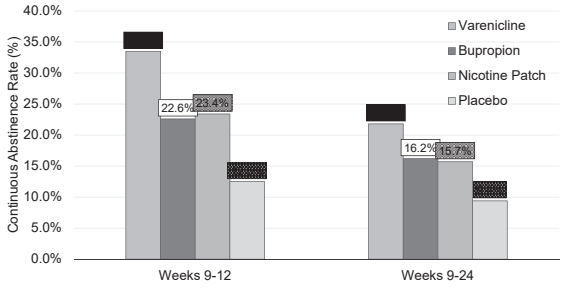
FDA boxed warning removed Dec 2016

EAGLES Study—Psychiatric Adverse Events



Anthenilli RM et al (2016). *Lancet*. 387: 2507-20.

EAGLES Study—Medication Effectiveness



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Anthenilli RM et al (2016). *Lancet*. 387: 2507-20.

Combination Pharmacotherapy

Regimens with enough evidence to be 'recommended' first-line

- **Combination NRT**

  Long-acting formulation (patch)
  - Produces relatively constant levels of nicotine

  PLUS

  Short-acting formulation (gum, inhaler, nasal spray)
  - Allows for acute dose titration as needed for nicotine withdrawal symptoms
- **Bupropion SR + Nicotine Patch**

Identify Key Issues to Streamline Product Selection*

- Do you prefer a prescription or non-prescription medication?
- Would it be a challenge for you to take a medication frequently throughout the day, e.g., a minimum of 9 times?
  - With the exception of the nicotine patch, all NRT formulations require frequent dosing throughout the day.
  - If patient is unable to adhere to the recommended dosing, these products should be ruled out as monotherapy because they will be ineffective.

Asking these two questions will significantly reduce the time required for product selection.

* Product-specific screening, for warnings/precautions/contraindications and personal preferences, is also essential.

NRT Best Practices

- **Nicotine Patch**: Leave patch on overnight
  - Unless patch disrupting sleep or causing vivid dreams
  - Can use gum in the morning if cravings are high)
- **Nicotine Gum**: Park and Chew
  - DO NOT continuously chew gum. Chew gum slowly until it tingles. Then park it between cheek and gum.
  - Repeat until most of the tingle is gone (about 30 minutes)
- Okay to use NRT if they smoke while trying to quit

30

Medications are effective, but just one component of comprehensive treatment for tobacco cessation.

Behavior change is equally important.

Behavior Change and Support

Behavioral Support Best Practices

- Establish a "why" for quitting
- Develop a plan for quitting
  - Review benefits of quitting
  - Discuss concerns/fears
  - Discuss triggers & coping strategies
  - Develop plan for handling urges
  - Discuss making changes prior to Quit Date
- Set quit date
- Provider support on Quit Date & close follow up
- Consider complementary modalities (acupuncture, psychiatry)

Assessment of Tobacco Use

1. Gather pattern of use
   - What kind of tobacco do you use?
   - How much tobacco do you use?
   - How often and in what situations do you use tobacco?
   - Everyday or on the weekends?
2. Gather history of cessation attempts (NRT, medications, what worked?)

Develop a Plan for Quitting

- "Individual Treatment Plan"
- Review benefits of quitting
- Discuss Concerns/Fears
- Assess Confidence and motivation
  - Develop Plan to address concerns
- Discuss Plan for Handling Urges
  - **Discuss pairing and conditioning**
- Discuss changes prior to Quit Date
  - Changing location of smoking
  - Brand switching
  - Delaying smoking
  - Tracking smoking patterns

Quit Day Support

- If still smoking (use MI to assess motivation to continue):
  - Identify triggers
  - Alternatives
  - Difficulties
  - What worked/What did not work
- If patient does not want to set another quit date, discuss option of cutting back with the goal of quitting
- Schedule a subsequent Quit Day or Follow-Up for Reduction Plan
- If quit:
  - Relapse Prevention
    - Discuss difference between a slip and relapse
    - Provide stress management/relaxation strategies

Relapse Prevention- 1 mo after Quit Date

- Re-asses current tobacco use status
  - Determine if patient has continued abstinence
- Discuss perceived benefits of cessation or reduction, successful strategies
- Encourage the patient to vigorously continue using coping strategies and medications that worked since Quit Date (anticipating upcoming stresses)
- Remind patient changes take time and sustained effort, continue using coping strategies
- Discuss the difference between a slip and a relapse
- Problem solve barriers, threats, and slips
- Relapse Prevention
  - Provide information about the most common high-risk situations for relapse: Query the patient about his/her highest risk smoking trigger that could lead to resumption of smoking after Quit Date

Quit Line

Registration:

- 1-800-QUIT-NOW
- www.quitnow.net

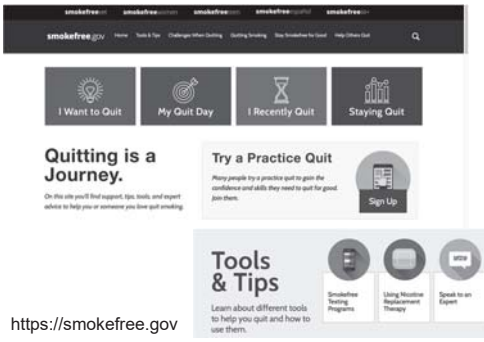
Eligibility:

- Must be at least 13 to enroll in counseling (and at least 18 to receive NRT)
- Must live in Oregon
- Must be ready to set a quit date in the next 30 days

What does the Quit Line Provide?

- Medications: up to 8 weeks of NRT (patch or gum)
- 1-4 Quit Line-initiated counseling calls
- Unlimited access to Quit Coach
- A Quit Guide
- Access to website to create a personalized quit plan
- Text message program
- Emails with tips to fight urges and prevent relapse

Online Resources for Patients



https://smokefree.gov

SmokefreeTXT

- 6-8 weeks
- Usually 3-5 messages per day
  - ➢ Provides tips, advice, and encouragement
- Keywords can be sent via text for extra help
  - ➢ "Text CRAVE, MOOD, or SLIP to 47848"

https://smokefree.gov

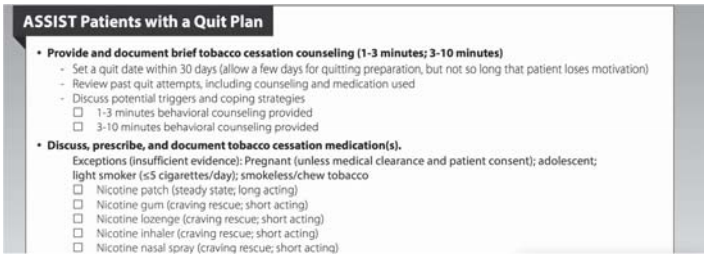
QuitGuide App

QuitStart for Teens

https://smokefree.gov

Million Hearts

https://millionhearts.hhs.gov/files/Tobacco-Cessation-Protocol.pdf
Includes a Tobacco Cessation Brief Clinical Intervention Protocol Checklist for Assisting Patients with a Quit Plan

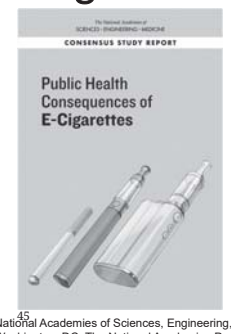


ASSIST Patients with a Quit Plan

- **Provide and document brief tobacco cessation counseling (1-3 minutes; 3-10 minutes)**
  - Set a quit date within 30 days (allow a few days for quitting preparation, but not so long that patient loses motivation)
  - Review past quit attempts, including counseling and medication used
  - Discuss potential triggers and coping strategies
  - ☐ 1-3 minutes behavioral counseling provided
  - ☐ 3-10 minutes behavioral counseling provided
- **Discuss, prescribe, and document tobacco cessation medication(s).**
  Exceptions (insufficient evidence): Pregnant (unless medical clearance and patient consent); adolescent; light smoker (≤5 cigarettes/day); smokeless/chew tobacco
  - ☐ Nicotine patch (steady state; long acting)
  - ☐ Nicotine gum (craving rescue; short acting)
  - ☐ Nicotine lozenge (craving rescue; short acting)
  - ☐ Nicotine inhaler (craving rescue; short acting)
  - ☐ Nicotine nasal spray (craving rescue; short acting)

A note about e-cigarettes…

E-cigarettes

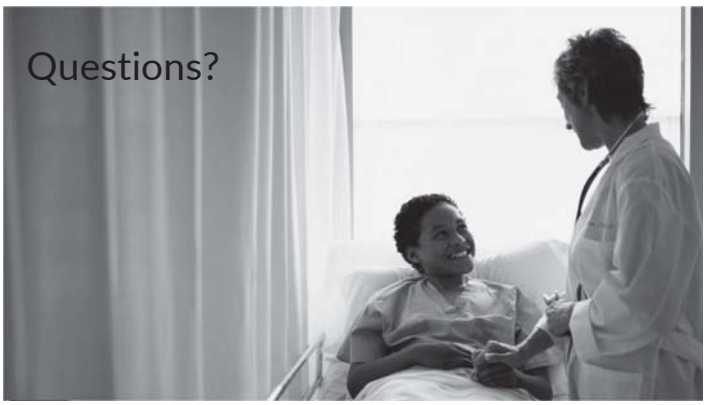


- Overall, there is *limited evidence* that e-cigs may be effective aids to promote smoking cessation.
- There is *insufficient evidence* from randomized controlled trials about the effectiveness of e-cigs as cessation aids compared with no treatment or to FDA–approved smoking cessation treatments.
- The evidence about harm reduction suggests that across a range of studies and outcomes, e-cigs pose less risk to an individual than combustible tobacco cigarettes.

National Academies of Sciences, Engineering, and Medicine. 2018. Public health consequences of e-cigarettes. Washington, DC: The National Academies Press.

Key Take Home Points

- Tobacco use is a chronic, relapsing condition
- It is a two part problem
- Medications can alleviate withdrawal symptoms while addressing behavioral change
- Black box warning removed
- Concerning vaping rates on the rise in adolescents
- Use your team and resources!



Thank You

MINDFULNESS FOR DEPRESSION

CATHERINE POLAN ORZECH M.A. LMFT

MAJOR DEPRESSIVE DISORDER DSM-5

- Depressed mood most of the day, nearly every day – sad, empty, hopeless
- Diminished pleasure in all or almost all activities
- Significant weight loss or gain
- Insomnia or hypersomnia
- Psychomotor agitation or retardation
- Fatigue or loss of energy
- Feeling worthless
- Difficulty concentrating or indecisiveness
- Recurrent thoughts of death

DEPRESSION LOOKS LIKE…

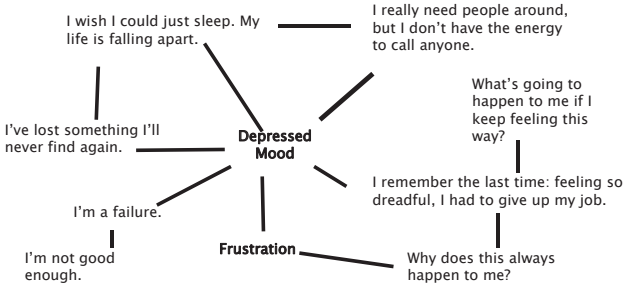
• "…Jane would often wake very early in the morning, unable to sleep, with a heavy feeling in her body and thoughts going round and round, impossible to switch off. She'd sometimes get up to make a cup of tea, sitting in the kitchen with a blanket around her shoulders, viewing whatever tidbits she could find on her phone, or trying to answer emails that had come through during the night. At last, exhausted, she'd go back to bed, only to find that the thoughts carried on, going round and round, but now a new voice: "this is terrible. You'll be too tired to think straight today. Why is this happening? Why can't you ever pull yourself together? What's wrong with you?"

UNHAPPINESS ITSELF IS NOT THE PROBLEM

Stage 1 = Unhappiness arises

Stage 2 = The unhappy mood brings up negative thinking patterns, feelings and memories for the past – this makes us more unhappy.

Stage 3 = We try to get rid of the unhappiness in ways that actually keep it going and just make things worse.



I AM DEPRESSED

PHYSIOLOGY OF SELF-COMPASSION AND SELF-CRITICISM (GILBERT, 2009)

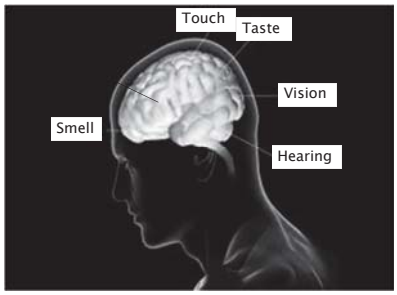
When we criticize ourselves we're tapping into the body's threat-defense system – amygdala gets triggered, we release cortisol and adrenaline, and get ready to fight, flee or freeze.

When the "threat" is to our self-concept – we feel inadequate or weak we end up attacking the problem – Ourselves!

This threat response causes even more stress and is related to conditions like anxiety and depression.

SELF-CRITICISM AND STRESS

WHAT IS MINDFULNESS?



RESOURCES FOR DEVELOPING MINDFULNESS

- The Oxford MBCT App
- The Head Space App
- The Mindfulness App
- The Mindful Self-Compassion Workbook (Kristin Neff & Chris Germer)
- Courses
  - Mindfulness-Based Stress Reduction (in-person) OHSU's March Wellness Center and in the community
  - Mindfulness-Based Cognitive Therapy (online) https://www.mindfulnessstudies.com/personal/mbct-online
  - Mindful Self-Compassion (online) https://centerformsc.org/lomsc

REFERENCES

- Teasedale, J., Williams, M., Segal, Z. (2014) *The mindful way workbook: an 8-week program to free yourself from depression and emotional distress.* New York: Guilford Press.
- Gilbert, P. (2009). *The compassionate mind: A new approach to life's challenges.* Oakland, CA: New Harbinger