Cardiology Updates

This meeting will be recorded and will be available at www.fmda.org/journalclub.php

FMDA Journal Club

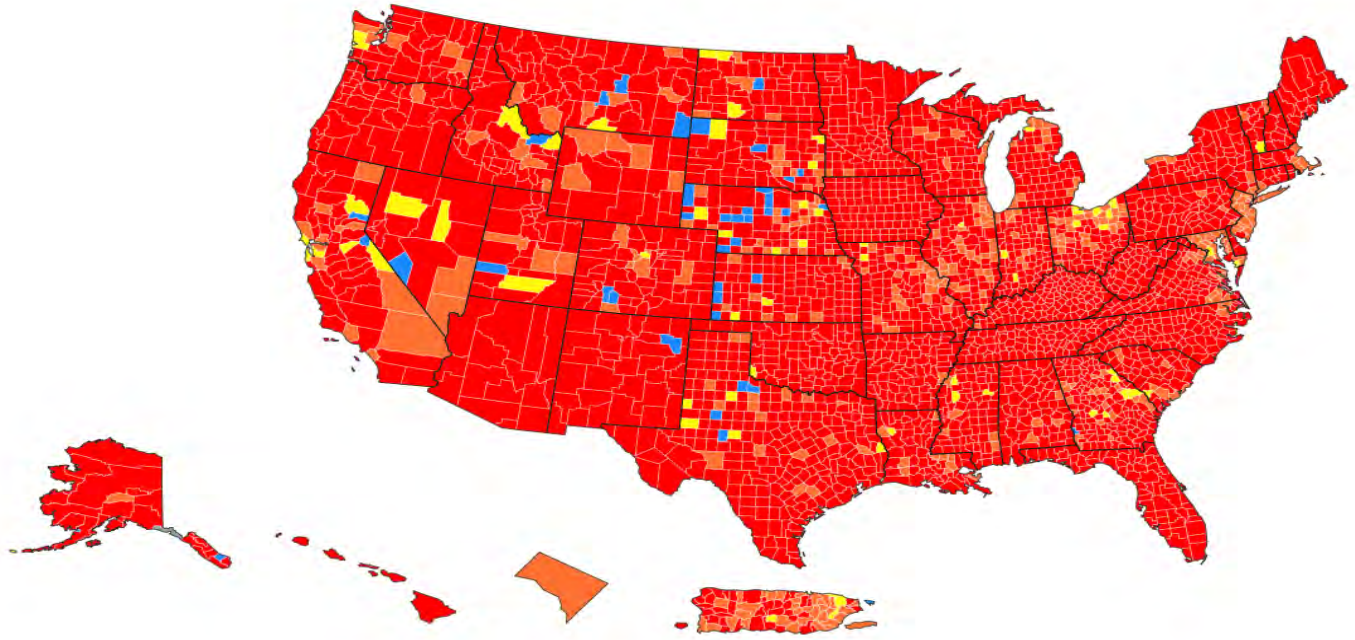
February 23, 2022
Bernardo J. Reyes, MD, CMD, AGSF; Shannu Satyavolu, MD – Special Guests
Diane Sanders-Cepeda, DO, CMD – Host

Agenda

- Hot Topics
- Atrial Fibrillation
- Open Discussion

Our Hot Topic is still COVID

Level of Community Transmission of All Counties in US



Community Transmission in US by County

	Total	Percent	% Change
High	2730	84.73%	-109.06%
Substantial	381	11.82%	8.54%
Moderate	68	2.11%	1.24%
Low	42	1.3%	-0.68%

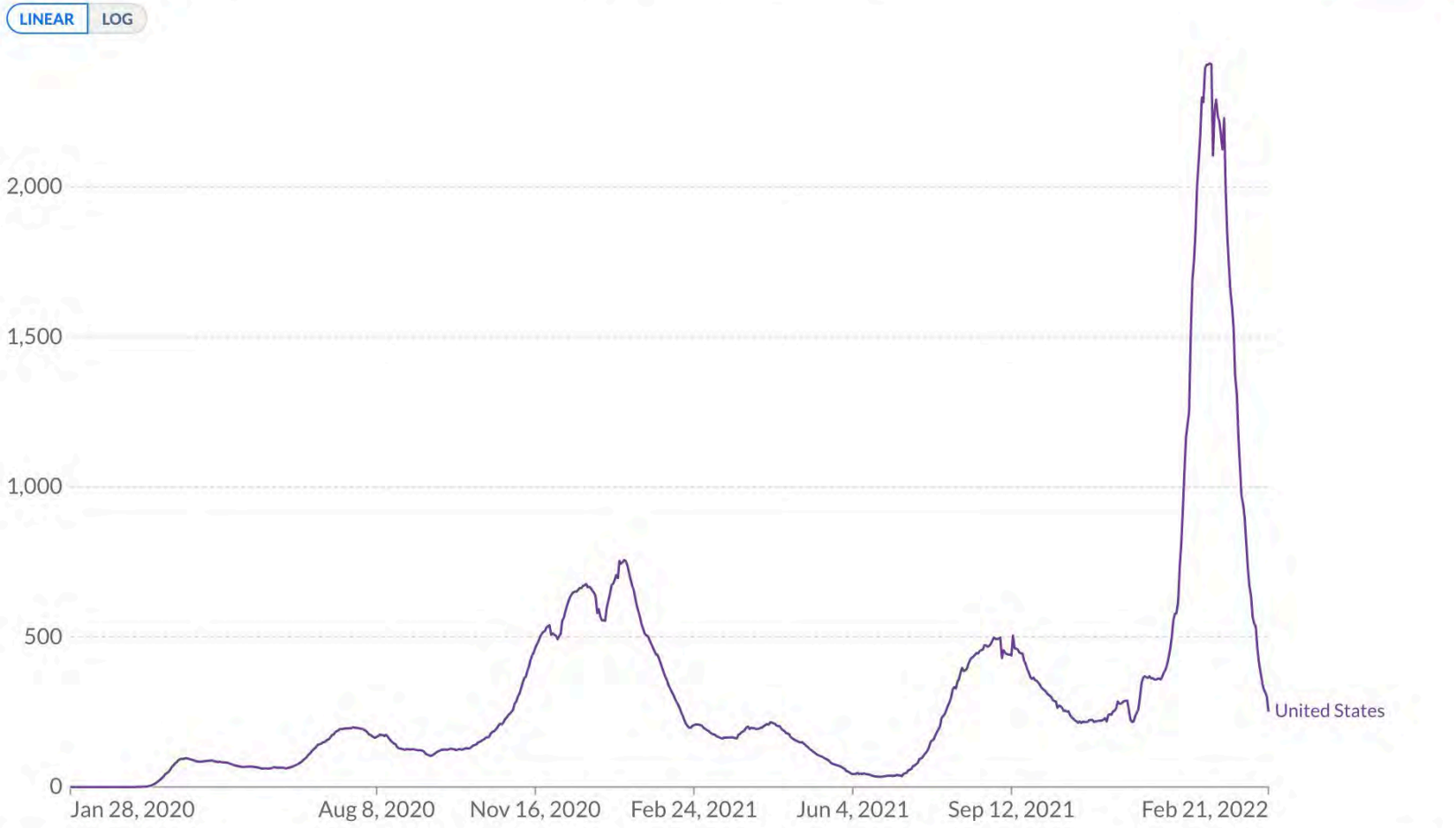
How is community transmission calculated?

Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World in Data

LINEAR LOG



Source: Johns Hopkins University CSSE COVID-19 Data

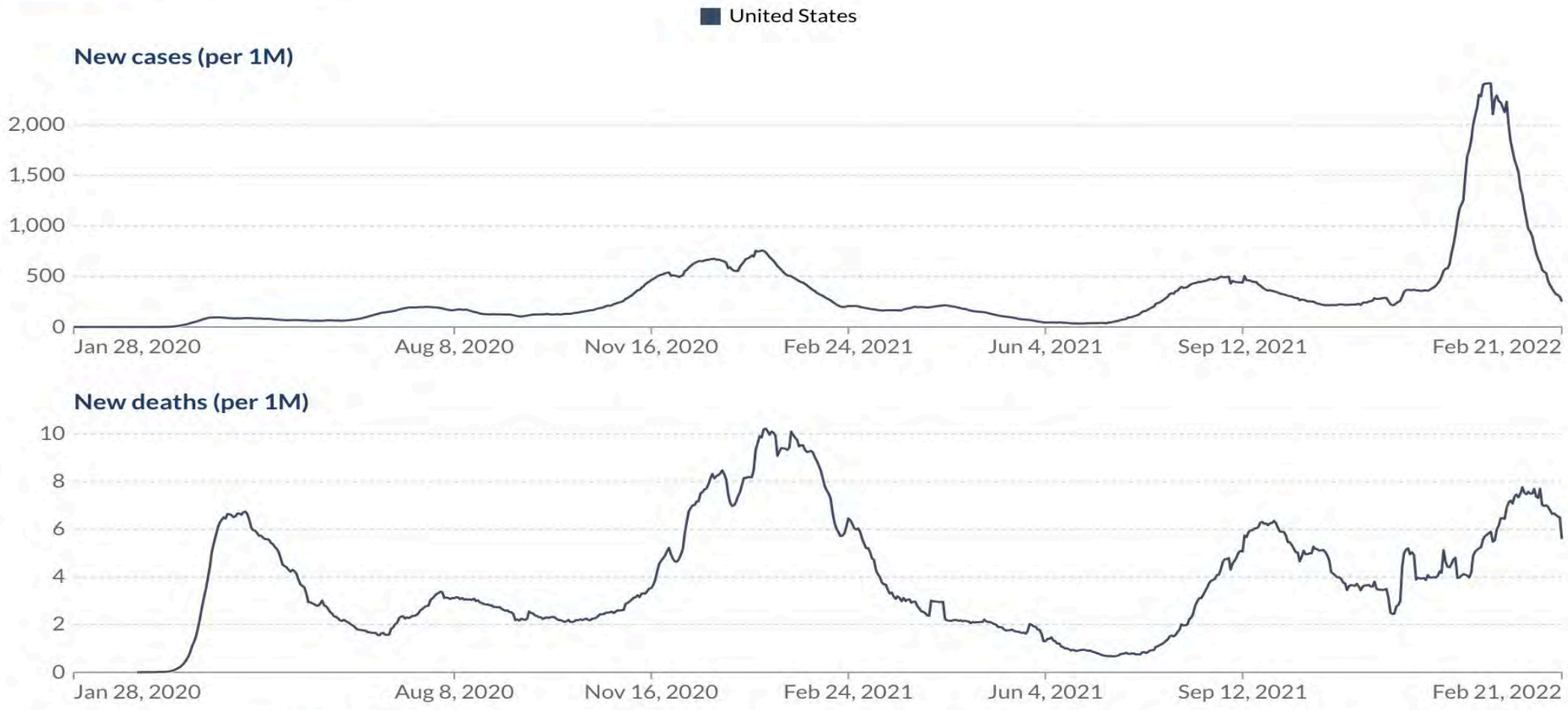
Jan 28, 2020 Feb 21, 2022

Daily new confirmed COVID-19 cases & deaths per million people

7-day rolling average. Limited testing and challenges in the attribution of cause of death means the cases and deaths counts may not be accurate.

Our World in Data

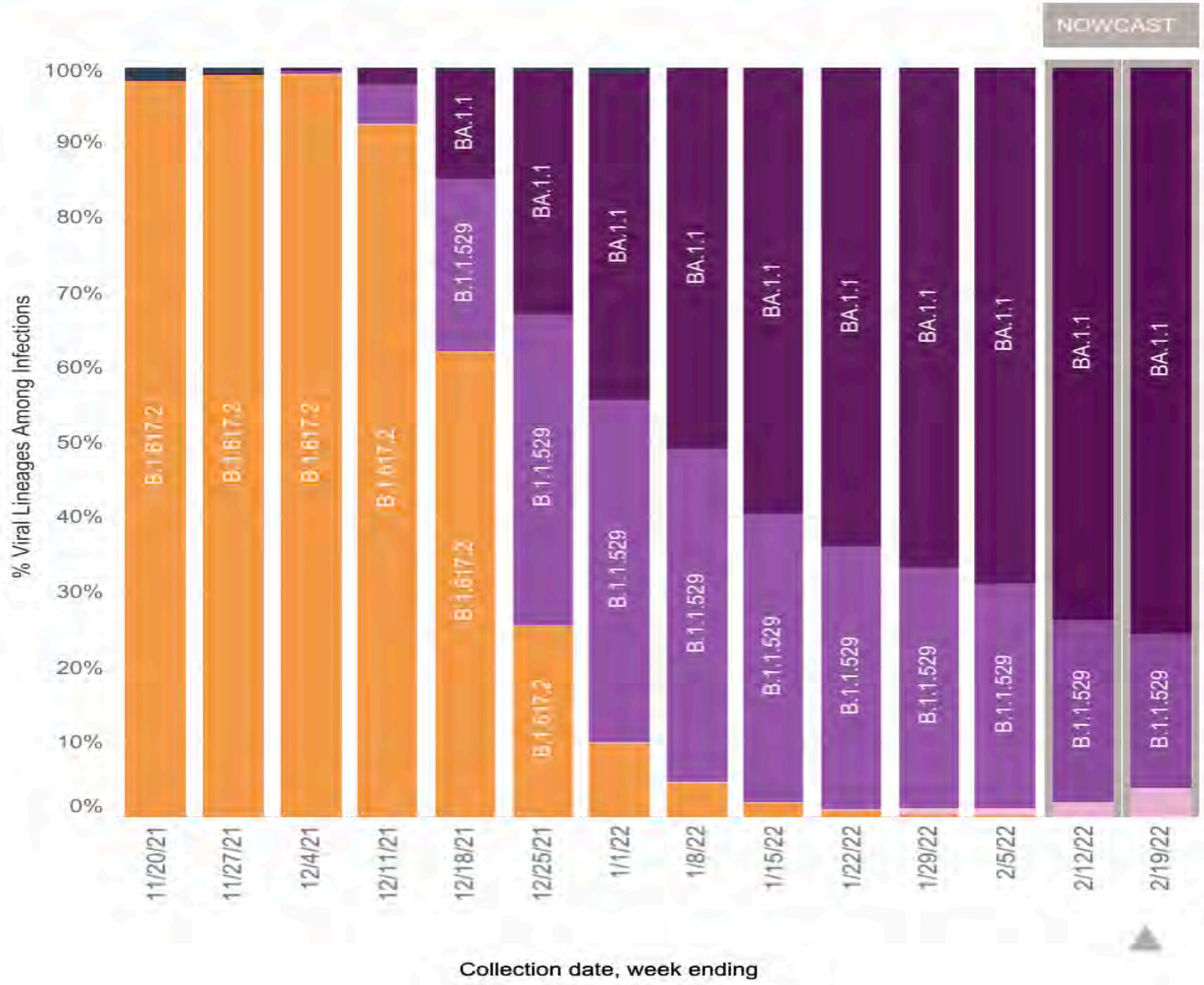
LINEAR LOG ☐ Uniform y-axis



Source: Johns Hopkins University CSSE COVID-19 Data

▶ Jan 28, 2020 ——— Feb 21, 2022

United States: 11/14/2021 – 2/19/2022



United States: 2/13/2022 – 2/19/2022 NOWCAST

USA

WHO label	Lineage #	US Class	%Total	95%PI
Omicron	BA.1.1	VOC	75.6%	71.1-79.7%
	B.1.1.529	VOC	20.6%	16.7-25.1%
	BA.2	VOC	3.8%	3.0-4.8%
Delta	B.1.617.2	VOC	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.0%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

\# AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1 and BA.3 are aggregated with B.1.1.529. For regional data, BA.1.1 is also aggregated with B.1.1.529, as it currently cannot be reliably called in each region.

What's the difference between an endemic, epidemic and pandemic disease?

ENDEMIC DISEASE
is constantly present in a certain population or region, with relatively low spread (or there may be periods when it doesn't affect people at all, if it is only present in the environment).

EPIDEMIC DISEASE
is when there is a sudden increase in cases spreading through a large population like a country (an outbreak is similar, but usually covers a smaller geographic area).

PANDEMIC DISEASE
is when there is a sudden increase in cases spreading through several countries, continents, or the whole world.

February is American Heart Month

Screening for Atrial Fibrillation in the Post-Acute and Long-Term Care Setting

Bernardo Reyes, MD, AGSF, CMD
Shannu Satyavolu, MD

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Bernardo Reyes, MD, FAGS, CMD
Shannu Satyavolu, MD

No Conflict of Interest

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Epidemiology of Afib.

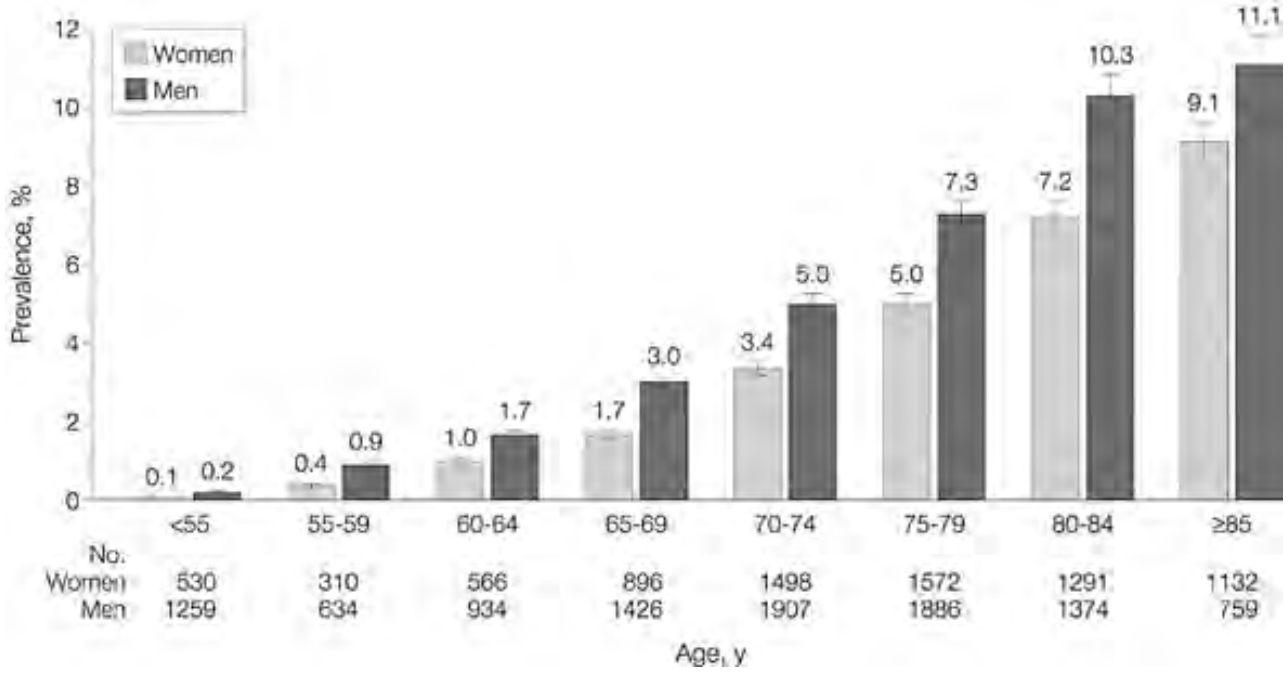
≈2.7–6.1 Million: number of people affected in the United States

prevalence in the general population increases steadily with advancing age, with 3.7–4.2% in those aged 60–70 years. Beyond the age of 80 years, prevalence can be as high as 10–17%

≈12.1–15.9 Million: number estimated to be affected in the United States by 2050

$26 Billion: estimated increase in annual healthcare costs from AF in the United States from $6 billion

Prevalence of Diagnosed Atrial Fibrillation Stratified by Age and Sex



A Global Burden of Disease 2010 Study

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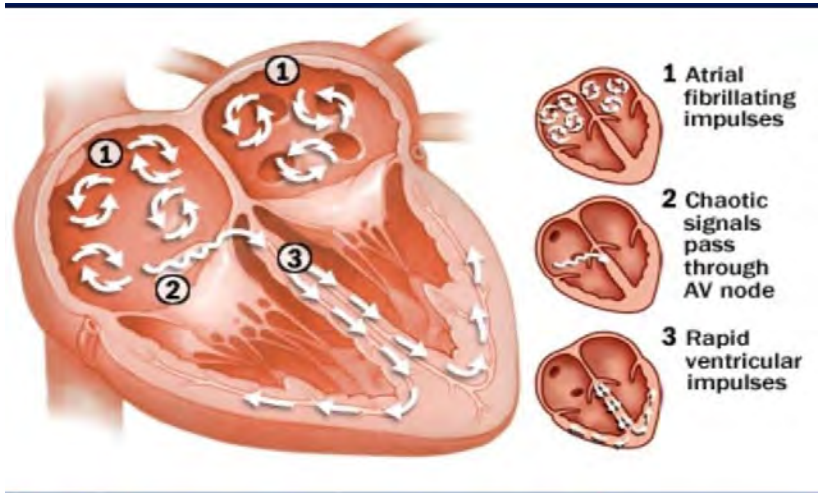
Afib. and Aging

- Requires an initiating trigger and an anatomical substrate
- Presence of multiple comorbidities adds to the complexity of establishing the impact of aging



Stretching of the atrial fibers due to atrial enlargement leads to a shorter refractory period and slower electrical conduction

Hypertension, ischemic heart disease, heart failure, valvular disease, and cardiomyopathy

Histopathological and atrial chamber abnormalities which result in myocardial fibrosis

Critical mass of abnormal tissue that can provoke atrial ectopic beats

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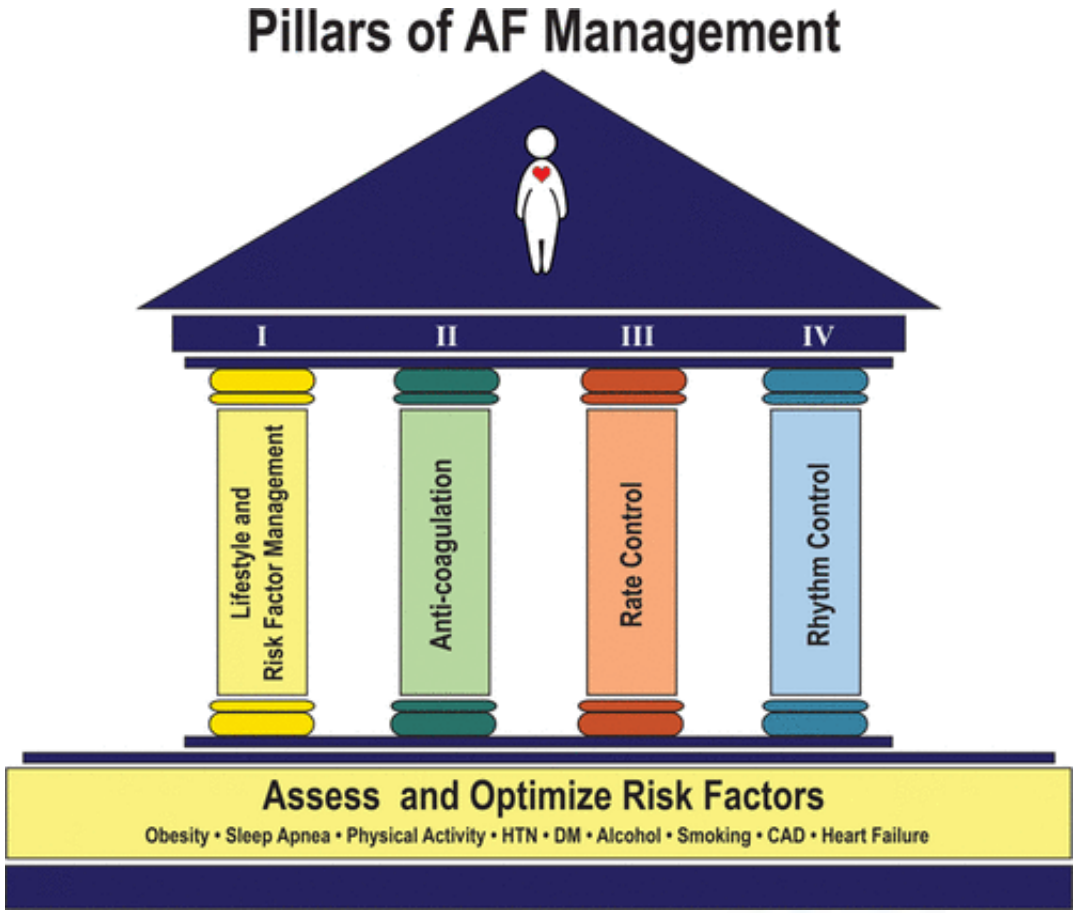
Other Risk Factors for Afib.

- Diabetes, hypertension, hyperthyroidism.
- Previous cardiothoracic surgery,
- Smoking, alcohol/drug use,
- Prior stroke, underlying heart disease,
- Sleep apnea, obesity,
- ECG features
  - left ventricular hypertrophy and
  - left atrial enlargement

Management of Afib.

- Management and treatment of this common arrhythmia in older people has proven to be a dilemma for many
- Heterogeneous group with functional, and social factors that contribute to their vulnerability, in addition to multimorbidity and polypharmacy
- Older people with frailty and AF are at risk of worse clinical outcomes.
- Benefits/Risk of Treatment



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Ref Ref

Case 1

- 81 y/o Female living in your ALF
- Found by CNA in the AM lying in bed disoriented
- PHMx of HTN, DM, Obesity
- Transferred via EMS to the local hospital
- P. Exam: BP 190/95 HR is 150 irregular. R hemiparesis, slurred speech and aphasia
- EKG Afib (new onset)
- Not a candidate for TPA or Thrombectomy
- Patient evaluated by Neurology
- Work up negative except for the presence of Afib on telemetry
- Patient discharged to Post-Acute Facility on oral AC
- Suffered fall 4 months after with resulting ICH and died in hospital

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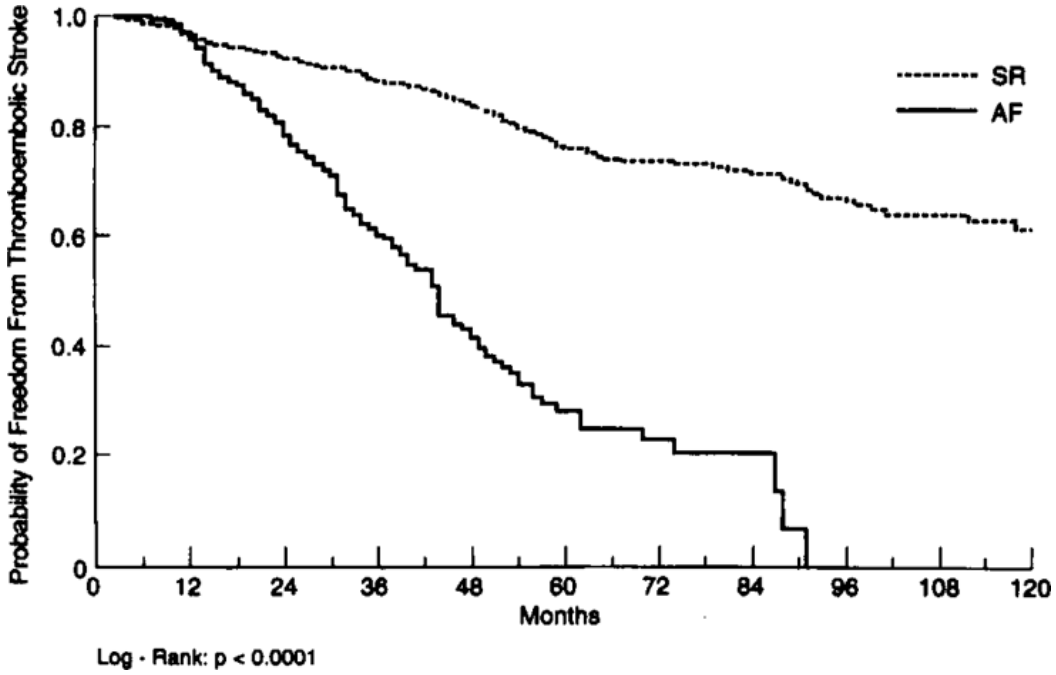
Avoidable?

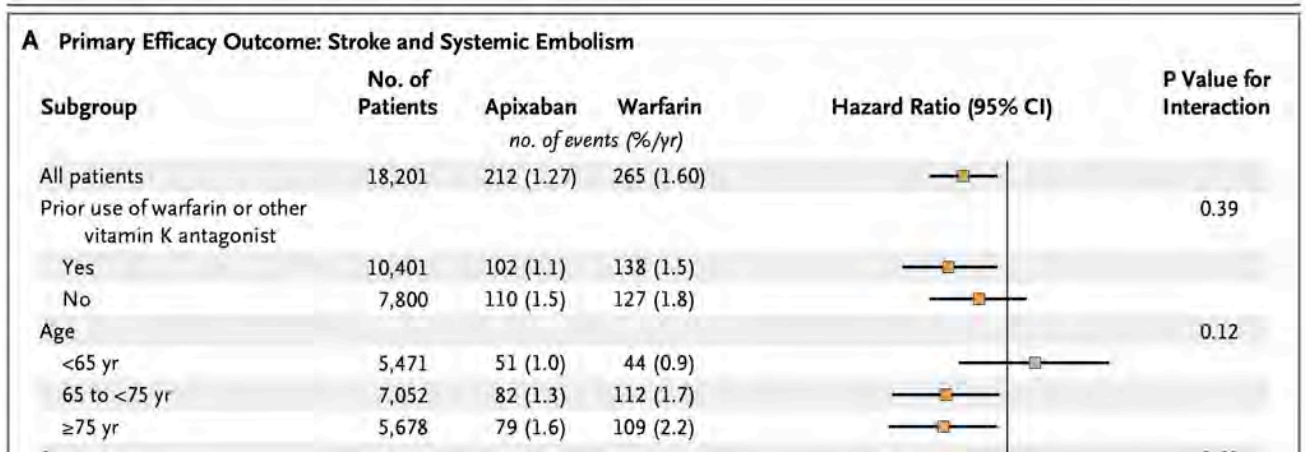
Rx of Afib. – Stroke/Mortality



Survival curves for development of new thromboembolic stroke in patients with sinus rhythm (SR) and atrial fibrillation (AF)

BENEFITS OF Rx

- Not only there is a thrombo-prophylaxis benefit but also a mortality benefits.
- Age independent (Coumadin or DOAC's)



A Primary Efficacy Outcome: Stroke and Systemic Embolism

Subgroup	No. of Patients	Apixaban	Warfarin	Hazard Ratio (95% CI)	P Value for Interaction
		no. of events (%/yr)			
All patients	18,201	212 (1.27)	265 (1.60)		
Prior use of warfarin or other vitamin K antagonist					0.39
Yes	10,401	102 (1.1)	138 (1.5)		
No	7,800	110 (1.5)	127 (1.8)		
Age					0.12
<65 yr	5,471	51 (1.0)	44 (0.9)		
65 to <75 yr	7,052	82 (1.3)	112 (1.7)		
≥75 yr	5,678	79 (1.6)	109 (2.2)		

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Rx of Afib. and Function

- Early recognition and treatment of AF is vital to improve physical function and reduce risk of deconditioning. Ref
- Greater incidence of cardio-embolic stroke among individuals with frailty compared with those without frailty Ref
- There is a relationship between the presence of frailty syndrome and the intensity of the symptoms and the acceptance of AF Ref
  - AF is independently associated with lower usual gait speed
- Self-reported syncope and adults aged 65-74 years with falls are twice as likely to have AF at physical examination Ref
- Increase risk of dementia among patients with Afib

Why (or not) Screening for Afib in PALTC?

The SAFE study. Routing practice vs. systematic (targeted and total population screening)

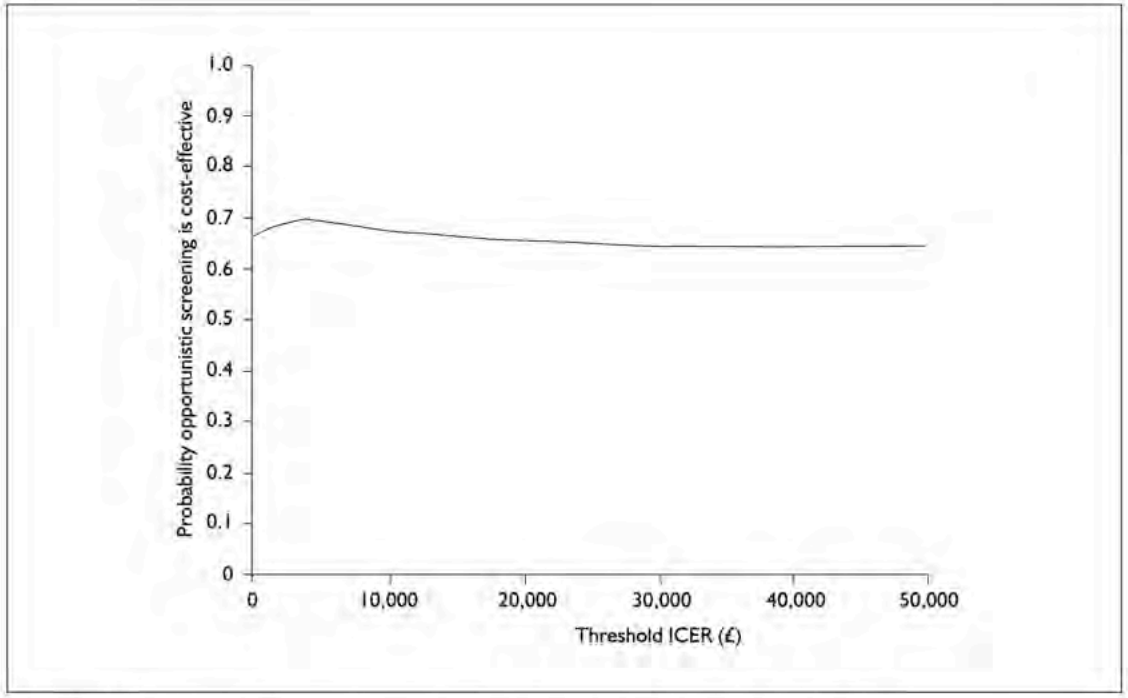

FIGURE 5 *CEAC for annual opportunistic screening compared with no screening in men, start age 65 years*

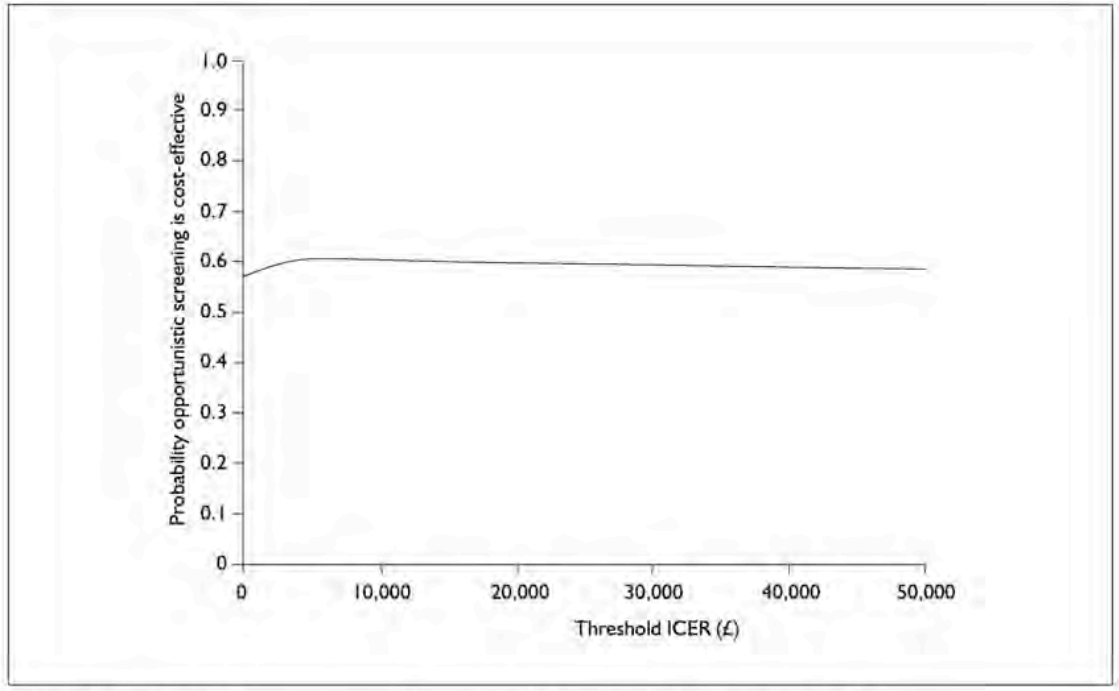

FIGURE 6 *CEAC for annual opportunistic screening compared with no screening in women, start age 65 years*

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The results of the SAFE Study show that utilizing broad screening might not be as cost effective as initially thought

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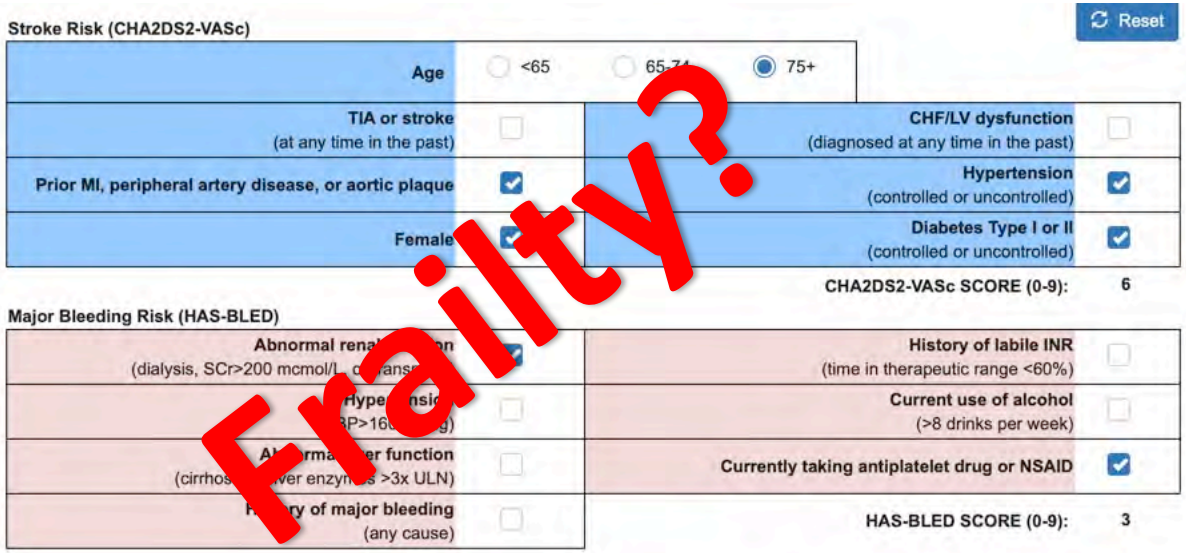
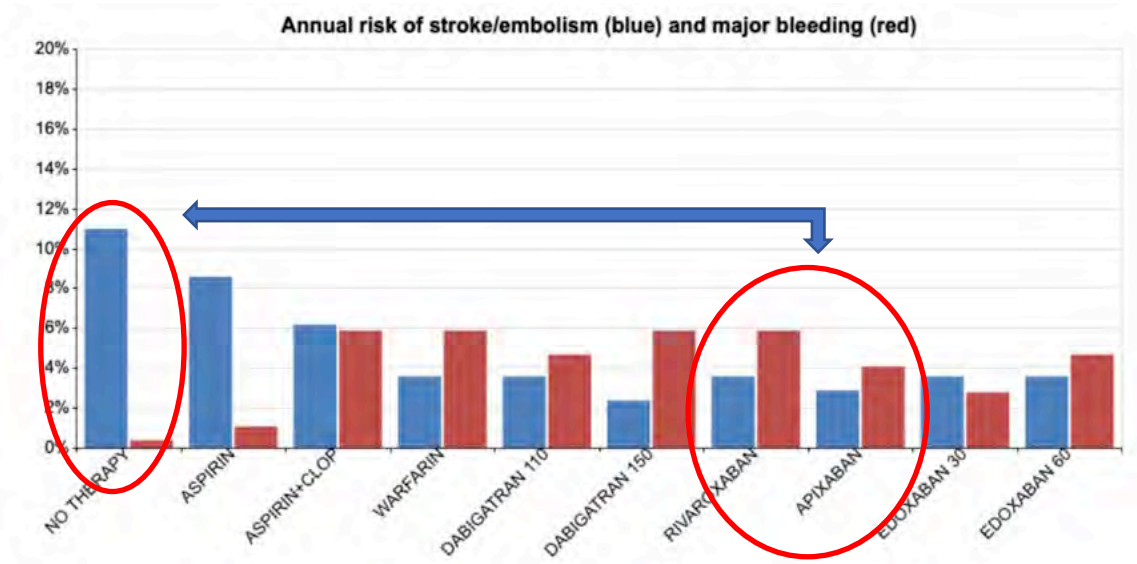
If Afib… then OAC?

SPARC Tool





- Among nursing home residents with AF and frailty, 70% of participants were eligible for OAC

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Why (or not) Screening for Afib in PALTC?

Benefits of Treatment

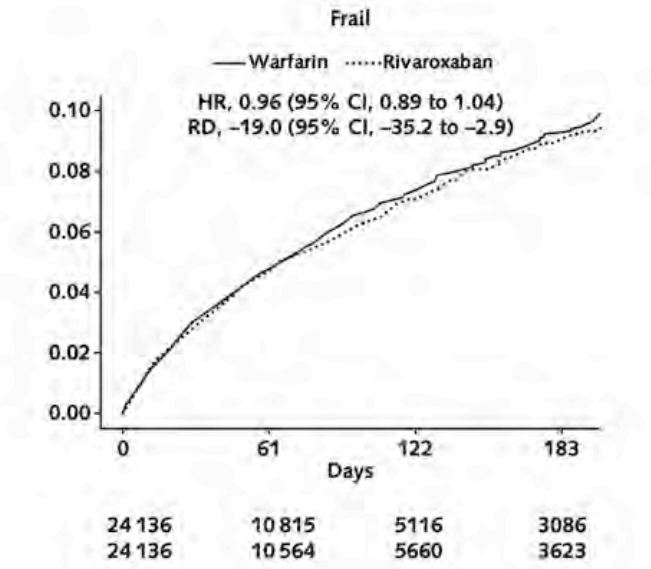
ORIGINAL RESEARCH **Annals of Internal Medicine**

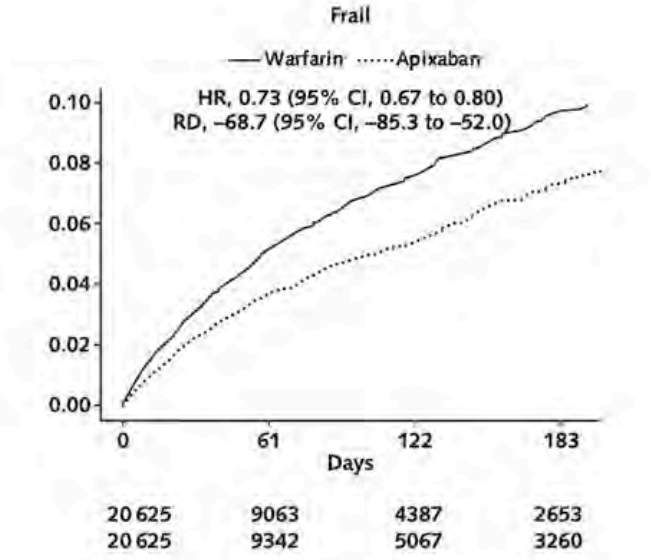
Frailty and Clinical Outcomes of Direct Oral Anticoagulants Versus Warfarin in Older Adults With Atrial Fibrillation

A Cohort Study

Ann Intern Med. 2021;174:1214-1223.

- Most older patients with AF, even if at increased risk of bleeding due to frailty, likely benefit from anticoagulation therapy





Cumulative incidence plots of a composite end point of death, ischemic stroke, or major bleeding of Medicare beneficiaries with AF who initiated anticoagulation.

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What Else is New

Jan 25, 2022

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What's New x USPSTF

- This recommendation applies to adults 50 years or older without a diagnosis or symptoms of AF and without a history of transient ischemic attack or stroke.
- Pulse palpation (considered usual care by the USPSTF) and screening with ECG in the detection of new cases of AF
- The USPSTF found trials that used an intermittent screening approach and trials that used a continuous screening approach.
  - SCREEN-AF
  - STROKESTOP
  - REHEARSE-AF

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Screening for Afib

Different intensities (intervals, and durations) of screening for AF are also being studied.

- 1-time screening strategies,
- intermittent screening strategies,
- and continuous screening strategies,

Continuous screening strategies yield the longest overall duration of screening.

Intermittent or continuous screening may be more likely to detect AF but also may be more likely to detect paroxysmal AF that occurs infrequently or is of short duration.

Was Not New x USPSTF after all…

- USPSTF did not find sufficient evidence to recommend for or against screening
- Several technologies have been proposed for screening for AF.

Table. Summary of USPSTF Rationale

Rationale	Assessment
Detection	• Inadequate evidence to assess whether 1-time screening strategies identify adults 50 years or older with previously undiagnosed AF more effectively than usual care. • Adequate evidence that intermittent and continuous screening strategies identify adults 50 years or older with previously undiagnosed AF more effectively than usual care.
Benefits of early detection and intervention and treatment	• Inadequate direct evidence on the benefits of screening for AF. • Inadequate evidence on the benefits of treatment of screen-detected AF, particularly paroxysmal AF of short duration.
Harms of early detection and intervention and treatment	• Inadequate direct evidence on the harms of screening for AF. • Adequate evidence that treatment of AF with anticoagulant therapy is associated with small to moderate harm, particularly an increased risk of major bleeding.
USPSTF assessment	Evidence is lacking, and the balance of benefits and harms of screening for AF in asymptomatic adults cannot be determined.

Abbreviations: AF, atrial fibrillation; USPSTF, US Preventive Services Task Force.

We have new technology to allows performing continuous monitoring

Persistent Afib due to atrial chamber changes more frequent among older adults

Paroxysmal Afib could be related to reversable causes such as sleep apnea.

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Why (or not) Screening for Afib in PALTC?

- The primary rationale for screening for AF in asymptomatic persons is to initiate oral anticoagulant medications in persons at sufficiently high risk to prevent a thromboembolic event.
- Afib is most prevalent in this population
- For approximately 20% of patients who have a stroke associated with AF, stroke is the first sign that they have the condition.
- PALTC is the population that is at the highest risk of suffering the effects of the disease (frailty)
- ***IF*** Afib is found, we tools and clinical skills to assess benefits vs. risks of treatment.

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If Screening for Afib in PALTC…

- Continuous Screening.
- Sensitive and Specific (risk of increase resource utilization)
- **Little or no need of dexterity from patient (passive role)**
- Target highest risks patients
- Do not target populations that will not benefit due to life expectancy and/or potential complications from Rx
- Treatment algorithms to avoid acute transfers

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Smart Phones

Diagnostic Accuracy of a Smartphone-Operated, Single-Lead Electrocardiography Device for Detection of Rhythm and Conduction Abnormalities in Primary Care

Ann Fam Med 2019;17:403-411.

- Validate a smartphone-operated, single-lead electrocardiography with integrated AF detection algorithm
- 214 patients from 10 Dutch general practices
- Patients held a smartphone with connected 1L-ECG while local personnel simultaneously performed 12L-ECG
- The AF detection algorithm had a sensitivity and specificity of 87.0% and 97.9%.
- The 1L-ECG as assessed by cardiologists had a sensitivity and specificity for any rhythm abnormality of 90.9%

Technology Works

↓

Study targeting patient patients known hx of Afib

↓

Requires dexterity

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Wearables Devices and Afib.

- Several devices cleared by the Food and Drug Administration (FDA)
- Such devices were reasonably sensitive and specific in diagnosing new-onset AF, albeit among populations with high disease prevalence.
- The FDA recently reorganized the Center for Device and Radiological Health to reduce burdensome premarket approval processes.
- Must accept any interference from primary users
- Afib –Sensitive Watches are highly sensitive for detection of AF and assessment of AF duration in an ambulatory population (vs. an insertable cardiac monitor)

Wearables Devices and Afib

Original Investigation | Cardiology

Association of Wearable Device Use With Pulse Rate and Health Care Use in Adults With Atrial Fibrillation

Libo Wang, MD; Kyron Nielsen, MPH; Joshua Goldberg, MD; Jeremiah R. Brown, PhD; John S. Rumsfeld, MD, PhD; Benjamin A. Steinberg, MD, MHS; Yue Zhang, PhD; Michael E. Matheny, MD, MS, MPH; Rashmee U. Shah, MD, MS

JAMA Netw Open. 2021;4(5):e215821.

- Retrospective, propensity-matched cohort study included 90 days of follow-up of patients in a tertiary care, academic health system. Included patients were adults with Dx of Afib
- 16 320 patients with AF included in the analysis: 348 patients used wearables and 15 972 individuals did not use wearables (matching control)
- More Health Utilization was triggered by information from a wearable (eg, cardioversions and prescription orders).

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Are We Dead in the Water?

- The evidence against wearables is applicable to the general population (PALTC?)
- Wearables might not be appropriate to monitor Afib burden
- Considering the high incidence of Afib in PALTC liked population, wearables could help screening for Afib (and many other things)
- **Early diagnosis** of **newly developed Afib** could avoid functional decline (physical and cognitive)
- **Early diagnosis** of **newly developed** Afib could avoid catastrophic outcomes such as stroke
- The pros and cons of oral anticoagulation can be determine by using scoring systems and the our vast experience managing this specific population
- NOAC's such at apixaban could increase the level of comfort among PALCT providers

Case 1 (in the near future…)

- 81 y/o Female living in your ALF
- Found by CNA in the AM lying in bed disoriented
- She is HTN, DM, Obesity
- Transferred via EMS to the local hospital
- Exam: BP 190/95 HR is 150, irregular
- EKG Afib (new onset)
- Found to have afib
- Had a follow up visit at the ALF clinic
- Started on Oral AC and referred to cardiology
- Patient discharged to Post-Acute Facility on oral AC
- Suffered fall 4 months after with resulting ICH and died in hospital

During her CVA in the ASF she was advised about her risk of developing Afib

She decided to start using electronic watch that can detect “anormal heart beats, irregularity and even notify somebody if she falls”

After a CVA (stroke) she got an alert (that was automatically sent to her PCP) about an irregular heart beat

PCP contacted Home Health, an EKG was performed

Not a candidate for TPA or Thrombectomy

Patient evaluated by neurology

Work up negative except for the presence of Afib on telemetry

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We should drive changes on standards of care that are patient-centered and evidenced-based

THANK YOU

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Open Discussion

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In the Post-Acute & Long-Term Care Continuum

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