Cardi-OH ECHO

What's New in Cardiovascular Prevention? A Series of Case-Based Discussions

November 10, 2022

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Disclosure Statements

- The following speakers have a relevant financial interest or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of their presentation:
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- The remaining speakers have no financial relationships with any commercial interest related to the content of this activity:
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- The following members of the planning committee DO NOT have any disclosures/financial relationships from any ineligible companies:
    - Shari Bolen, MD; Richard Cornachione; Carolyn Henceroth; Gillian Irwin; Michael Konstan, MD; Elizabeth Littman; Devin O'Neill; Steven Ostrolencki; Ann Nevar; Claire Rollins; Catherine Sullivan

* These financial relationships are outside the presented work.
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Person-Centered Language Recommendations

The ADA and the APA recommend language that emphasizes inclusivity and respect:

- **Gender**: Gender is a social construct and social identity; use term "gender" when referring to people as a social group. Sex refers to biological sex assignment; use term "assigned sex" when referring to the biological distinction.
- **Race**: Race is a social construct that is used broadly to categorize people based on physical characteristics, behaviors, and geographic location. Race is not a proxy for biology or genetics. Examining health access, quality, and outcome data by allows the healthcare system to assist in addressing the factors contributing to inequity.
- **Sexual Orientation**: Use the term "sexual orientation" rather than "sexual preference" or "sexual identity." People choose partners regardless of their sexual orientation; however, sexual orientation is not a choice.
- **Disability**: The nature of a disability should be indicated when it is relevant. Disability language should maintain the integrity of the individual. Language should convey the expressed preference of the person with the disability.
- **Socioeconomic Status**: When reporting SES, provide detailed information about a person's income, education, and occupation/employment. Avoid using pejorative and generalizing terms, such as "the homeless" or "poor."
- **Violent Language**: Avoid sayings like 'killing it,' 'pull the trigger,' 'take a stab at it,' 'off the reservation,' etc.

Flanagin A et al., 2021, JAMA; Dickinson JK et al., Diabetes Care, 2017; American Psychological Association, 2021; ODM, 2021.

Electronic Health Record Systems

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Learning Objectives

1) Discuss the role of EHR systems in identifying, assessing, and caring for patients at increased risk for cardiovascular disease.

2) Define clinical decision support and features of well-designed clinical decision support.

3) Describe the incorporation of social determinants of health into EHR systems.

Can you use an EHR to ID and Rx patients at increased cardiovascular risk?

- Risk-based patient <u>registries</u>
- Risk-driven <u>clinical decision support</u> prompts or interventions
  - Best-practice advisories
  - Health maintenance topics

- <u>Individualized decision aids</u>
  - Patient education
  - Shared decision making

- Self-service <u>data query tools</u>
 - SlicerDicer

EHR data – Proceed with caution

- Promise:
  - Rich, contextual data about an individual's baseline health and life experiences.
  - Ripe for model building with minimal input

- Reality:
  - A highly biased, **secondary** data source with variable data quality and completion
  - Data patterns and presence reflect systemic biases (Agniel et al. *BMJ* 2018;361:k1479)

EHR logic thought experiment:
Statin therapy for primary prevention
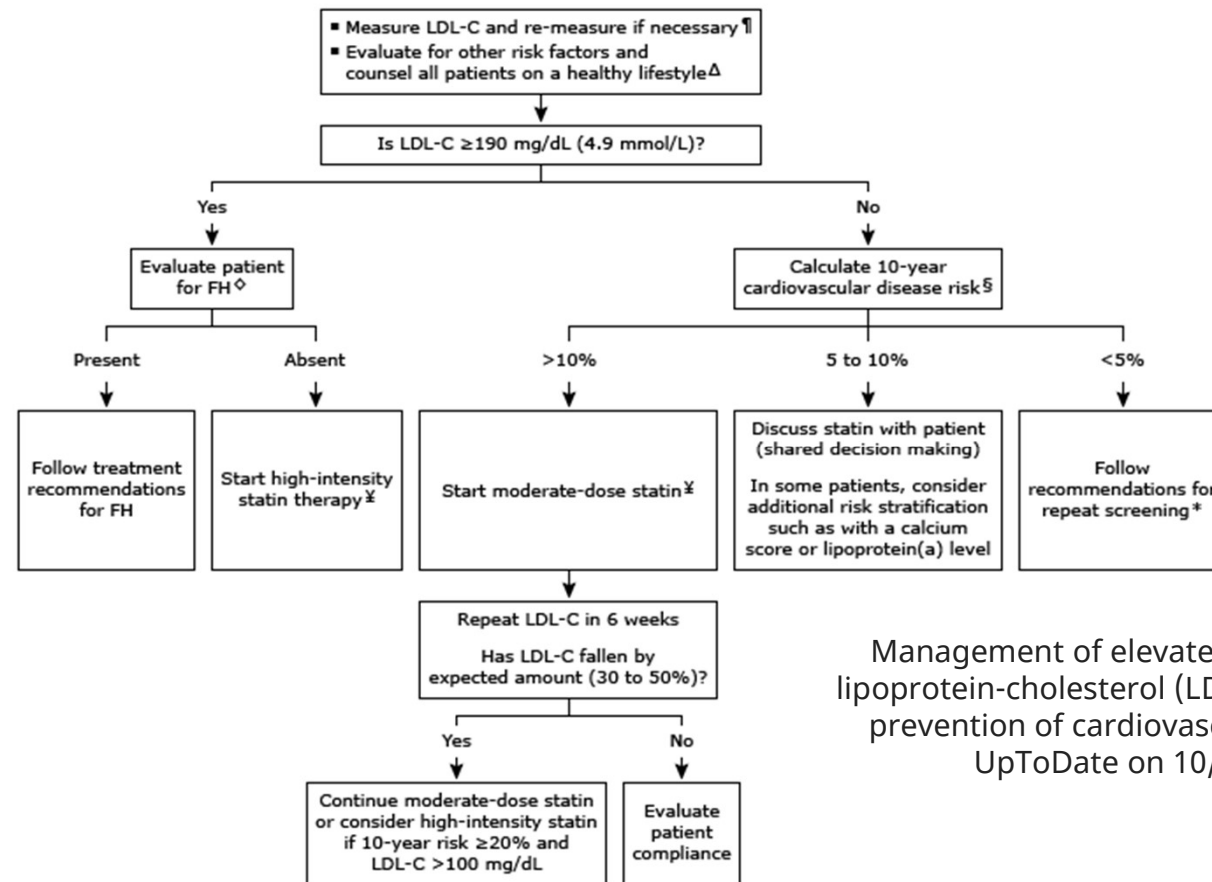
Management of elevated low density lipoprotein-cholesterol (LDL-C) in primary prevention of cardiovascular disease, UpToDate on 10/31/22

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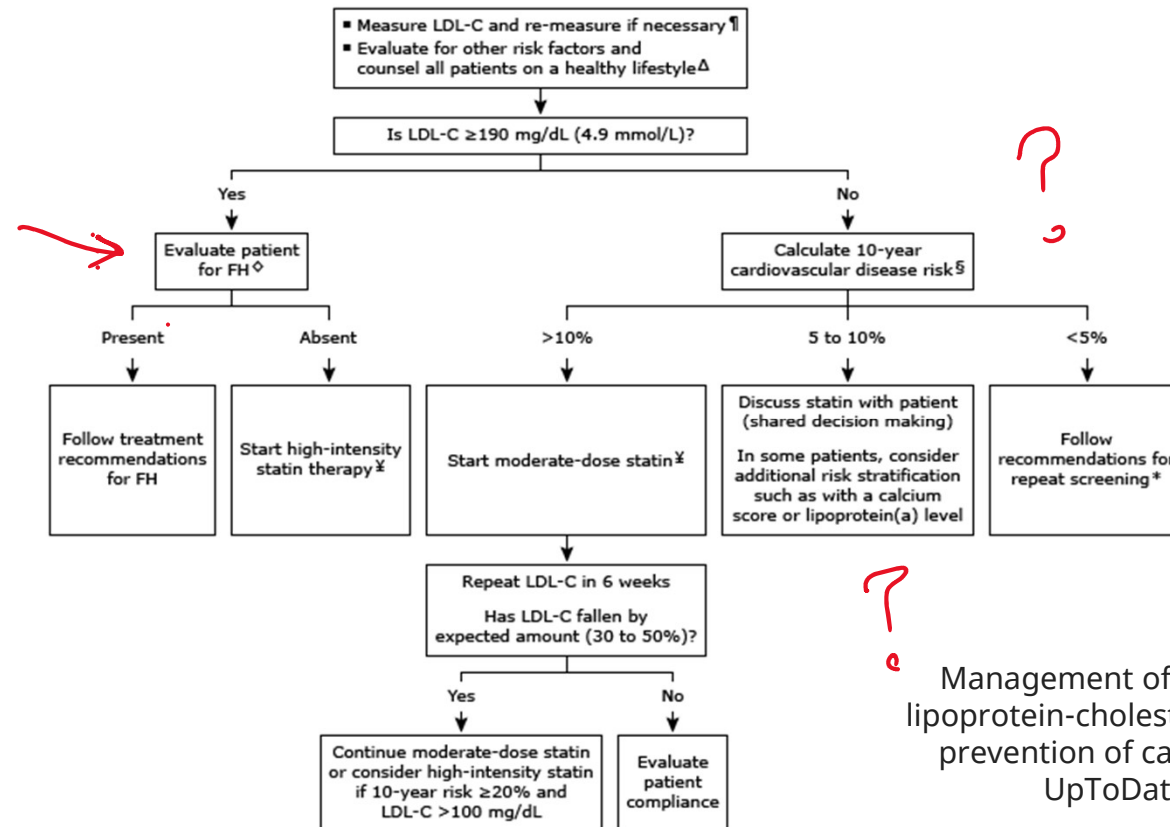
Management of elevated low density lipoprotein-cholesterol (LDL-C) in primary prevention of cardiovascular disease, UpToDate on 10/31/22

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Problems with ASCVD risk

- .ascvd…
- Which fields are problematic?
- What is the lookback period?
- How could missing data contribute to misestimation?

ASCVD Risk Estimate

Estimated 10-year risk of a first ASCVD event is 13.0%. ASCVD is defined as MI, CHD death, or stroke

Calculation Inputs:

Age	year old
Gender	
Race	Black / African American
Current Smoker?	Yes
Diabetes?	No
On Antihypertensive?	No
Last Systolic Blood Pressure	144
Last Cholesterol	168
Last HDL	90
Last LDL (FYI; not used in calculation)	71
On Statin (FYI; not used in calculation)	Yes

Assuming it even works, is the estimate relevant to my population?

Figure 2. Prognostic accuracy of the PCERM across strata defined according to percentile groups of the NDI (highest percentiles correspond to the least affluent communities).

Perfect calibration of the PCERM is represented along the line *y* = *x*; points above this line indicate underestimation of risk by the PCERM in relation to observed event rates, and points below it indicate overestimation of risk. Concordance indices (*C*) and corresponding 95% CIs are displayed within each panel. The *C* ranges from 0.5 to 1.0, where a value of 0.5 represents no discrimination of events from nonevents and a value of 1.0 represents complete separation of outcomes. NDI = neighborhood disadvantage index; PCERM = Pooled Cohort Equations Risk Model.

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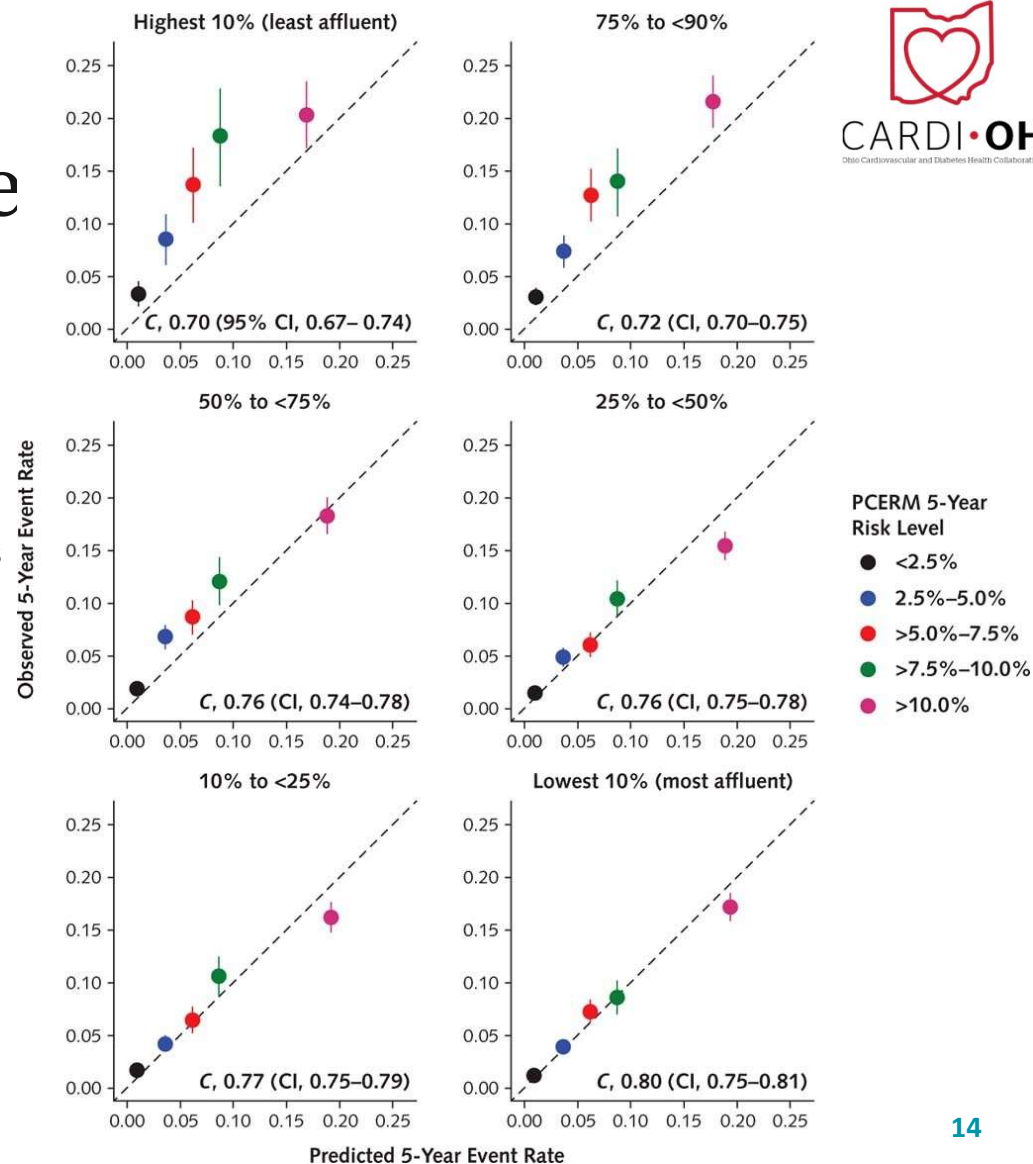
Putting data issues aside, how can we operationalize this?

- Registry?
  - Not really at the right time/place

- Clinical decision support?
- Shared decision aid?

- Personal panel review?
 - Great global view, not great for patient-level assessment

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CDS?

- Clinical Decision Support (CDS) is a process for enhancing health-related decisions and actions. It empowers clinicians, patients, and other stakeholders by enhancing clinical decision-making and clinical processes and improving the quality of healthcare services and patient outcomes. (source: AMIA CDS WG)
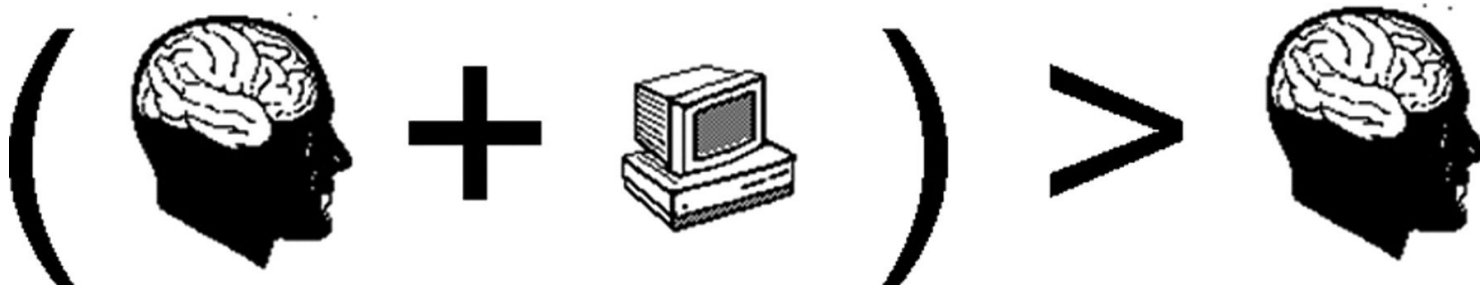
CDS: Bates' Ten Commandments (2003)

1. Speed is everything
2. Anticipate needs, deliver in ==real time==
3. Fit into ==workflow==
4. Little things matter (==usability==)
5. Physicians resist stopping
6. Changing direction is easier
7. ==Simple== interventions work best
8. Ask for ==info only when really needed==
9. ==Monitor impact==, get feedback and respond
10. Manage and maintain

Meta-analysis of CDS studies generally support these:

Most effective CDSS used (Kawomoto et al (2005):

1. Automated alerts
2. Provision of recommendations rather than assessments
3. Provision of decision support at time and location of decision making
4. Computer-based alerts

CDSS also successful when (Roshanov 2013):

1. CDS during Charting/CPOE avoided
2. Providers forced to supply reason for override
3. Patients advised as well

CDS: Limits and Misgivings

- Alert fatigue and workflow disruptions are common

- Clinical improvement with CDS is small to modest at best (Meta-analysis of controlled studies by Kwan et al in 2020).

- Clinicians accept complex solutions, so long as they are perceived to be useful (e.g. Jansen-Kosterink et al, 2021)

CDS + Predictive scoring = It's complicated

Complicates CDS by combining CDS misgivings with the vagueness of more advanced statistical methodology (Duran 2021).

End users are:
- Generally interested in prediction-based CDS (Takamine 2021).
- Naturally Bayesian in their thinking (Gill 2005).

However, they:
- Prefer processing "mechanistic" risk factors.
- Struggle with statistical concepts such as sensitivity, discrimination, or calibration (Whiting 2015).
- Worry about exacerbating disparities with more complex models

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# Statin intensification CDS – cluster randomized RCT
(Adusumalli 2020)

JAMA Cardiology | Original Investigation

Effect of Passive Choice and Active Choice Interventions in the Electronic Health Record to Cardiologists on Statin Prescribing
A Cluster Randomized Clinical Trial

- ~12K patients randomized at cardiologist level in PA and NJ.
- Passive notification vs interruptive alert vs neither for high-risk patients (based on ASCVD).
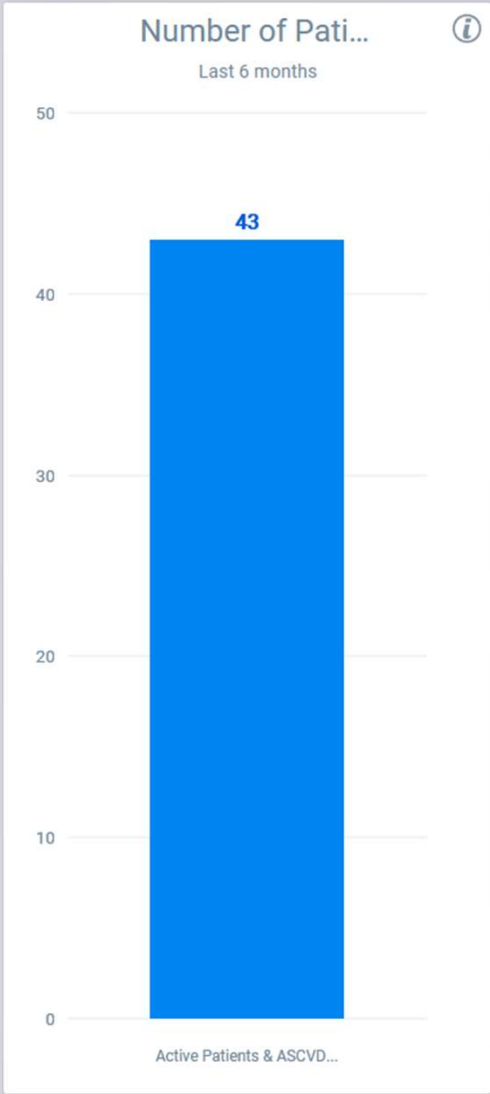- No difference in the main outcome of statin prescription or intensification.

What about shared decision making?
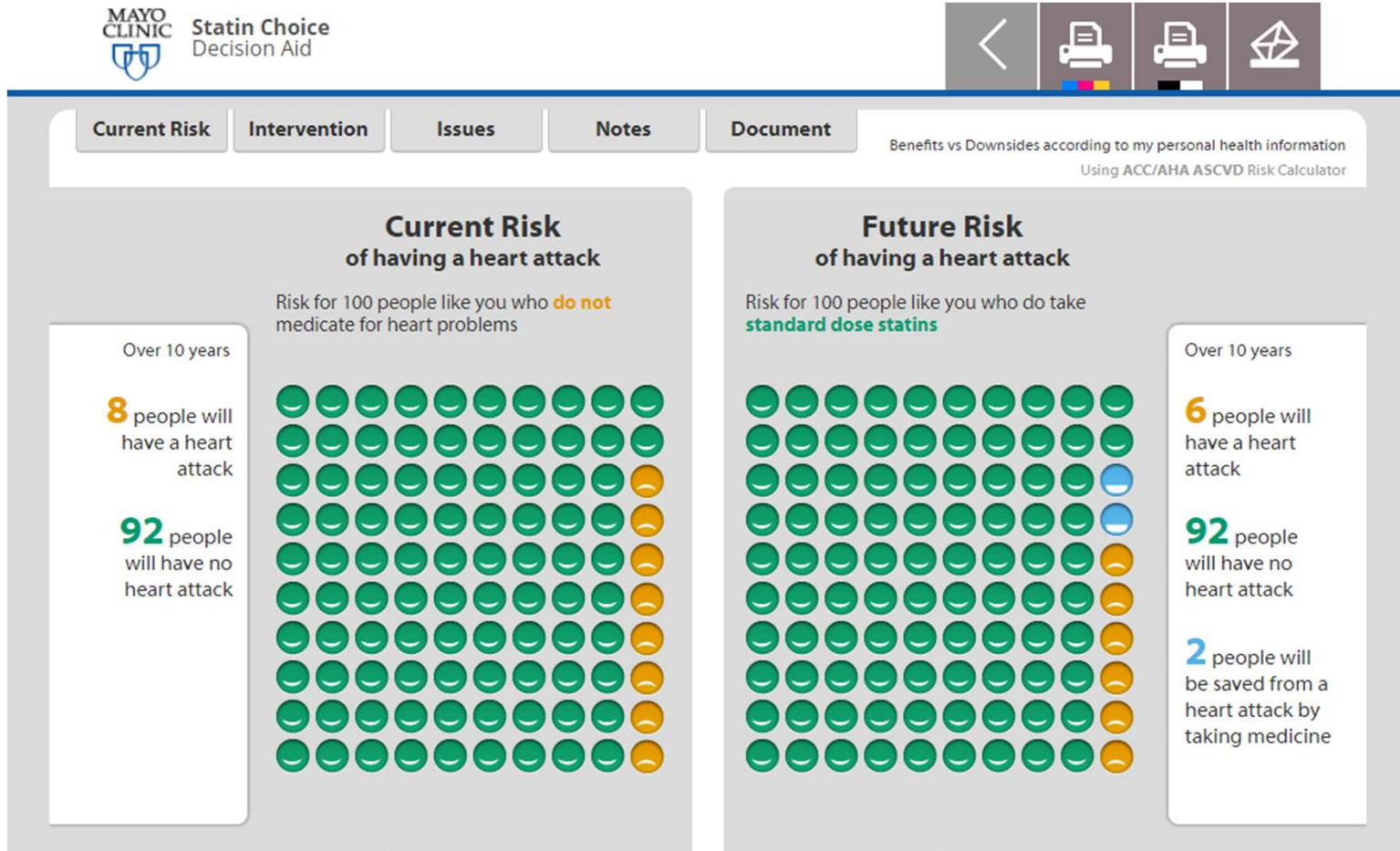
What about shared decision making?

- Victor Montori's statin choice – several RCTs that showed:

  - Improved knowledge, trust, and decreased decisional conflict
  - Uncertain to no improvements in compliance and clinical outcomes

Weymiller et al, Arch Int Med. 2007
Mann et al, Patient Edu and Counseling. 2010

Self-service tools:

(e.g.) SlicerDicer

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Screening Domains Included

We assess patients for **13** Social Needs Categories

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Food Insecurity	Social Isolation	Housing Stability	Transportation	Education
Financial Resource Strain	Stress	Intimate Partner Violence	Digital Connectivity	Employment Status
	Physical Activity	Housing Problems	Utilities	

8 Domains from Current Epic SDOH Foundational Questions

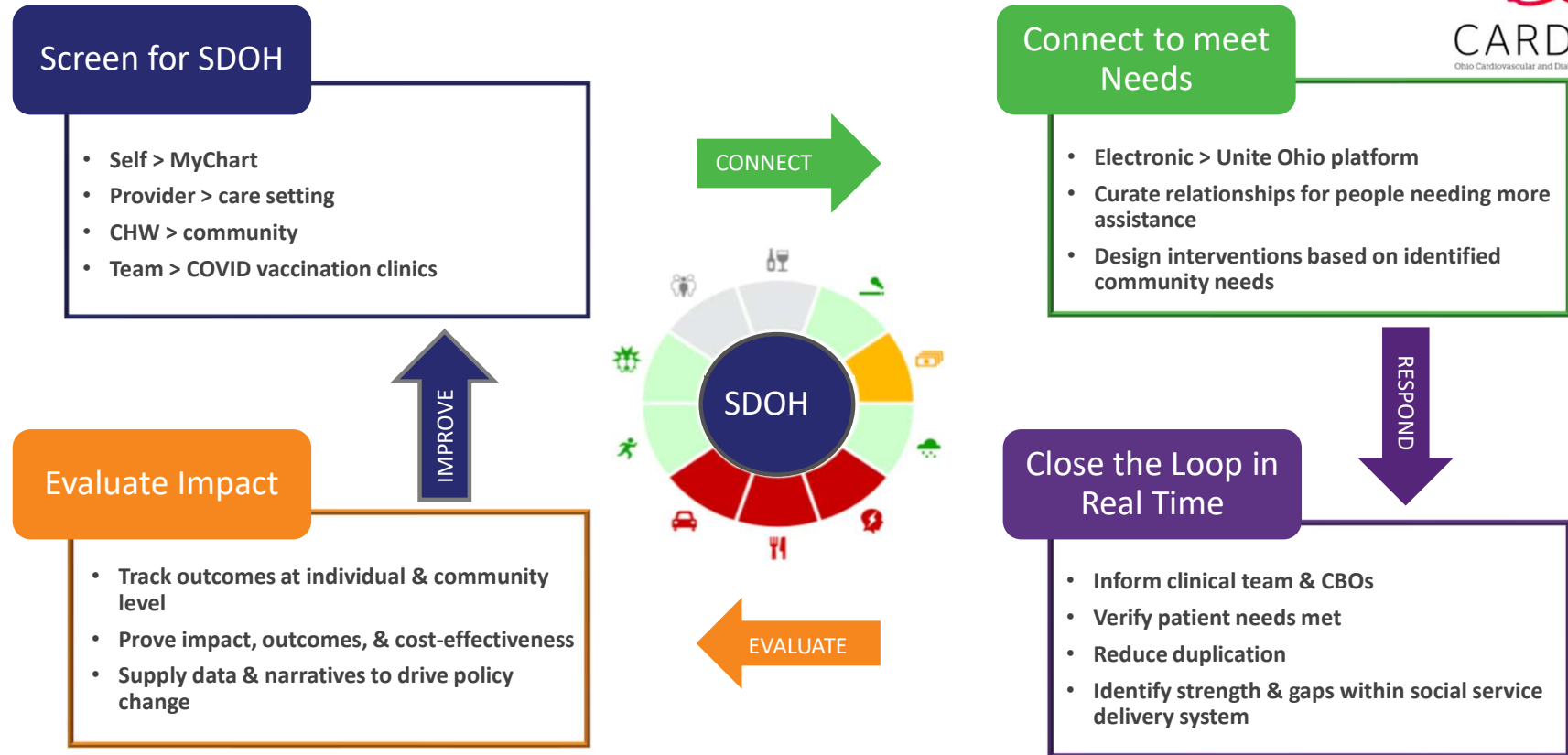2 Domains from Old Epic SDOH Foundational Questions

2 Domains from Epic Demographic Questions

1 Domain from Custom Questions

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Redesigning how healthcare and community organizations work together to help communities thrive

Screen for SDOH
- Self > MyChart
- Provider > care setting
- CHW > community
- Team > COVID vaccination clinics

CONNECT

Connect to meet Needs
- Electronic > Unite Ohio platform
- Curate relationships for people needing more assistance
- Design interventions based on identified community needs

RESPOND

Evaluate Impact
- Track outcomes at individual & community level
- Prove impact, outcomes, & cost-effectiveness
- Supply data & narratives to drive policy change

IMPROVE

SDOH

EVALUATE

Close the Loop in Real Time
- Inform clinical team & CBOs
- Verify patient needs met
- Reduce duplication
- Identify strength & gaps within social service delivery system

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Utilize process and outcome data to drive program evaluation, research and continuous program improvement

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A Framework for Evaluating Social Determinants of Health Screening and Referrals for Assistance

Kevin Chagin[1] (iD), Franklin Choate[1], Karen Cook[1], Susan Fuehrer[1], James E. Misak[1,2], and Ashwini R. Sehgal[1,3,4] (iD)
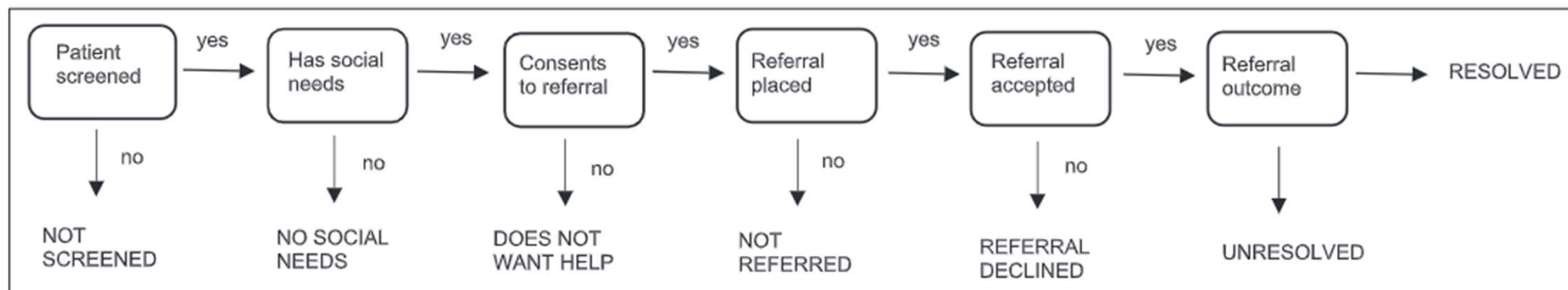
Figure 1. Sequential steps in social determinants of health screening and assistance.

⑤SAGE journals

Original Research

A Framework for Evaluating Social Determinants of Health Screening and Referrals for Assistance

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> Of 9537 patients, 5741 were screened and 98 received food.

Table 2. Completion of Specific Food Insecurity Screening and Assistance Steps by All Patients and Illustrative Subgroups.

Group	Number of patients	Patients screened (%)	Have food insecurity (%)	Consents to referral (%)	Referrals placed (%)	Total referrals	Referrals accepted (%)	Referrals resolved (%)
All patients	9537	5741/9537 (60)	988/5741 (17)	848/988 (86)	356/848 (42)	366	360/366 (98)	98/360 (27)

> Of 848 patients who wanted help with food, 98 received food.

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JOURNAL ARTICLE   EDITOR'S CHOICE   FEATURED

Social determinants of health in electronic health records and their impact on analysis and risk prediction: A systematic review 🔓

Min Chen ✉, Xuan Tan, Rema Padman

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"The literature provides early and rapidly growing evidence that integrating **individual-level SDoH into EHRs** can assist in risk assessment and predicting healthcare utilization and health outcomes, which further motivates efforts to collect and standardize patient-level SDoH information."

Thank you!

Questions/Discussion