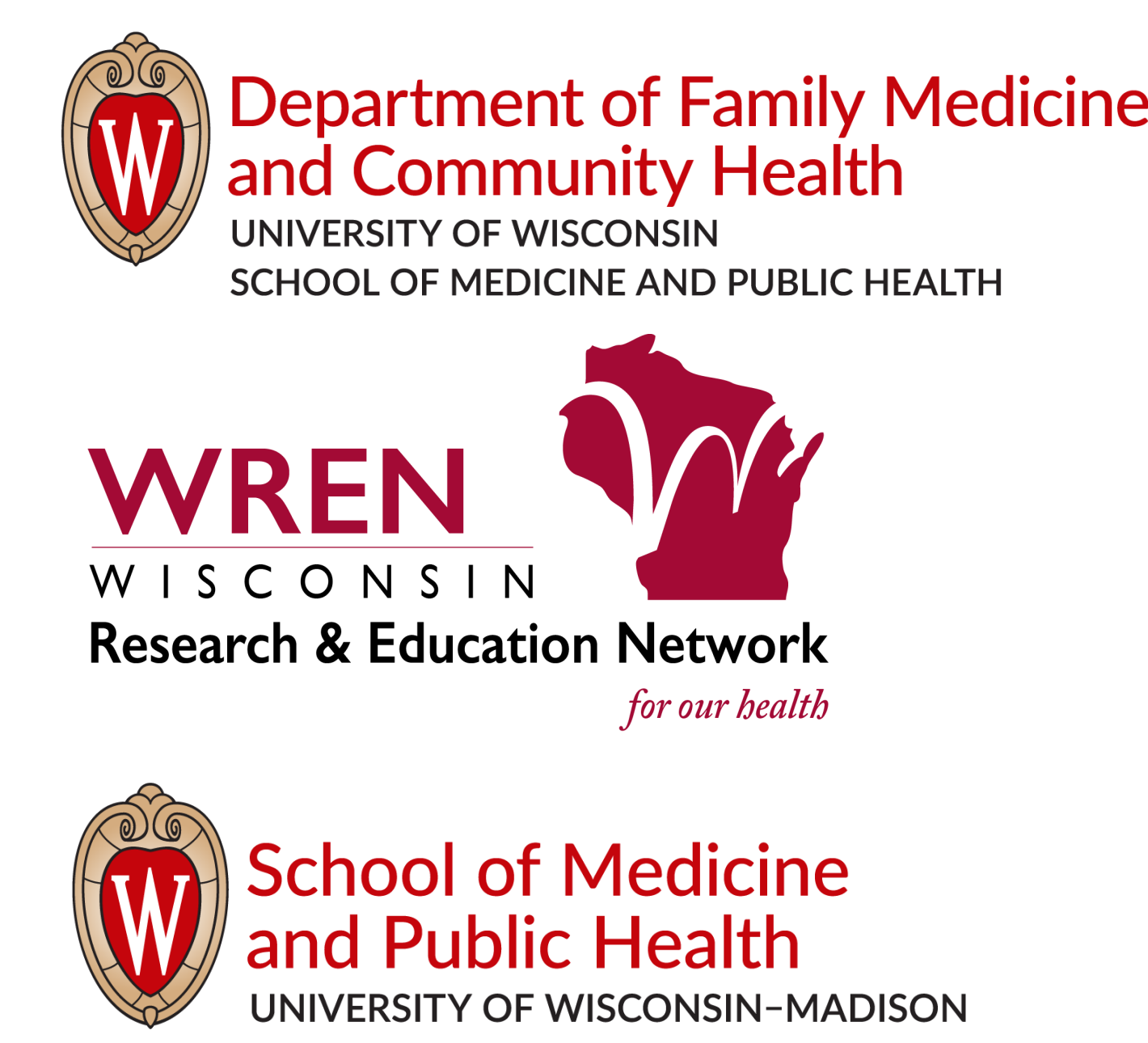# A systems engineering approach for disseminating and implementing shared decision making around breast and lung cancer screening using decision aids embedded in electronic health records

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Background

Shared Decision Making (SDM)
- Should include a balanced explanation of potential benefits and harms, taking into account patient values and preferences
- Is appropriate when offering clinical preventive services as patients are often unaware of benefits and harms of screening
- Has had suboptimal uptake due, in part, to lack of clinician training and a limited number decision aids (DAs) embedded in electronic health records (EHRs) to facilitate SDM[1,2]

Project goals
- Create a SDM training program for clinicians, focusing on use of DAs for breast and lung cancer screening
- Employ system engineering approaches to develop pragmatic strategies for primary care clinics leading to increased SDM and use of DAs for breast and lung cancer screening
- Provide clinic teams with best practices to **efficiently** and **effectively** engage in SDM with patients

Setting
- Pilot project within UW Health, an integrated, academic health system of University of Wisconsin-Madison
- Funded by UW Health, demonstrating a commitment to SDM as part of its quality assurance model
- Adult primary care clinics in urban, suburban, and rural settings
  - Family Medicine (17 clinics; 182 clinicians)
  - General Internal Medicine (10 clinics; 87 clinicians)

HealthDecision® Patient Decision Aids
- Individualized risk assessment with visual prediction of possible outcomes of screening
- DAs for lung cancer & breast cancer screening integrated within UWHealth EHR system
- Clinician use of DAs are being monitored throughout the project

HealthDecision® DAs are available:
HealthDecision.org

Needs Assessment

- Goal: assess clinician attitudes about SDM, comfort with SDM processes and knowledge of DAs
- Surveys emailed to 272 UW Health primary care clinicians
- 72 (26.5%) responded to the survey (40 family medicine, 18 general internal medicine, 14 obgyn)

Value of SDM

% Agree or Strongly Agree	SDM Needs Assessment Survey Statement
95%	Using SDM would enhance the quality of care I provide my patients
79%	Using SDM would improve my ability to do critical aspects of my job
70%	Learning to use SDM would be easy for me
61%	I would find SDM easy to use

Current use of SDM and DAs

% Agree or Strongly Agree	SDM Needs Assessment Survey Statement
87%	I utilize SDM with my patients when discussing lung/breast cancer screening
87%	Patient DAs are a useful tool for facilitating SDM within a health care setting
8%	Consistently use the Patient Decision Aids embedded in EHR

Potential Barriers to SDM

% Agree or Strongly Agree	SDM Needs Assessment Survey Statement
67%	I worry that SDM will increase the amount of time I spend with patients
34%	I worry that SDM will increase patient demands upon me
31%	I worry that my patients will use SDM inappropriately (or will not interpret correctly)
13%	I worry that my patients won't want to use SDM

Take Aways
- Primary care clinicians within this health system see value in SDM
- Time spent on SDM is the primary perceived barrier, which is consistent with published reports[3]
- Although clinicians report using SDM with their patients and agree DAs are valuable, **<10% are consistently using DAs available to them in the EHR system**

Clinician Training

- Comprehensive training curriculum developed by a multi-disciplinary team
- Training incorporates COD model (Choice Talk, Option Talk, Decision Talk)[4]
- Curriculum components include:
  ◊ 20-minute didactic presentation (live and recorded)
  ◊ Interactive role-playing exercise (live or self-study)
  ◊ Professionally produced videos demonstrating frequently encountered SDM situations
  ◊ Training handouts
  ◊ Patient handouts on breast and lung cancer screening

- Three training workshops have been held for UW Health clinicians:
  ◊ Department of Family Medicine & Community Health Faculty Development Day (52 participants)
  ◊ General Internal Medicine Grand Rounds (27 participants)
  ◊ Advanced Practice Providers Grand Rounds (26 participants)

Complete training curriculum available:
www.fammed.wisc.edu/sdm-cancer-screening/

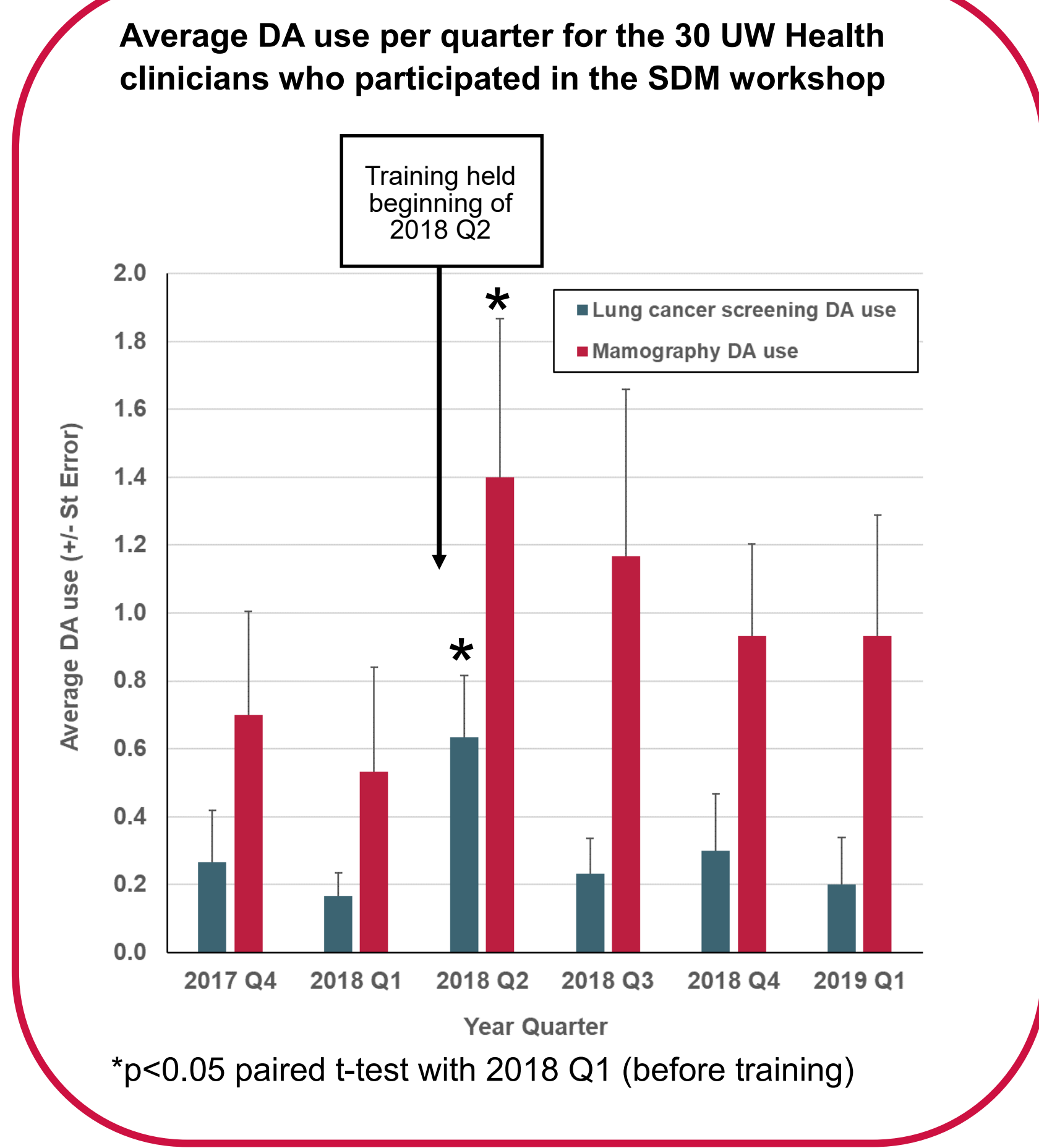### Training Participant Self Evaluation
- Of 105 SDM training participants, 37 (35%) completed pre/post evaluations
- Participants were asked to rank their pre/post confidence on key elements of SDM using the scale:
  1: Strongly Disagree **2**:Disagree **3**:Neutral **4**:Agree **5**:Stongly Agree
- The participants' **post training confidence rankings were significantly higher than pre training rankings**

Pre/post self assessment, paired samples t-test (N=37)	Pre-training		Post-training		p-value
	Mean	SD	Mean	SD	
Recognize that a decision needs to be made	4.14	0.86	4.76	0.44	<0.001
Develop partnership with the patient	4.16	0.69	4.65	0.48	0.001
Know how to use cancer screening decision aids	3.00	1.13	4.35	0.68	<0.001
Identify options	3.60	0.83	4.38	0.55	<0.001
Present pros and cons of options	3.46	0.84	4.30	0.57	<0.001
Clarify patient values and preferences	3.67	0.99	4.44	0.56	<0.001
Ascertain and respond to patient's ideas, concerns and expectations	3.70	0.91	4.46	0.56	<0.001
Make a decision in partnership and resolve any conflict	3.54	0.90	4.38	0.59	<0.001
Agree upon an action plan	4.00	0.85	4.46	0.56	<0.01
Complete arrangements for follow-up	4.03	0.83	4.38	0.68	<0.01

Breast and lung cancer screening DA use before and after SDM training
- Analyzed DA use by participants of the training workshop held May 5, 2018 for the UW Department of Family Medicine & Community Health
- Of 52 workshop participants, 30 were UW Health clinicians (MDs, Dos, and APPs) where DA use could be measured
- The figure shows the average DA use per quarter for the 30 UW Health clinician workshop participants
- **Use of the breast and lung cancer screening DAs were significantly higher (p<0.05) in the quarter following the training (2018 Q2) than the quarter before (2018 Q1)**
- DA use in 2018 Q3 to 2019 Q1 were not significantly higher than DA use before the workshop

Average DA use per quarter for the 30 UW Health clinicians who participated in the SDM workshop

Training held beginning of 2018 Q2

Legend: Lung cancer screening DA use; Mammography DA use

Y-axis: Average DA use (+/- St Error)
X-axis: Year Quarter — 2017 Q4, 2018 Q1, 2018 Q2, 2018 Q3, 2018 Q4, 2019 Q1

*p<0.05 paired t-test with 2018 Q1 (before training)

Take Aways
- Self-reported confidence with key elements of SDM increased after participating in the training workshop
- Clinician use of DAs increased following participation in the training workshop
- Increase in DA use was temporary, especially for lung cancer screening. This may be due to reports from clinicians that the lung cancer DA is harder to find in the EHR system, patient smoking history often incomplete in the EHR, and overall unfamiliarity with lung cancer screening guidelines.
- System wide, use of the lung cancer screening DA is lower than other available DAs
- Lung cancer screening is a more recent guideline, so it may not be well established in clinical workflows

Pilot Implementation

- Goal: employ human factors and system engineering to develop pragmatic clinic workflow strategies leading to increased SDM and use of DAs for both breast and lung cancer screening
- Pilot sites are four adult primary care clinics (one urban and one rural family medicine, one urban and one rural general internal medicine). One family medicine site is a Federally Qualified Health Center.
- Workflow strategies are being developed in partnership with clinic staff through practice facilitation meetings and tailored for each clinic based on their needs
- Implementation is in progress for all four sites

Results to date
- Clinic change team used Nominal Group Brainstorm Technique[5] facilitated by research team members to identify and rank top ideas for:
  ◊ Challenges or barriers that might prevent more frequent use of SDM and DAs
  ◊ Strategies or solutions to overcome the top identified barrier
- Top ranked strategies are used to inform a workflow change or interventions for each individual clinic

Common barrier themes across 4 pilot clinics:
- Limited time during clinic visits
- Patients have other priorities during clinic visit
- Patients may have firm preferences about cancer screening (positive or negative)
- Patients may call for mammograms without a clinic visit, circumventing the opportunity for SDM
- Clinicians and not familiar with and/or comfortable using DAs
- The lung cancer DA is more difficult to find in the UW Health EHR (whereas the mammography DA is conveniently in the health maintenance section)
- Unfamiliarity with lung cancer screening guidelines
- Smoking history may be unclear or not up to date in EHR

Example solutions from 4 pilot clinics:
- Medical assistants identify patients eligible for cancer screening and leave laminated cards to flag clinician to initiate SDM
- Expand pre-visit planning to identify patients eligible for screening
- Give questionnaires about cancer screening to patients to prepare them for a SDM conversation
- Place patient education materials in room (handouts, posters, etc.)
- Incorporate SDM and DA training in new clinician onboarding
- Develop workflows to collect accurate smoking histories
- Work with EHR vendor to include lung cancer screening in health maintenance listing

Take Aways
- Although common themes emerged with the group brainstorm activity, each clinic had its own individual challenges and approaches to workflow change management
- The use of SDM for lung cancer screening had barriers distinct from those of mammography, which makes addressing both types of screening in one implementation workflow change more challenging

Conclusions and next steps

- Primary care clinicians see value in SDM, but <10% consistently use DAs available in their EHR
- Use of DAs increased after a SDM training workshop, but the increase was temporary
- Use of the DA for lung cancer screening was more challenging than for mammography, possibly due to inaccessibility of the lung cancer screening DA in the EHR and less familiarity with lung cancer screening
- The clinic implementation phase will conclude in 2019 with development of dissemination and implantation strategies to follow
- Results will inform development of a tool kit summarizing best practices for SDM, which can be applicable to any clinical encounter requiring a decision

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