Clinical Decision Support System: An answer to significant issues in the US Healthcare

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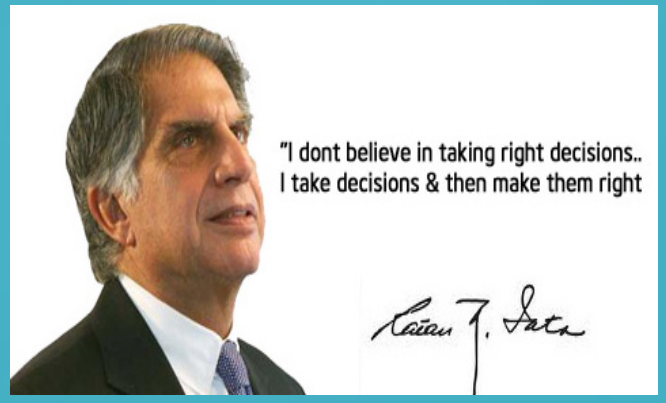
Clinical Decision Support System

Introduction

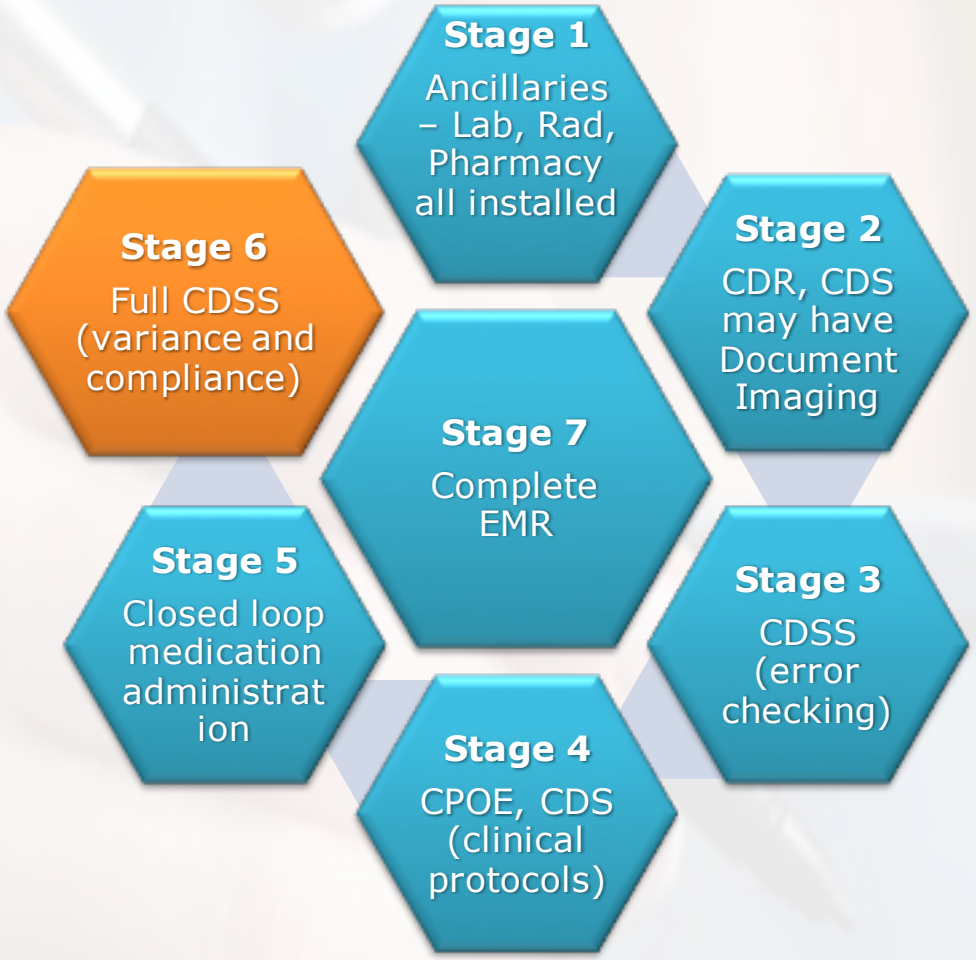
"A Decision is a choice that you make about something after thinking about it: the result of deciding."

(Source: Merriam-Webster Dictionary)

"EMR refers to the systematized collection of patient and population electronically-stored health information in a digital format."



US EMRAM Model



Clinical Decision Support System

Healthcare Systems have seen a paradigm shift in its delivery as well as the working of the complete workflow system.

- Adoption of an appropriate EHR system
- Interoperability
- Appropriate Use Criteria
- CMS Regulations

Research Questions

1. What are the critical issues in the US Healthcare Environment that need to be addressed, confronted by healthcare providers in the US?
2. What are the current game plan changes altered by the national government and the CMS?
3. What is the distinguished role of Clinical Decision Support in empowering healthcare providers to achieve the EMRAM goals and MU objectives?
4. What should be the strategic approach towards consolidating a CDS module inside a current EMR structure?

Objectives

1. To identify and analyze the pressing issues faced by the healthcare facilities in the United States.
2. To study the emerging healthcare reforms/legislations released.
3. To disruptively, identify the role of Clinical Decision Support System in enabling healthcare facilities to reach required MU and EMRAM objectives and become compliant.
4. To formulate a strategic approach to implementing an integrated CDSS into an EMR system.

Clinical Decision Support System

Book Review

- Miller RA. Medical diagnostic decision support systems—past, present, and future: a threaded bibliography and brief commentary
- Osheroff JA. Improving medication use and outcomes with clinical decision support: a step-by-step guide
- Stead WW, Lin HS. Computational technology for effective healthcare: immediate steps and strategic directions

Sr.no.	Study	Methodology
1	Design	External Desk Review
2	Duration	3 months from 06 February to 12 May, 2017
3	Setting	Deloitte US India Offices, Bengaluru, Karnataka

Stages	Methodology
1	Formulation and design including identification of key issues and development of the thematic framework
2	Data assembly and compilation of statistical information
3	Desk based literature reviews, Client visit reports and documentation,
4	Production of Interim report – the "March Bundle" dealing with the major issues and lessons based on interviews with senior personnel
5	The main stage involving interviews with key informants and SME's
6	Preparation of synthesis, thematic and final reports.

Clinical Decision Support System

What is CDSS?

Clinical Decision Support Systems

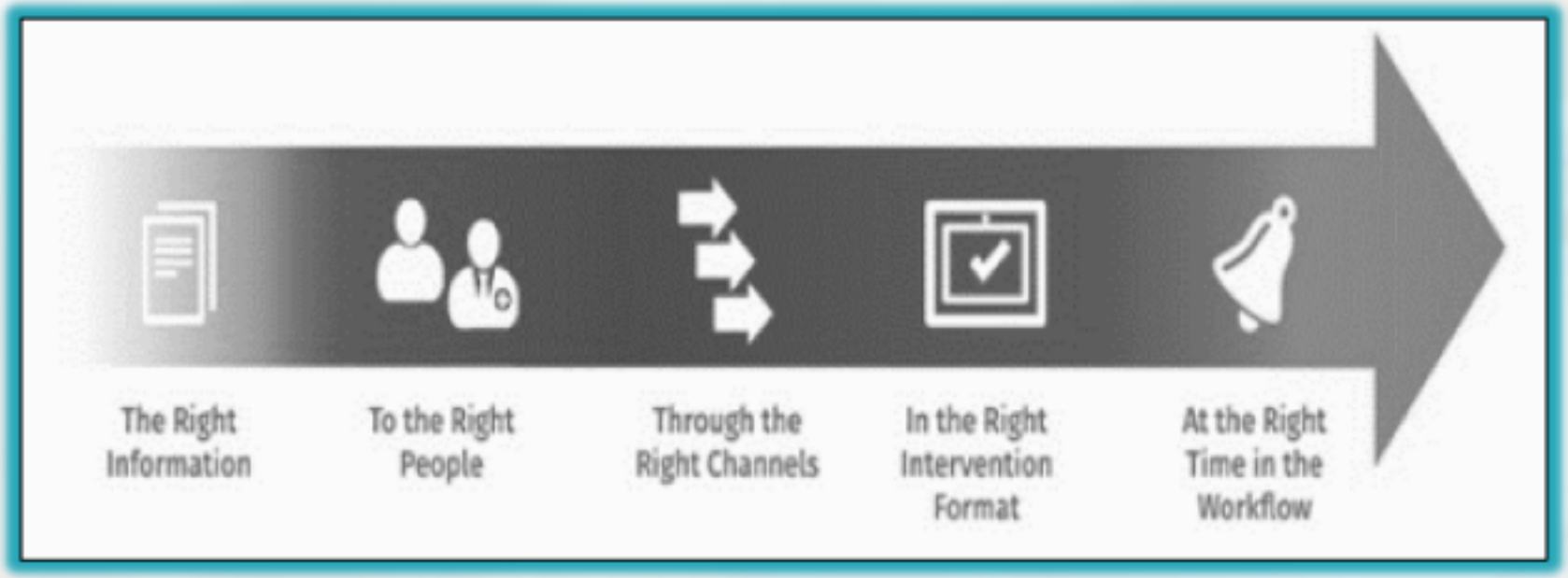
Clinical Decision Support (CDS) "is a process for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve health and healthcare delivery" (Including both computer-based & non-computer-based CDS)

Source: Osheroff et al., 2012

Types of CDSS

a) The knowledge-based systems (a.k.a. expert systems)
- knowledge base (IF-THEN Rules)
- inference engine
- mechanism to communicate

b) The non-knowledge-based systems
- artificial intelligence (artificial neural networks)
- machine learning (genetic algorithms)



Issues Confronting the US Healthcare

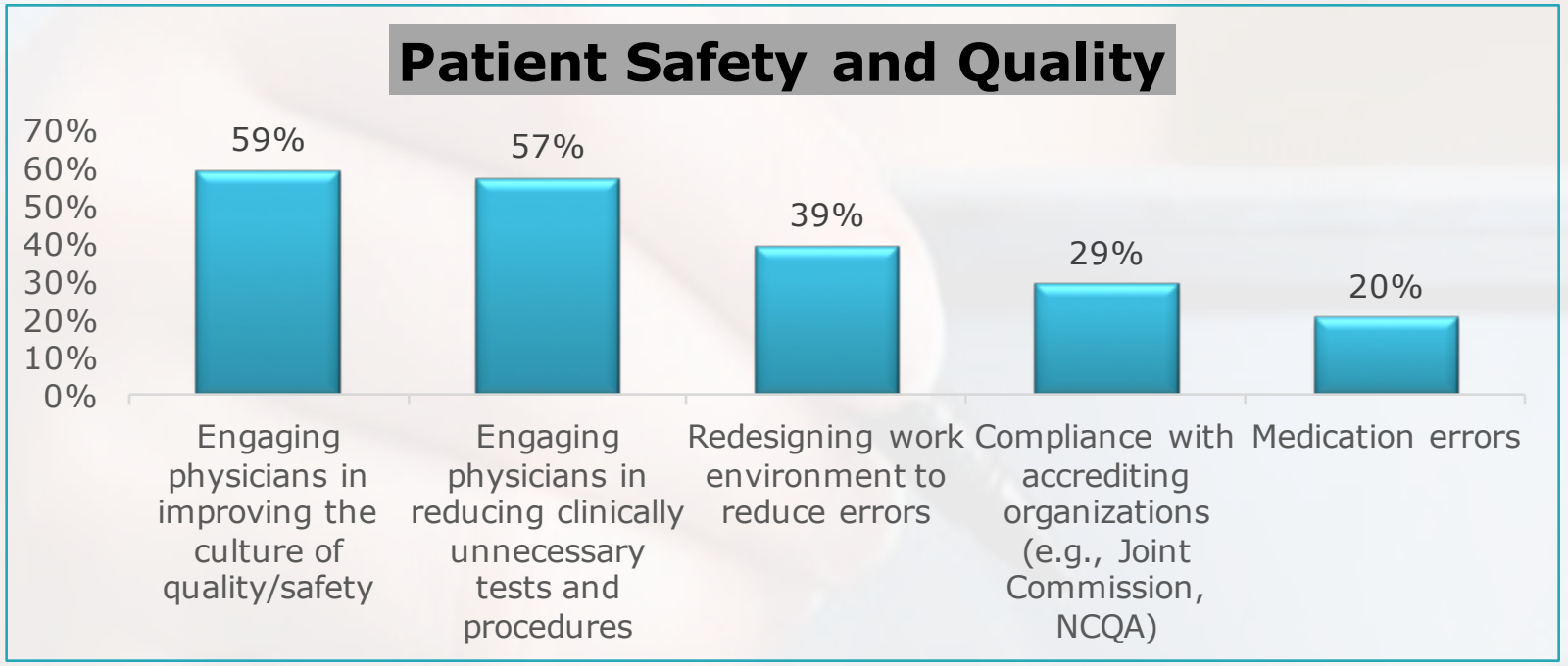
Background

Most healthcare organizations fret over financing and reform.

Quality or Revenue?

The major challenges faced by the US Healthcare today can be broadly categorized into:

1) Financial challenges
2) Government mandates
3) Patient safety and quality



Source: Survey conducted by American College of Health Executives, January, 2017

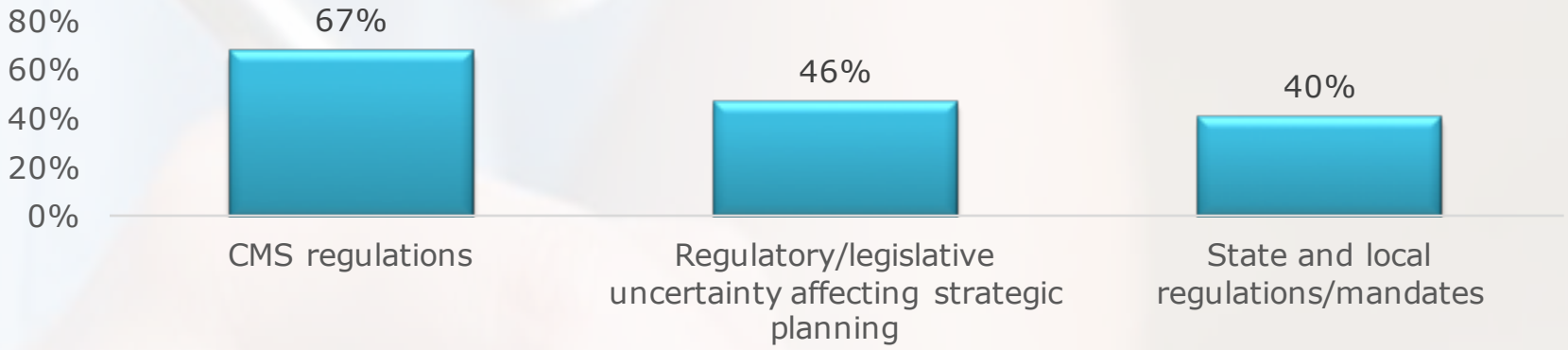
Issues Confronting the US Healthcare

Other Issues

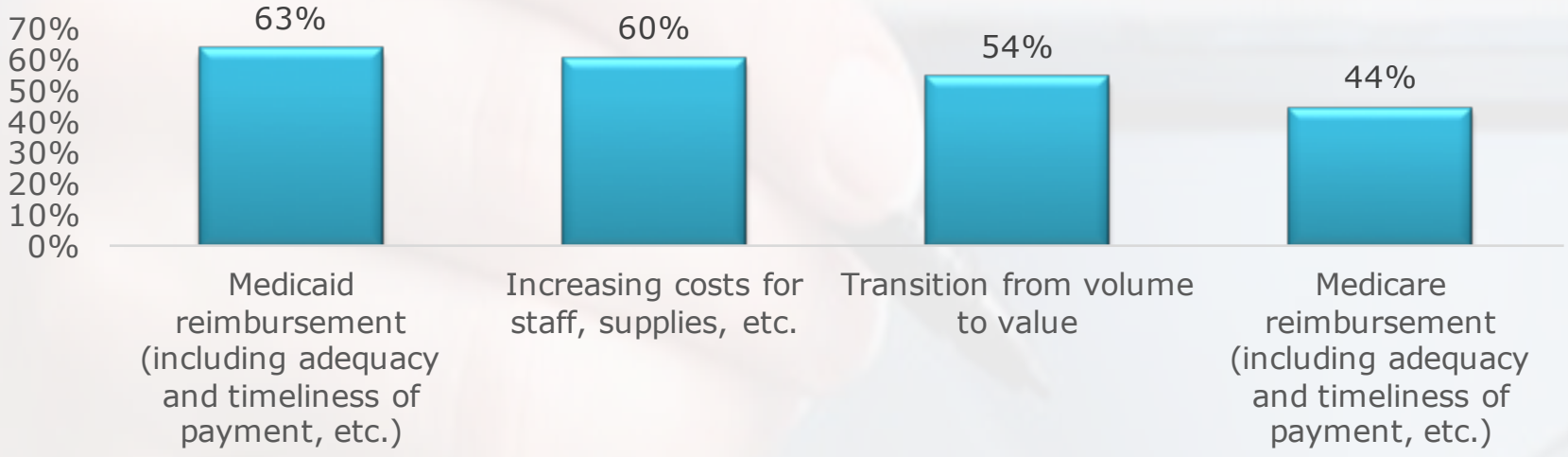
The other six issues, in order of their ranking from the current report include :

1) Personnel shortage
2) Patient satisfaction
3) Access to care
4) Physician-hospital relations
5) Population health management
6) Technology

Governmental Mandates



Financial Challenges



Source: Survey conducted by American College of Health Executives, January, 2017

Clinical Decision Support System

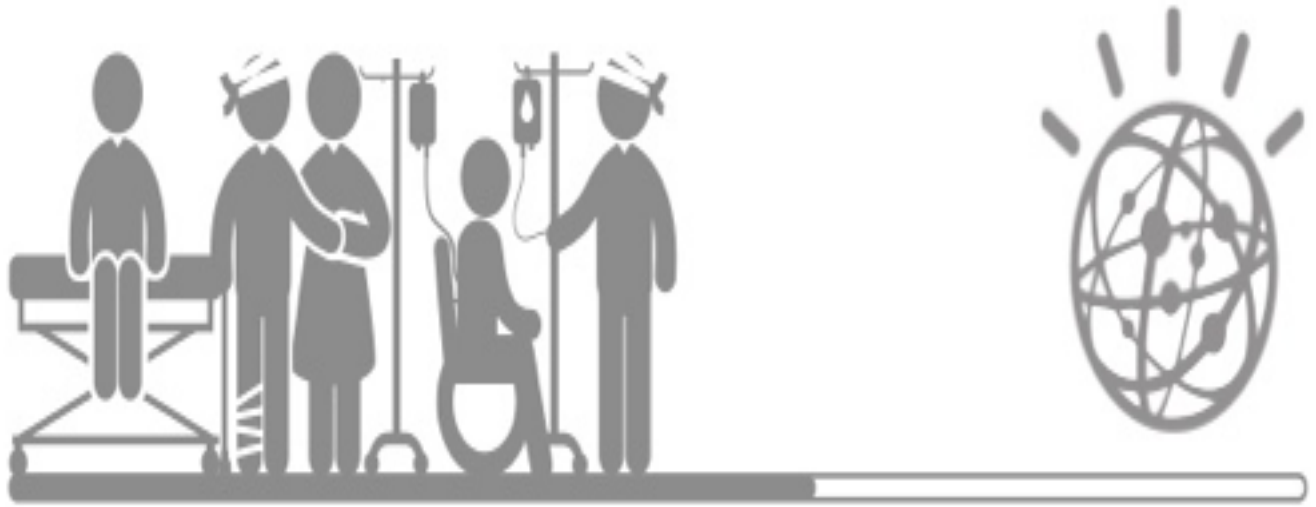
Regulations

- **Section 218(b)** of the **Protecting Access to Medicare Act** of 2014 (PAMA)
- **Final rule on Stage 3 of the Meaningful Use Requirements** for the Electronic Health Record Incentive Program
- **Medicare Physician Fee Schedule** (MPFS) final rule for 2017
- **The Recovery Act, Incentive Programs**, & **The Affordable Care Act** (ACA)

Factors Facilitating Broader Utilization of CDSS

Factors that can facilitate adoption and more extensive use of CDSS include:

- **Federal or other payer initiatives**
- **Technological developments**



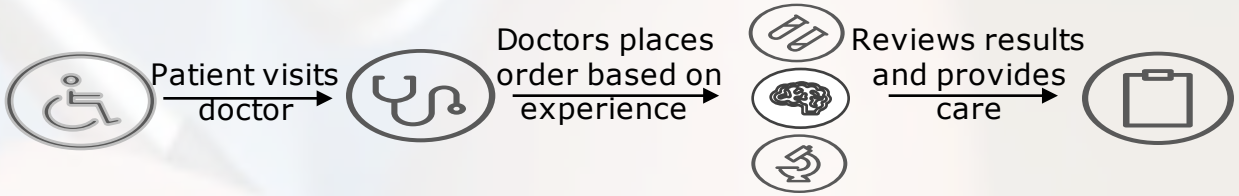
Clinical Decision Support System

Functions

- **Administrative**
- **Managing clinical complexity and details**
- **Cost control**
- **Decision support**

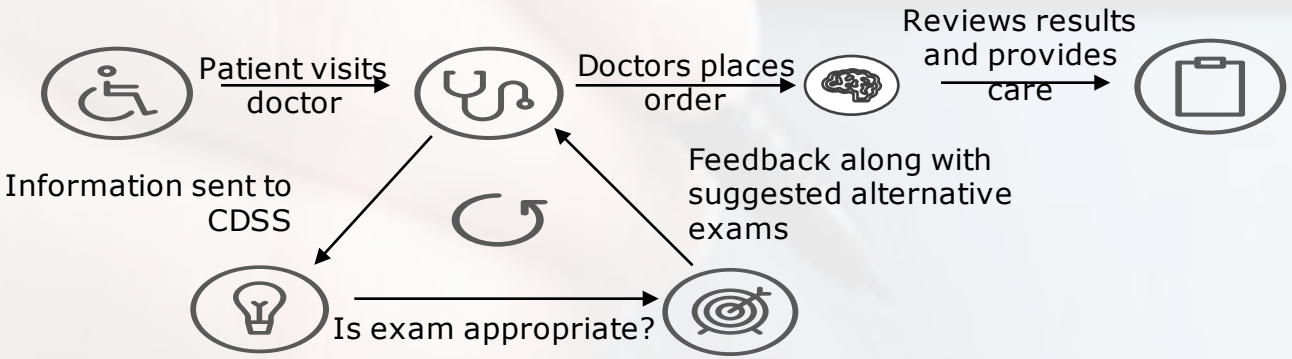
[Source: Perreault & Metzger, 1999]

Typical workflow followed in hospitals



- Non-availability of external decision support system integration
- Current available best practice advisories are limited to internal decisions & experience

Workflow to be implemented (proposed state)



Clinical Decision Support System

Benefits

Potential Benefits:

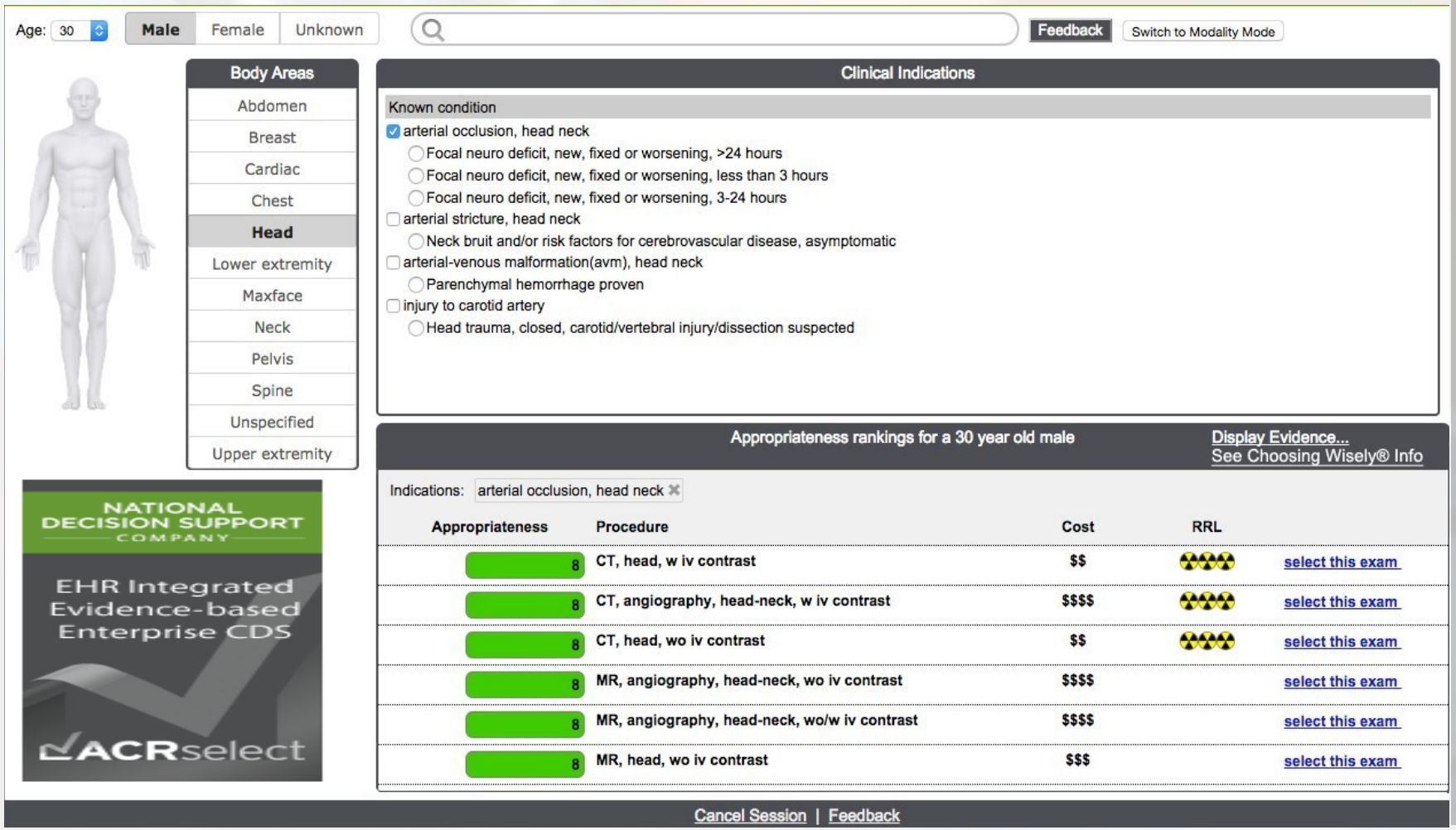
a) **Improved patient safety**

b) **Improved quality of care**

c) **Improved efficiency in healthcare delivery**

NATIONAL DECISION SUPPORT COMPANY

ACR Select



Source: www.acrselect.org

Approach towards CDS Integration Strategy

Considerations

- Learn about which decision tools can help the organization achieve its objectives
- Define the scope for implementation
- Identify the members of the decision support team
- Define the committee's responsibilities

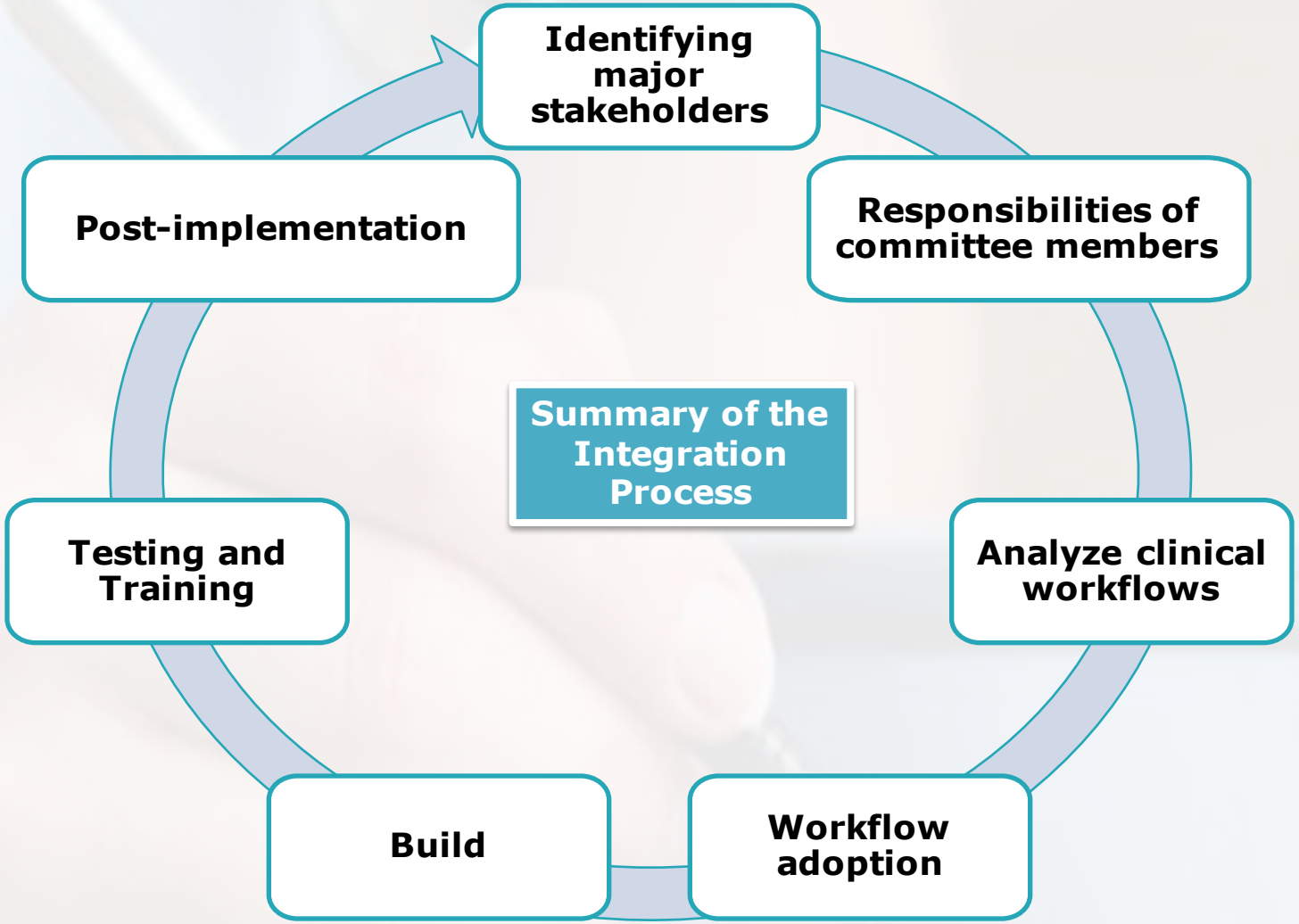
Implementation Pre-requisites

1. What actions should trigger External Decision Support Service?
2. Which all patients will qualify for consulting this service?
3. What is the end-point for your service? Is it SOAP or REST?
4. What security measures will you use to protect data in transit between your system and the clients EMR System? What are the network requirements are needed?
5. What questions or indications, if any, will be asked to the clinician when he/she places an order?
6. What specific order and order details that your system will recommend to the user? Enumerate them with associated order keys so your customer can match them to order on the respective EMR.
7. Will your system use a website to gather additional details from the user?
8. Should the end user acknowledge with a reason as to why they aren't taking the suggested actions? If they choose any acknowledgement reason, is the user required to enter a comment?

Approach towards CDS Integration Strategy

Tools of CDS

- Reminders or Warning Systems
- Best Practices systematically plans and tracks the progress of the patient enabling the clinicians' to place only the relevant orders conveniently without the chance of any mistakes.
- Adverse drug interactions
- Various alternative procedures that are available
- The decision support tool for high end radiological investigation



Strengths

- Aid in gauging consumer perception before go-live
- Provide a standardized approach for real time implementation
- Provide an add-on for a new client

Challenges

- Lack of adequate information
- No Exposure to primary data
- Lack of control over data quality

Conclusion

1. The major issues confronted by the US Healthcare system primarily focusses on 3 aspects for 3 consecutive years.
2. With the upcoming legislations, EMR systems without an integrated CDSS will be of no value to the clients.
3. CDSS+EMR can not only reduce the cost of care delivery, it can improve the overall quality of care by removing the unnecessary steps involved in the process of patient care. A CDS is an add-on guidance tool which aids in the process of clinical decision making without intervening with the skills or judgement of the clinicians.
4. CDSS+EMR makes the most of both the worlds of technology and functionality clubbed together for an improved and better future if implemented for a new client with an existing EMR in practice.

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We face many important, unanswered **questions** about health care.

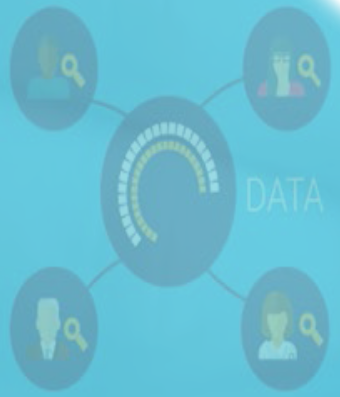
But our current research system is not set up to answer these questions in the most **useful** and **efficient** way.

We need to link **patients**, **clinicians**, **health systems**, and **researchers** as **partners**.

Thank You

And harness health **data** to fos **knowledge** that can lead to **better care**.

to study and how to use data.



wers more quickly to the health and healthcare questions that matter most.