Usability is the Key to Stimulating EHR Innovation and Adoption

NIST Workshop on EHR Usability

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SZOLLOSI
HEALTHCARE
INNOVATION
PROGRAM

Speaker Background

- Active Primary Care Physician
- Medical Director of Clinical Information Systems, Northwestern Memorial Physicians Group (NMPG)
- Founder & Director, Szollosi Healthcare Innovation Program (SHIP)
- Governance Board, Innovation Learning Network (ILN)
- Board of Directors, American Health Information Management Association (AHIMA) Foundation
- Board, Association of Medical Directors of Information Systems (AMDIS)
- Member, HIMSS EHR Usability Taskforce
- EHR Experience: User, Implementer, Developer
- Business Experience: Public companies and Startups

Group Background

- **Northwestern Memorial Physicians Group (NMPG)**
  - 100 providers at 15 clinical offices, Over 300,000 visits/year
  - Clinical support staff at every office
  - Centralized administration office and Call Center
  - Virtual Care Coordination Team

- **Electronic Medical Records**
  - Messaging
  - Results
  - Prescribing
  - Visit Documentation
  - CPOE (labs, billing)

- **Secure Messaging**
  - Clinical and Administrative messages

Agenda

- **HIMSS EHR Usability Task Force: White Paper on Helping Practices use Usability when Choosing a Vendor**
  - Definition
  - Functionality vs. Usability
  - EHR Usability Principles
  - Practice Guide to Evaluating EHR Usability

- **Usability Overview from a User's Perspective**
  - Understanding End User vs. Workflow Usability
  - Measurements: Objective vs. Subjective

- **What can the Government do to Help?**
  - Define and Use EHR Usability Measurements
  - Support Open Platforms
  - Create a National Database for Results and "Challenges"

Selecting an EHR for Your Practice: Evaluating Usability
(Aug, 2010)

EHR Usability Task Force

Purpose: While formal, professionally conducted, usability evaluations can provide in-depth product comparisons, this may not be a practical consideration for small to medium size practices. This guide outlines some basic steps to include in a vendor selection process that will help practices evaluate EMR usability based on current usability recommendations and best practices. While the target audience of this guide is smaller practices, the steps outlined in this document can also be used by large practices and healthcare institutions.

Definition

Usability is the **effectiveness, efficiency and satisfaction** with which specific users can achieve a specific sets of tasks in a particular environment (1).

(1) Schoeffel R. The concept of product usability. ISO Bulletin, 2003; 34:6-7

EHR Functionality vs. Usability

Problem List Functionality

- The EMR permits you to add, update, correct, and remove entries on a patient-centered problem list.
- The problem list may be filtered and sorted in meaningful ways.

Problem List Usability

- The choice list for problem selection uses terminology that is familiar, unambiguous and useful to the clinician for this context of use.
- The mechanism for selecting a new problem is simple and straightforward, requiring very few steps.
- It is easy to visually integrate a problem with associated clinical data or events (e.g. lab results, medications, procedures, or clinic visits).
- The EMR eliminates the need for redundant data entry by allowing easy cross-population of entries in problem lists and progress note assessments.
- The EMR protects against duplicate entries on the problem list (both literal and conceptual) to maintain its clarity and usefulness.

EHR Usability Principles
The Elements of a Usable EHR

EHR Usability Task Force

Practice Guide to Evaluating EHR Usability

1. Engage your <u>users</u> from the start.
2. Consider practice <u>goals</u>.
3. Include usability questions in your <u>RFP</u>
4. Review available <u>survey</u> data.
5. Perform usability <u>tests</u>.
6. Observe <u>other</u> similar practices using the products
7. <u>Discuss</u> your findings with the vendor(s) before making a final decision.

EHR Usability Task Force

Practice Guide to Evaluating EHR Usability

Appendix A: Sample EHR Usability RFP Questions
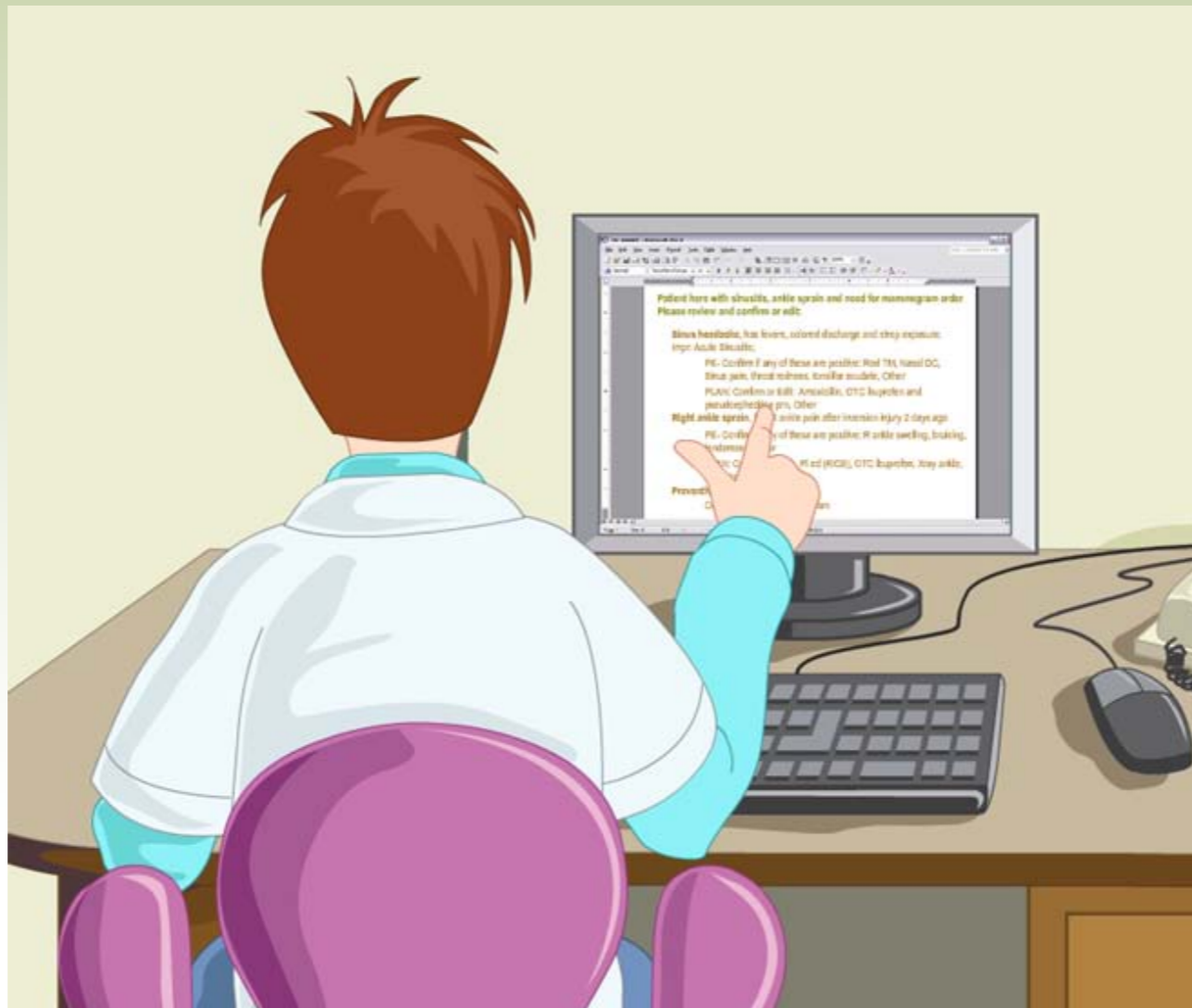
Appendix B: Sample Usability Task Scenarios

Appendix C: Sample Post-Test Usability Scales

Two Types of Usability
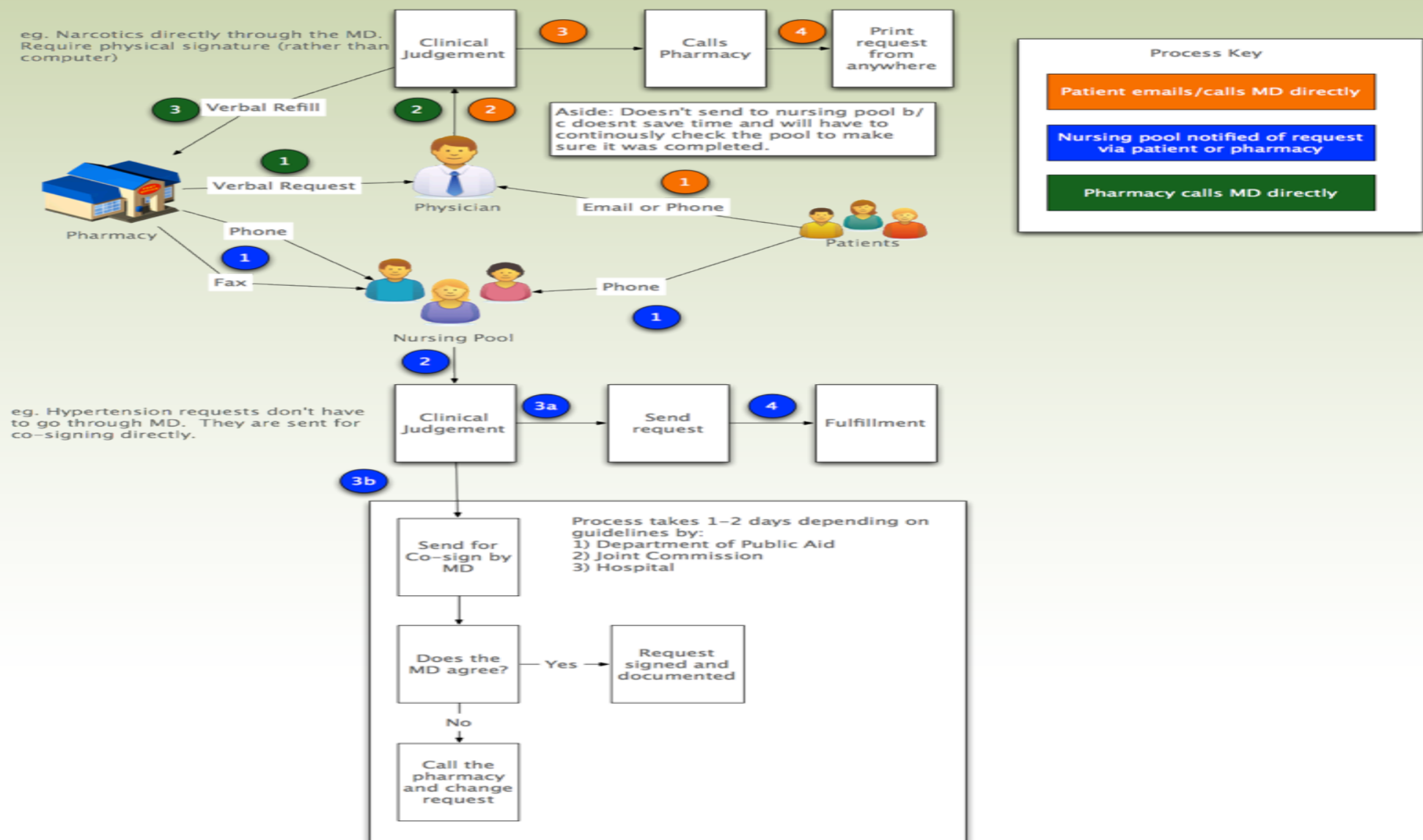
Individual Usability

- The "Micro" view

- Physician-Centric /User-Centric

Two Types of Usability

Workflow Usability

- The "Macro" or Holistic View

- Workflow-focused

Rethinking our Perspectives

- Assume any task has **Units**: time, energy, effort, frustration, failure…

- Then ask, what is the potential effect of usability on <u>decreasing</u> those Units from the <u>MD's perspective</u>?

- **Individual Usability**

  - Current: 100 units → Future: 80 units (MD)

  - Via usability principles, data visualization…

- **Workflow Usability**

  - Current: 120 units (100 MD, 20 Team)

  - Future: 90 units (30 MD, 60 Team)

  - Via usability principles, data visualization…

  - + Task-shifting

Why Do We Need to Measure?

You Can't Improve What You Don't Measure

But not all measurements are for ratings

(side note: you need to market this better to vendors)

Two Ways to Measure Usability

Objective

5-Star Safety Ratings

Find out Valuable Information on Crash Tests, Rollover Ratings, and Safety Features.

safercar.gov

Year/Make/Model	Front Driver	Front Pass.	Side Driver	Side Pass.	4x2 Rollover	4x4 Rollover
2010 Acura RL 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★	Not Rated	★★★★★
2010 BMW 3 Series Wagon w/SAB	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
2010 Buick Lacrosse 4-DR w/SAB	★★★★★	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★☆
2010 Cadillac CTS V 4-DR. w/SAB	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆

To Vendors: No one tells GM <u>how</u> to improve safety, they just report the measurements.

Two Ways to Measure Usability

Subjective

To Vendors: This is being done already, what can we learn from expanding further?

USABILITY IS THE KEY TO STIMULATING EHR INNOVATION AND ADOPTION

What can the Government do to Help?

- **EHR Usability Measurements**
  - Define clear and reportable <u>Objective</u> measurements
  - Define a useful range of <u>Subjective</u> measurements
  - Explain how different stakeholders can perform these measurements in a consistent manner, including the creation of <u>standardized Use Cases</u>
  - Incorporate appropriately into the <u>Certification</u> Process

What can the Government do to Help?

- **Support Open Platforms/Open APIs**
  - Encourage/Mandate vendors to open their platforms
  - Grow the <u>SMARTPlatform</u> as a potential option for vendors who can't or won't open their platforms

"Get those vendors to separate their data from the application!"

– Dr. William Stead, NCR Report, Jan, 2009

SMART

What can the Government do to Help?

- **Create a national EHR Usability Database**
  - Real world users <u>Report</u> Usability Scores
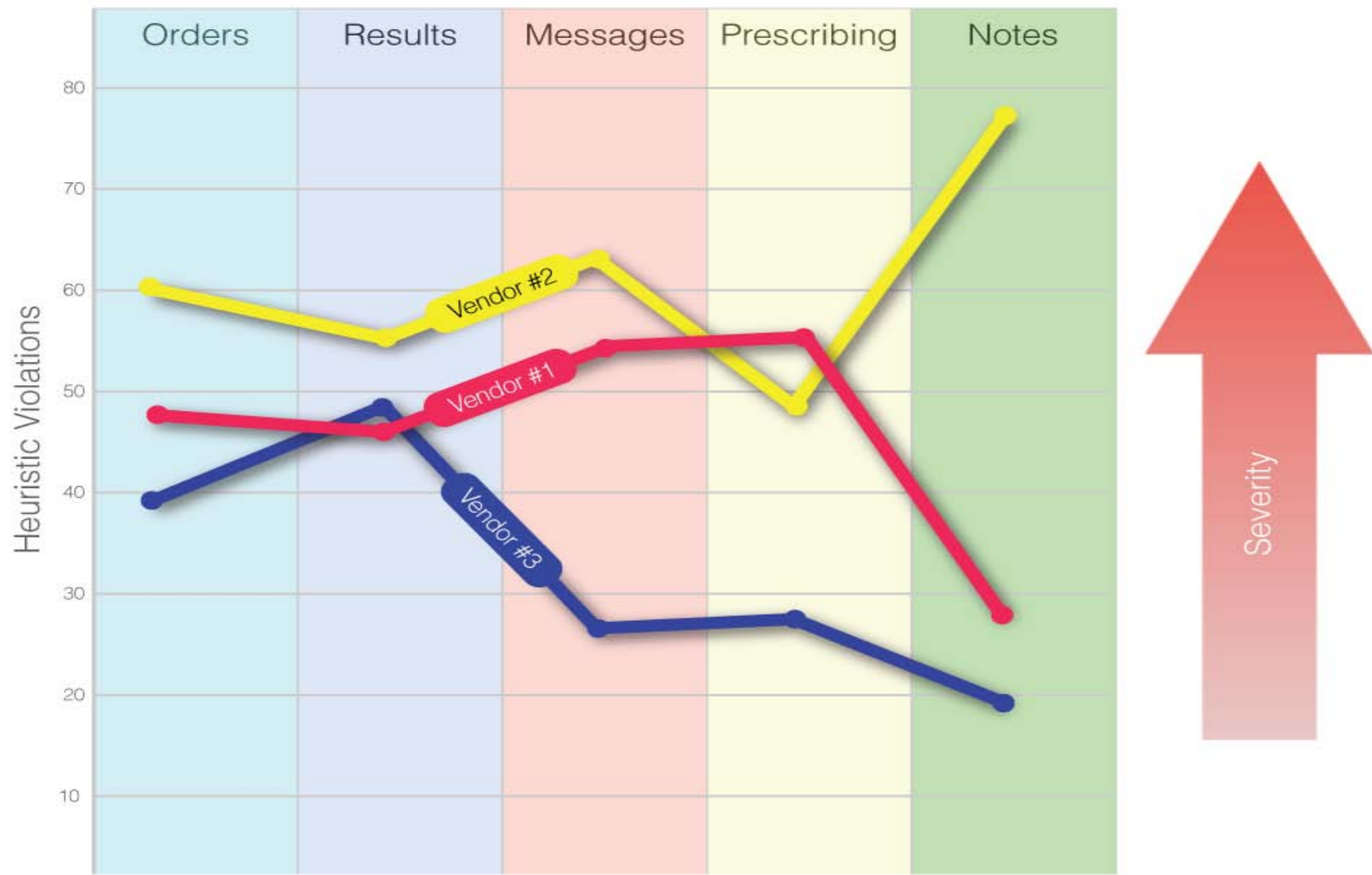 - Real world users submit <u>Challenges</u>

What if we got all of the above?

*Let's Flash Forward
To the Not Too Distant
Future…*

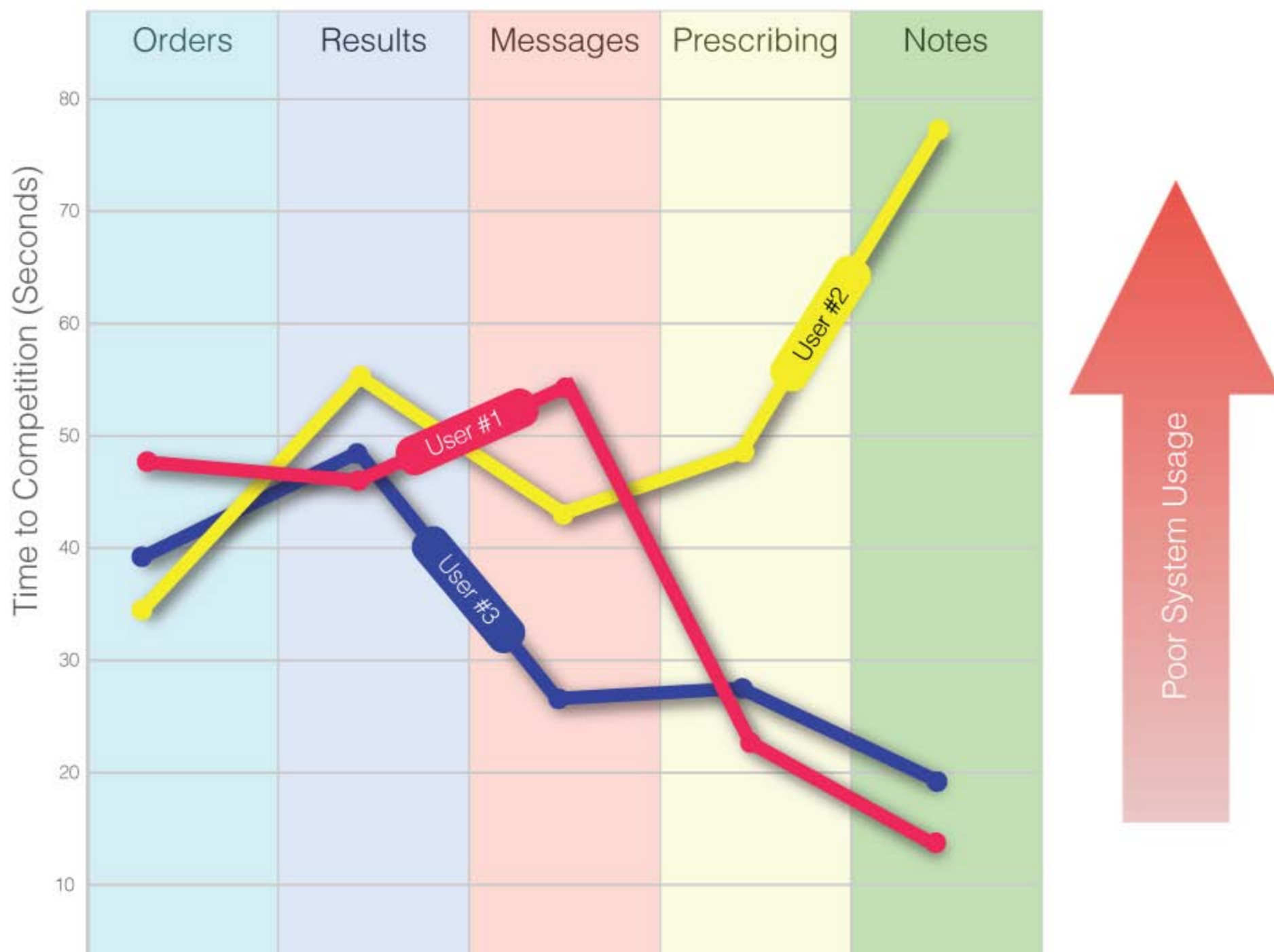# What if we had <u>Objective</u> EHR Usability Measurements?

What if we had <u>Objective</u> EHR Usability Measurements?

- **As a User:** I'd know…
    - Where/How to ask my vendor for improvement
    - Where/How to consider innovating myself
- **As a Buyer:** I'd know…
    - What are the strengths/weaknesses across EMRs
    - Where/How to better negotiate with vendors
- **As a Vendor:** I'd know…
    - Where to appropriately focus some time and resources to improve your user's experiences and outcomes

What if we had <u>Subjective</u> EHR Usability Measurements?

What if we had <u>Subjective</u> EHR Usability Measurements?

- **As a User:** I'd know…
  - How individuals are doing across my organization
  - How we are doing compared to other organizations
- **As a Buyer:** I'd know…
  - How my testers do compared to beginners and expert users at other sites
  - How sites similar to ours perform in areas that matter most to us
- **As a Vendor:** I'd know…
  - How my users are performing (and Who needs help)
  - If there were universal problems across users

What if we had <u>Subjective</u> EHR Measurements + National Reporting

Function	Site 1	Site 2	What to Do
Lab Review	**80% good 20% poor**	**90% good 10% poor**	**Sites Educate/Train Negative Outliers**
Med Refill	**0% good 100% poor**	**80% good 20% poor**	**Sites talk to clarify differences: settings, workflow, technology**
Smoking Status	**0% good 100% poor**	**2% good 98% poor**	**Do Usability Research, and Study Positive Deviants**

What if EHRs had Open Platforms?

- **As a User**
  - I'd love the option to find "apps" to improve <u>my specific</u> Usability (and Functionality) Needs
  - I'd shop around for the best product and the best deal

- **As a big EHR Vendor**
  - I'd want to control how "apps" interact with my system
  - I'd be happy if these made my clients more successful
  - I'd be unhappy if this increased my work without an ROI

- **As a small "EHR App Developer"**
  - I'd love to focus on the App, not on the data exchange
  - I'd love to ability to re-use one App across systems

What if Open Platforms + National Database for "Challenges" + Ecosystem Supporting Developers?

And I got these requests from my users…

- A bunch of docs want to look at the Problem List in a variety of different ways.

- A single Cardiologist wants a graphical representation of a somewhat obscure MI risk score he can show his patients at the time of care.

- The Renal docs want a program that calculates the risk of a patient developing kidney failure, and automatically creates a registry of the high risk patients so their care coordination team can track them.

- A group of docs and staff are asking for a tool to help them better manage their day to day workflow, such as the medication refill process and lab results.

Problem List: Current View

Classification View   [Active Problems ▼]

Annotated Display	Name of Problem	Code	📋	Life Cycle Date	Course	Or
🗔 **All Problems**						
ECHO Doppler (2/01...	AORTIC VALVE DISORDE...	424.1		10/30/2003	Stable	
Glaucoma, sees NM...	GLAUCOMA	365	📋	8/11/2003	Stable	
BPH	HYPERTROPHY (BENIGN...	600.0		9/29/2003	Stable	
Asbestos exposure: ...	NONSPECIFIC ABNORMA...	793.1		2/23/2005		
High LDL, Low HDL	Pure hypercholesterolemia	272.0		9/29/2003	Stable	
DM- type 2	type II diabetes mellitus [no...	250.00		8/7/2003	Stable	
HYPERTENSION	UNSPECIFIED ESSENTIA...	401.9		8/25/2004		8/

Problem List – Future View #1

Problem List – Future View #2
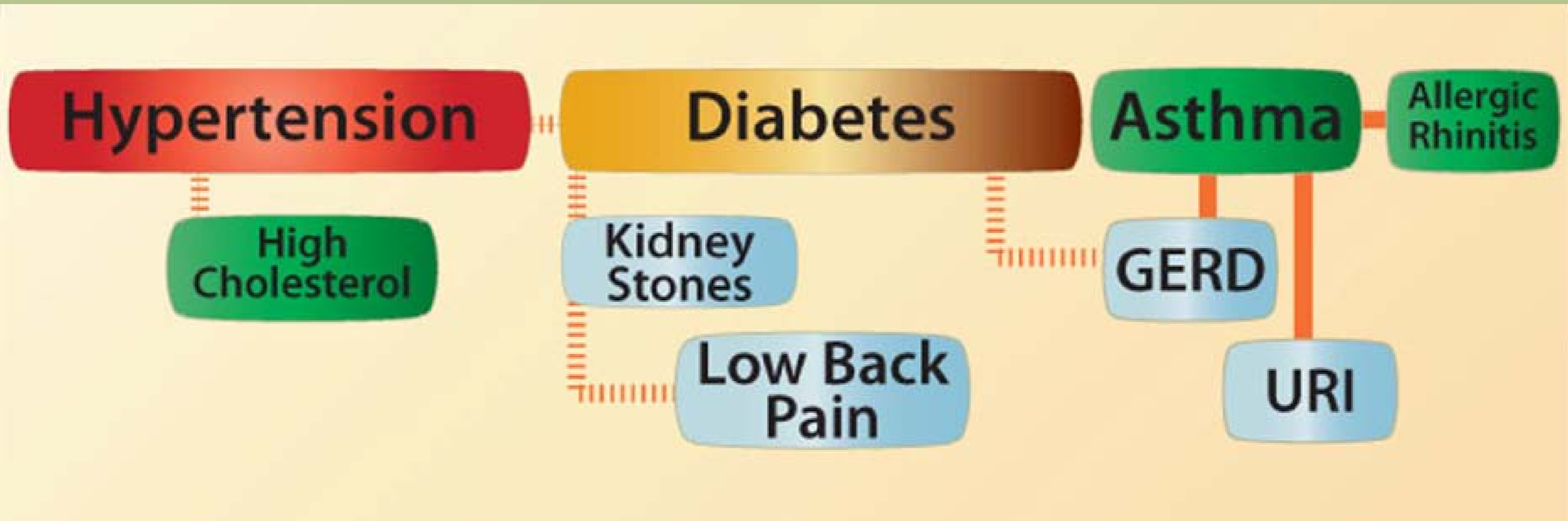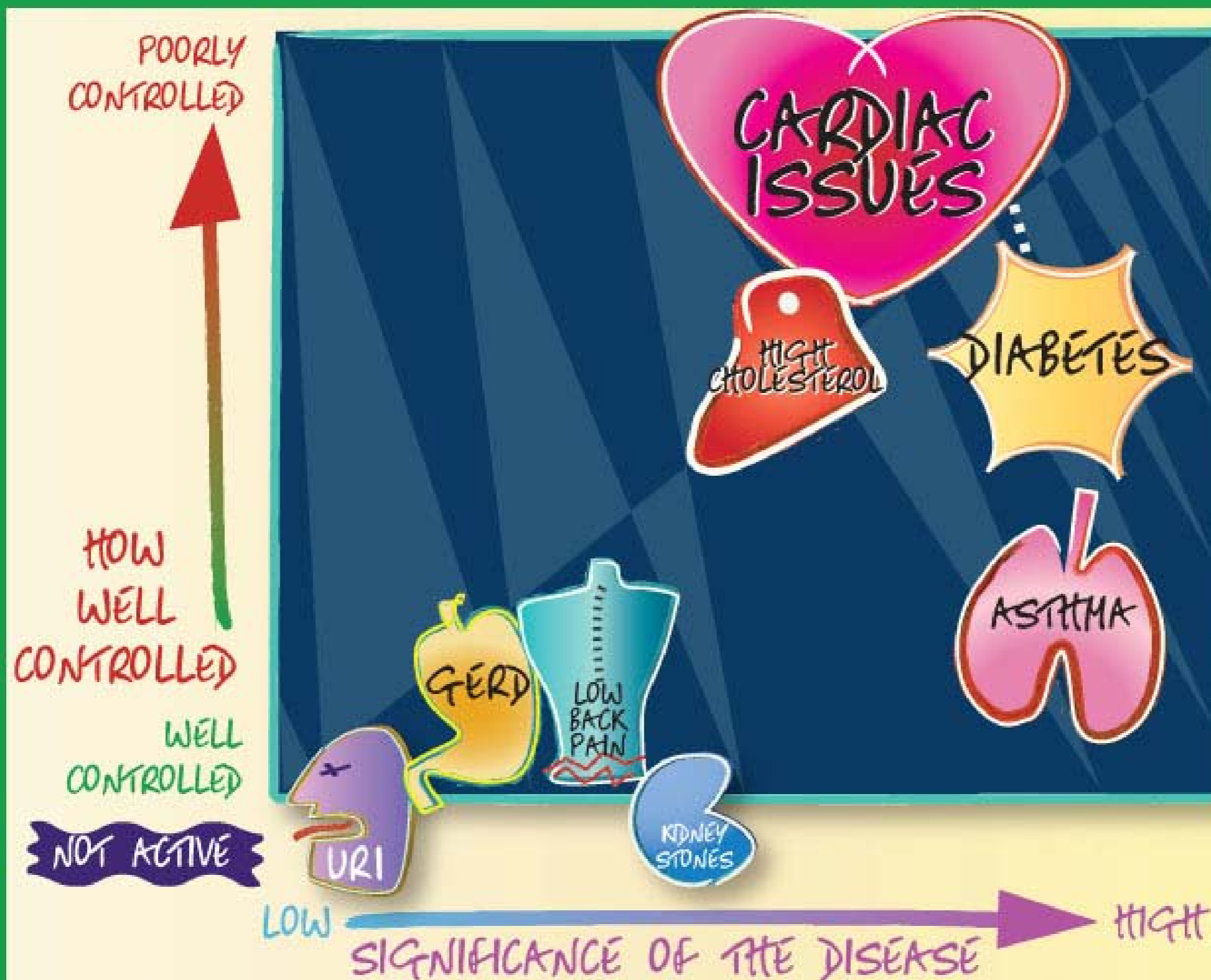
Summary

- **Recognize Individual and Workflow Usability**
  - Think more about how usability impacts <u>team-based care</u>
- **You Can't Improve What You Don't Measure!**
  - Usability Measures can be used for Reporting, but also for <u>Brainstorming</u>
  - They can be used for identifying <u>Product</u> issues, but also for identifying <u>User</u> issues
- **Open Platforms and Open Communication…**
  - We must create a technical and cultural ecosystem which allows for easier development of "<u>EHR Extender Apps</u>"
  - <u>Innovation</u> will flourish… and Usability will improve!

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