

Key Technologies in Healthcare



*Technology Association of Georgia
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CIO, McKesson*

McKESSON

McKesson Corporation

- Strong, stable company
**\$82+ billion in revenues, Fortune 15, S&P 500,
Established 1833**
- Extensive resource base
24,000+ employees solely dedicated to healthcare
- Comprehensive array of solutions
Significant value through a single relationship
- Broadest customer base in healthcare
Experienced partners in improving healthcare



Focus for Today: Key Technologies

- **First, do no harm**
- **It's all about you**
- **A peek inside**

An Opportunity to Improve!

Medical Errors May Cost Up to 98,000 Lives A Year

\$200 - 250 Billion in US Healthcare Costs Due To "Unmanaged Variation"

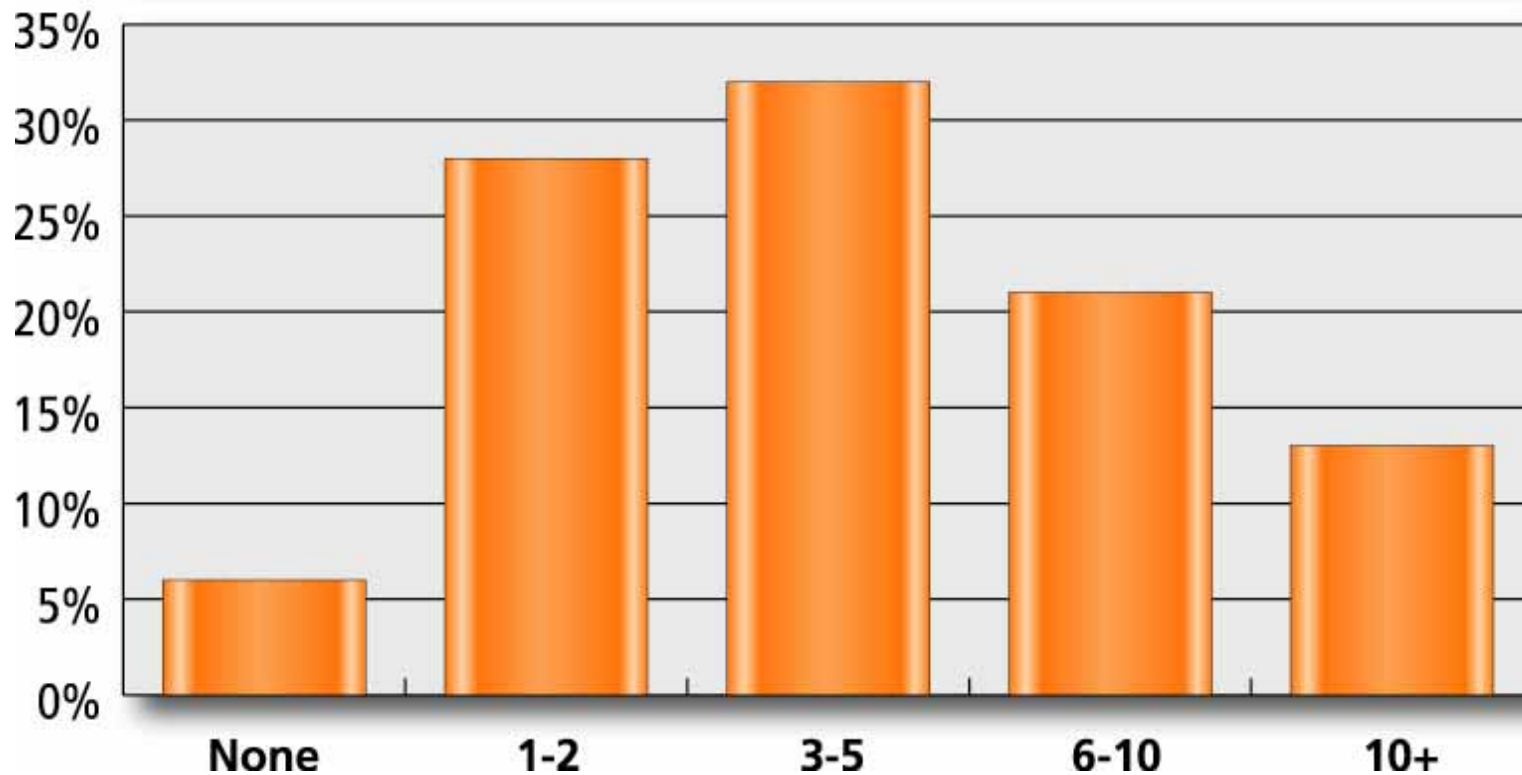
Data Missing in 81% of Clinical Encounters

250K 'Scripts Written Each year Result in ADEs

Preventable ADEs Cost \$2B Annually in In-Patient Setting Alone

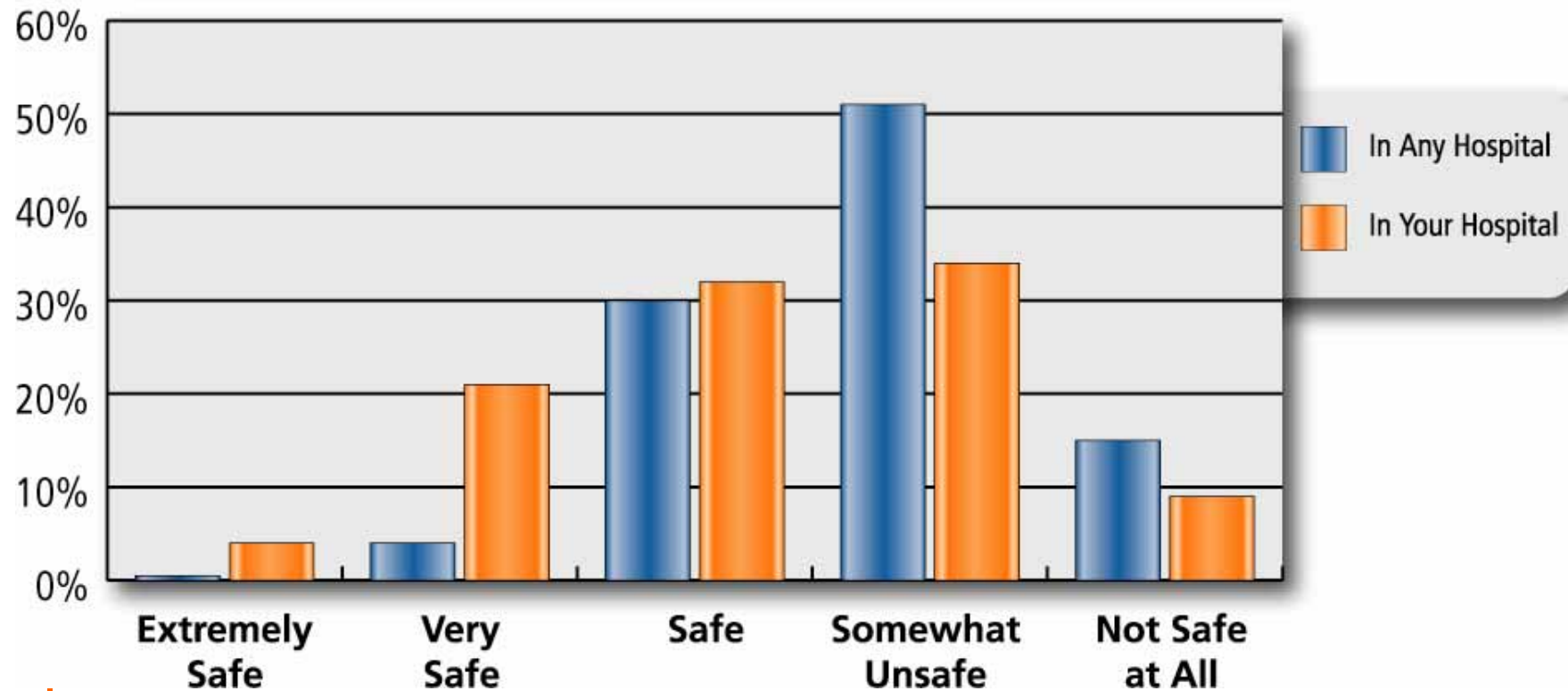
Medication safety is still a concern

How many serious medication errors have you witnessed within the last five years?



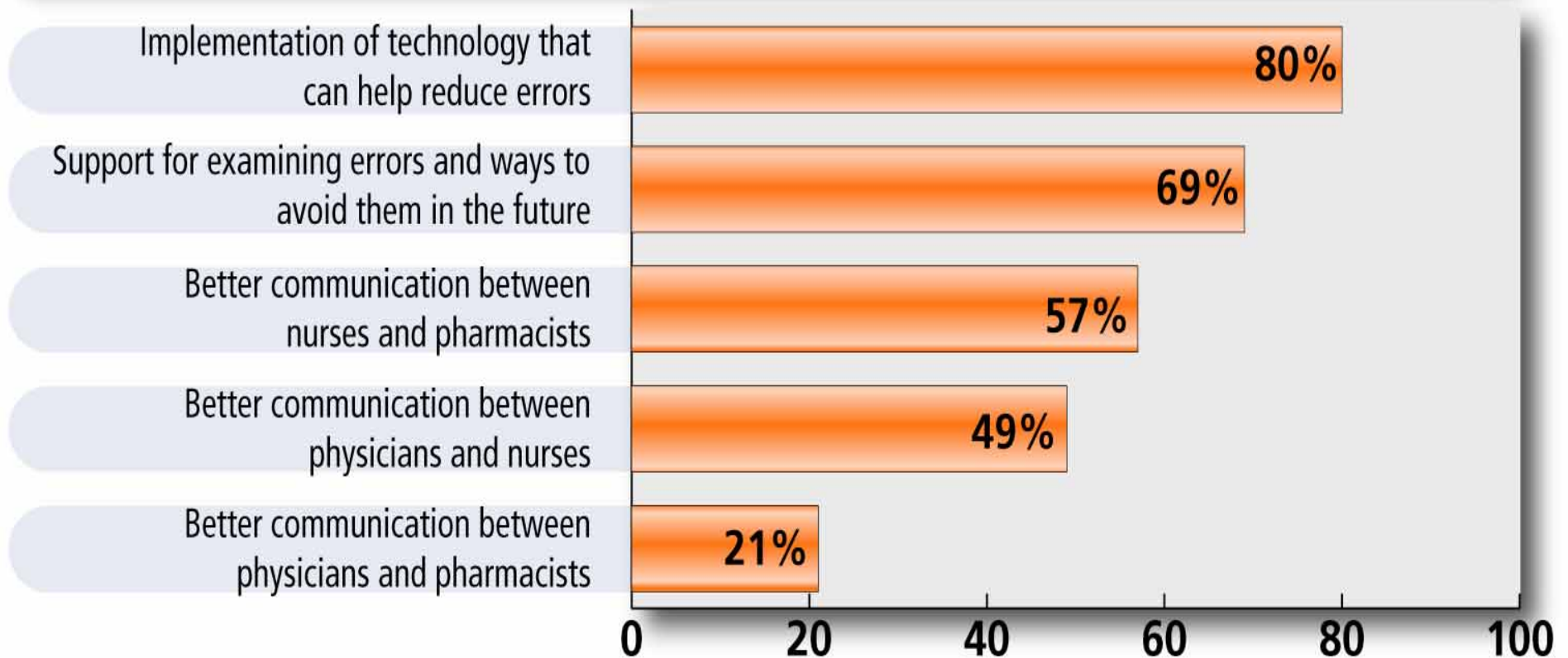
How safe would you feel as a patient?

Concerning medication errors, how safe would you feel as a patient?



Technology key to improvement

If you feel medication safety is better in your hospital than five years ago, which of the following are reasons for this improvement?



Use of Technology by Frontline Nurses and Perceptions of Patient Safety Value

Technology	Percentage of respondents who said they have used the technology	Respondents' perception of technology value for improving patient safety <small>(1=no impact on patient safety, 7=major impact on patient safety)</small>
Online documentation at the nursing station	43%	4.5
Online documentation at the point of care	32%	5.1
Bar-coded medication administration	23%	5.6
Automated medication dispensing cabinets	70%	5.7
Electronic reminders and alerts	22%	5.3
Electronic "plan of care" tool	36%	4.0

Conclusions

- **While medication safety has improved, much progress remains**
- **Use of proven technology among frontline nurses still remarkably low**
- **Even nurses with little exposure to clinical systems recognize their value**

Innovation Track Record



1989

Bar code scanning with computer-generated MAR



1992

Robotic drug dispensing



2000

Clinical data repository with rules-driven monitoring alerts



2004

BPOC/Smart IV pump integration



2005

Smart/mobile medication cart

How simple is that?



No one wants to be treated like a number. But sometimes numbers can make all the difference.

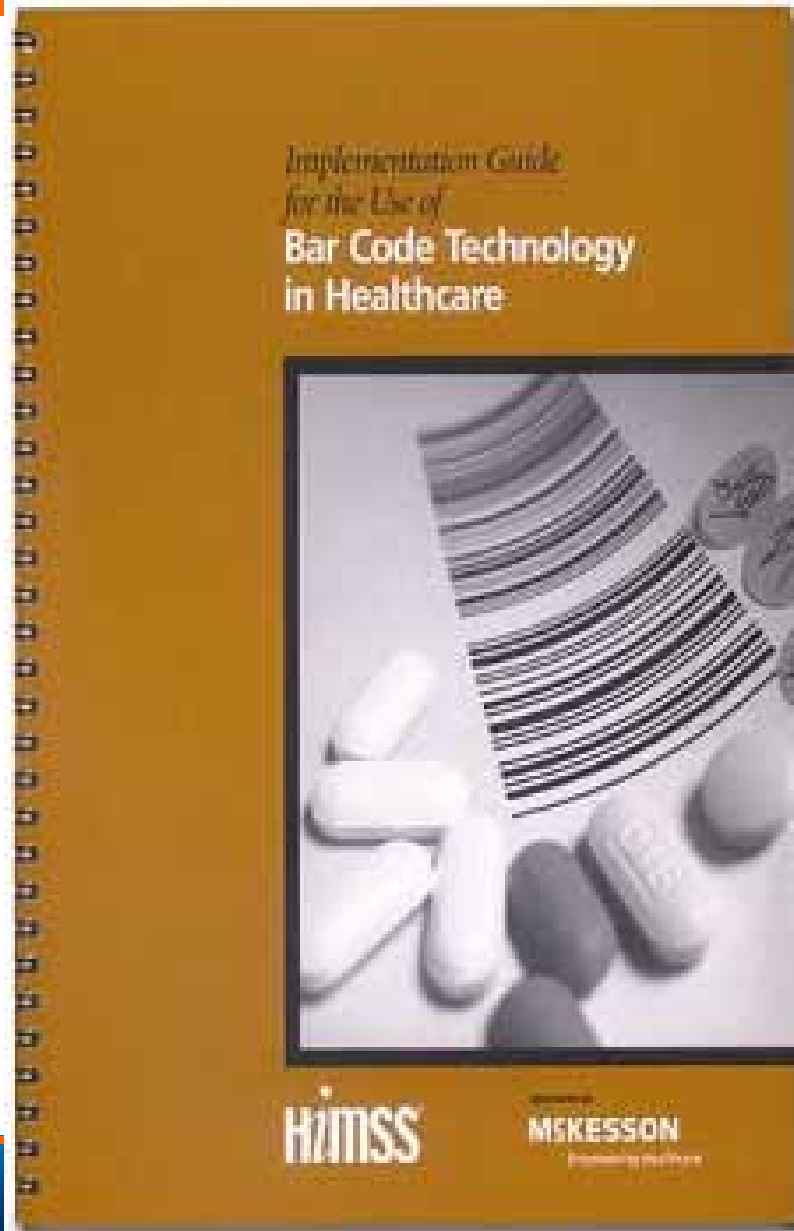
You see, when Marion Saunders was in the hospital, she wore a wrist ID bracelet that had nine numbers and a bar code on it. Every day, the nurse scanned the bar-code label on Marion's medication and then the bar code on Marion's ID bracelet. A computer then made sure that the bar codes matched, which meant that Marion was getting the *right* amount of the *right* medication at the *right* time.

Thanks to the advanced technology we have in place at *(hospital name here)* to double check medication, we're preventing medication errors *before* they can happen. Bar-code checks and double checks are important ways we at *(hospital name here)* go the extra mile to keep patients like Marion safe every day.

At (hospital name here), safety counts.

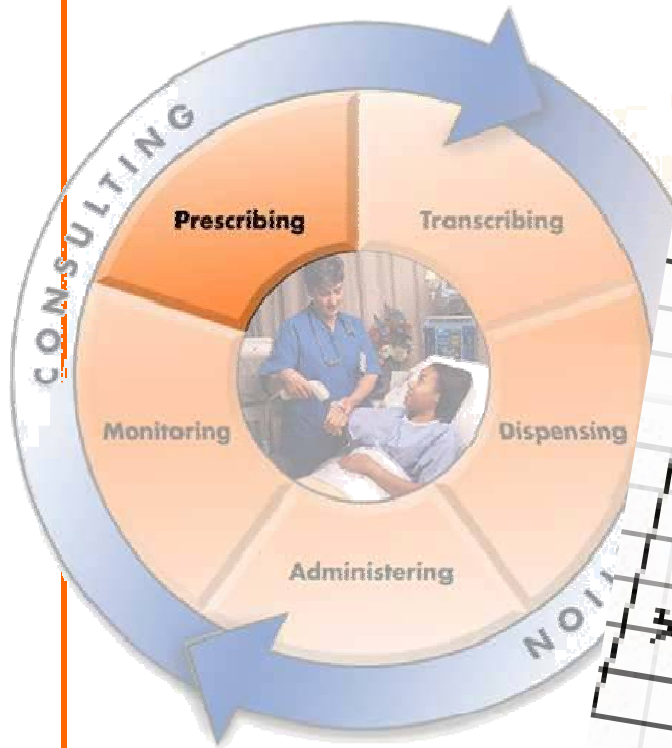
SSON

Industry and Regulatory Engagement



- **FDA Bar Code Mandate**
- **HIMSS 2004 Leadership Survey**
- **Health Data Management 2004 CIO Survey**
- **JCAHO National Patient Safety Goals**

Prescribing



* *Amoxicillin* to 1300 volume
 2000
 PATIENT ROOM DISPENSARY OUTPATIENT CLINIC

1. *Amoxicillin*
 250mg/5ml
 175mg bid = 280mg bid
 10/1/99

2. *Amoxicillin* also
 Cefaclor 200mg bid
 $AUC = 60$
 $AUC \propto (GFR + 25)$
 $60 \propto (50 + 25)$
 $= 470mg$ WPP
 7/1 date

3. *Amoxicillin*
 250mg WP
 250mg bid
 10/1/99

Dispensing Automation Solutions



High Speed Packager



Unit-dose Cart Filling



Storage and Retrieval
Cabinet Filling



Narcotic Mgt. and Storage



Dispensing Cabinets

Administration

- Single integrated wireless handheld device at the point of care
- Automates the documentation process and ensures **positive** patient / medication match



✓ Right Patient

✓ Right Medication

✓ Right Time

✓ Right Dose

✓ Right Route

Presbyterian Hospital, Albuquerque: Patient Safety Investments

**Robot in
Pharmacy**



**Pre-Redesign Study
(March 2000)**

**Automated Cabinets
on All Units**



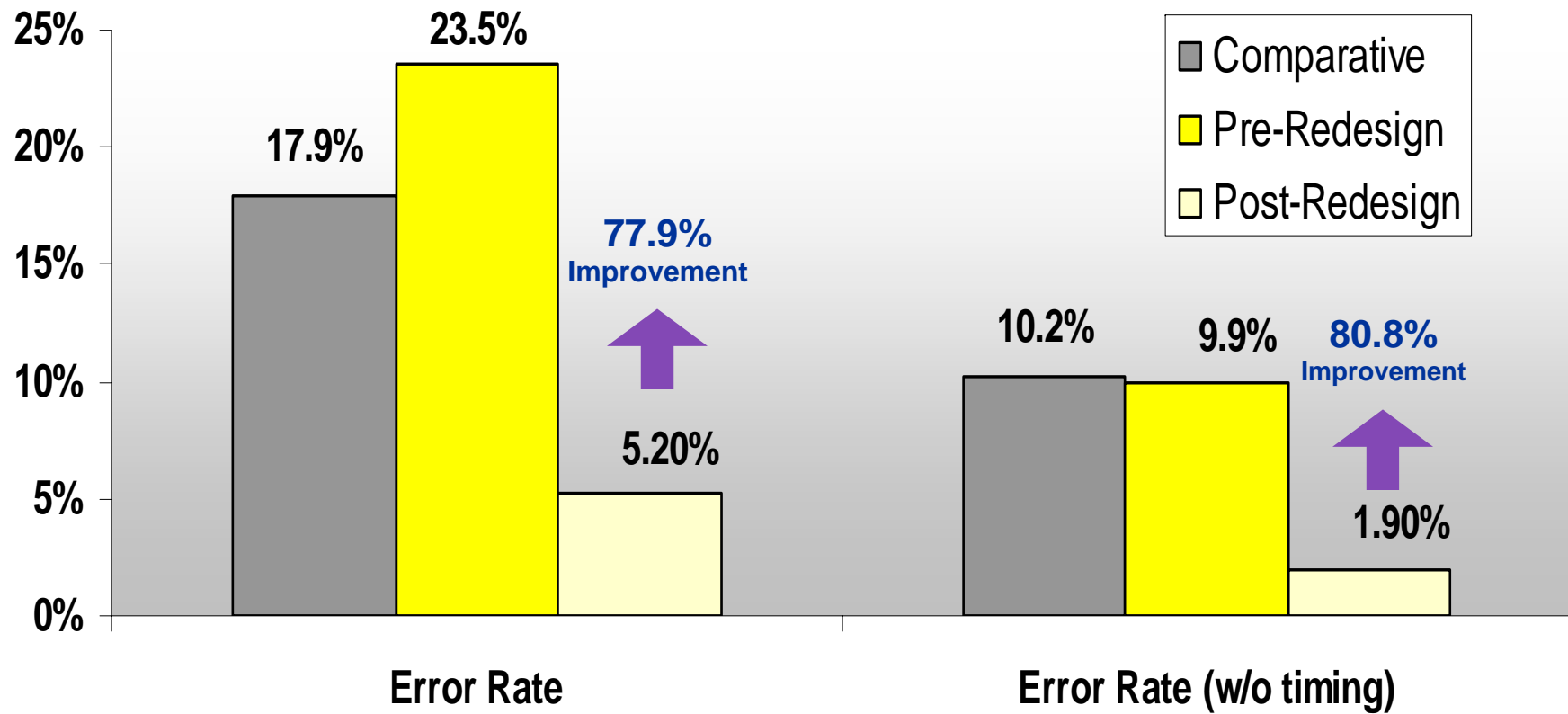
**BPOC on
Inpatient Units**



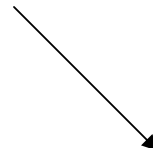
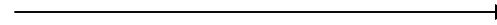
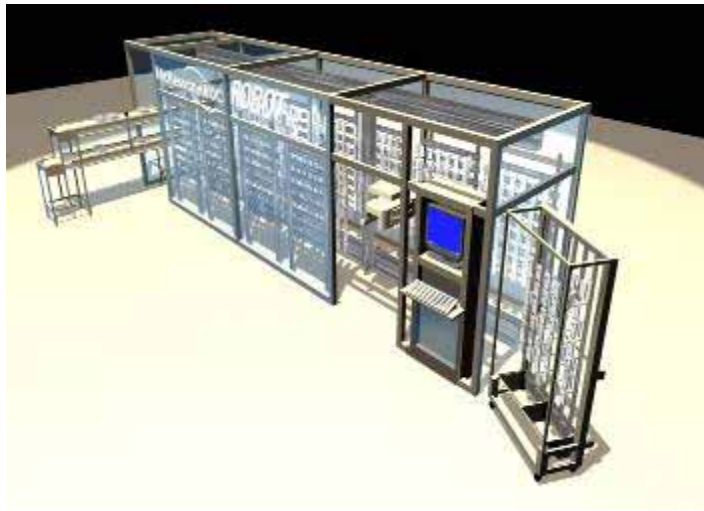
**Post-Redesign
Study (Nov. 2003)**

- Bar-coded medications
- Transcription error cross-functional team (pharmacists, nurses, unit secretaries, physicians)
- Pharmacy staffing
- Pharmacists placed on critical units

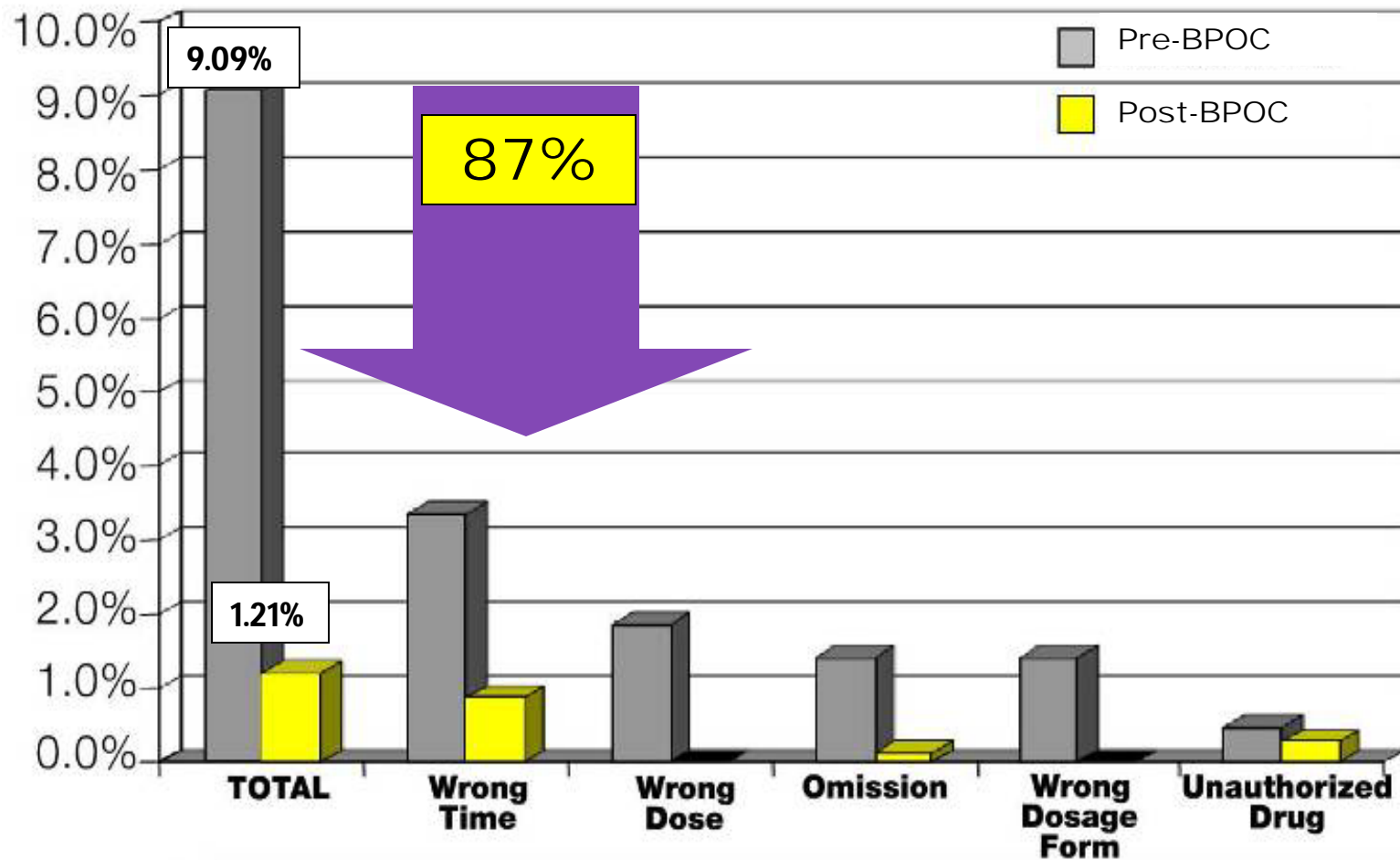
Results



University of Wisconsin: Inpatient Automation



Pre- vs. Post-BPOC Error Rates



Unsurpassed Results

Each week, McKesson customers

***Issue 403,995 warnings and
Prevent 55,776 medication errors***

***44 Million medications safely scanned at the
bedside every year***

Focus for Today

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- **It's all about you**
- **A peek inside**

Healthcare for the Patient

Patient Education

- Symptom Advisor
- Consumer Content

Personal Health Record

- Medications
- Allergies
- History
- Results

Personal Health Management

- Health Assessment
- Family history
- Genomics
- Care Plan
- Coaching
- Alerts

Self Service

- Patient Kiosk
- Bedside Patient Access
- Patient Portal

Remote Patient Monitoring

- McKesson Telehealth Advisor

Intervention Management

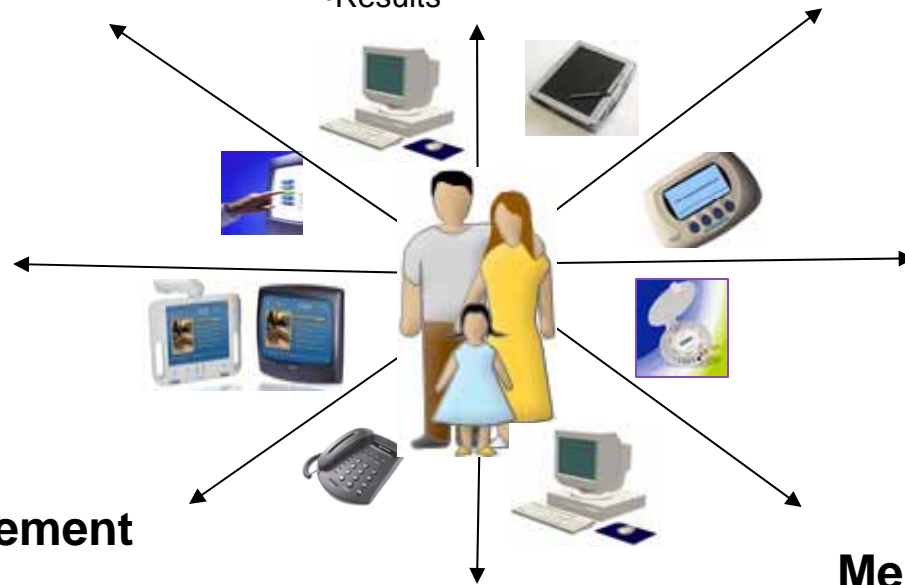
- eVisit
- Secure Messaging
- Referrals
- ePrescribing
- Nurse Triage

Distribution

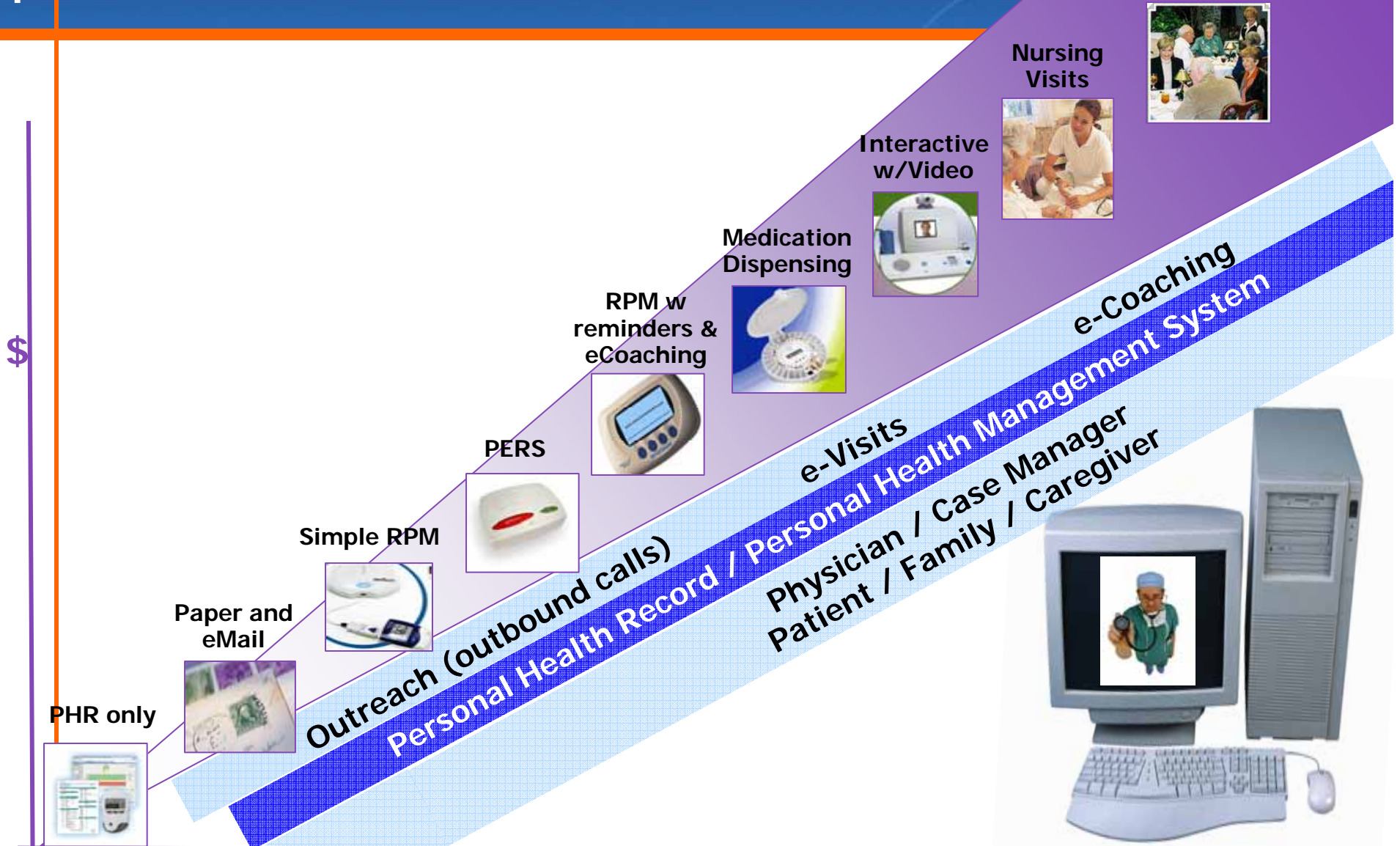
- Supplies to Home
- Equipment to Home
- Prescriptions to Home

Medication Management

- Specialized Packaging
- Medication reconciliation
- Medication compliance



Continuum of cost and complexity to match each patient's needs



Simple

Advanced

MCKESSON

In-home health monitoring



Monitoring Technologies



Hello Mary.
What is your weight today?

120
Less More

◀ ▶ OK

Reminder: A weight gain may be a sign of fluid retention. Be sure to take your medicines and call Dr. Jones if your weight goes up more than 3 pounds.

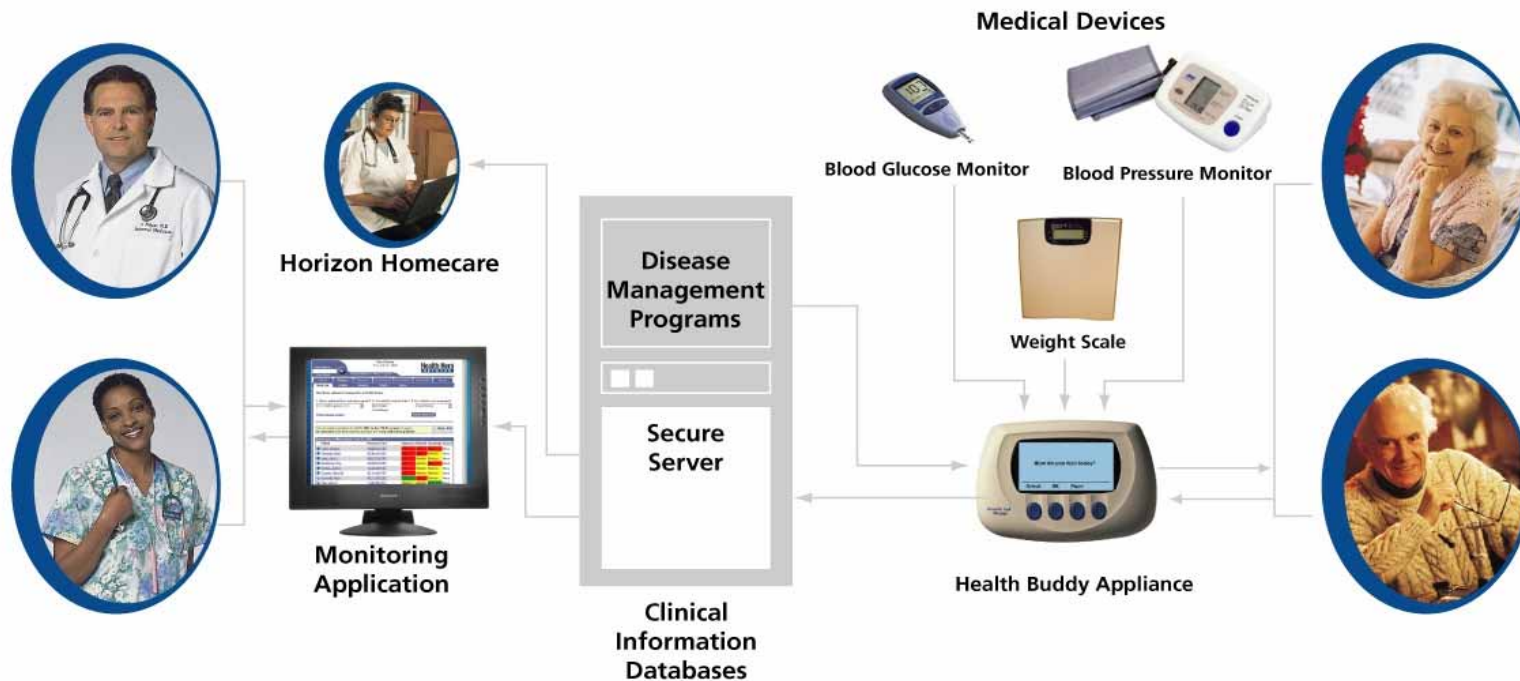
OK

Daily Health Quiz: What is the best way to avoid feeling thirsty?

1. Drink water constantly
2. Save your fluids for mealtime and when you are feeling very thirsty
3. Eat more salt

1 2 3

Telehealth Advisor



© Health Hero® Network, Inc.

- Remote Health Monitoring Technology
- Clinical Information Databases
- Internet-Enabled Decision Support Tools
- Disease Management Programs
- Integration to Homecare Agency

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Enterprise-wide image access – improving healthcare fundamentals

- The Importance of Imaging in Medicine is increasing
- Specialists require productivity tools to simplify their complex workflow
- Enterprise Imaging – “paradigm shift”
- Tip of the “Imaging Iceberg”



Image Enabled Care – throughout Healthcare

Primary Care Physician Portal - Complete with Images

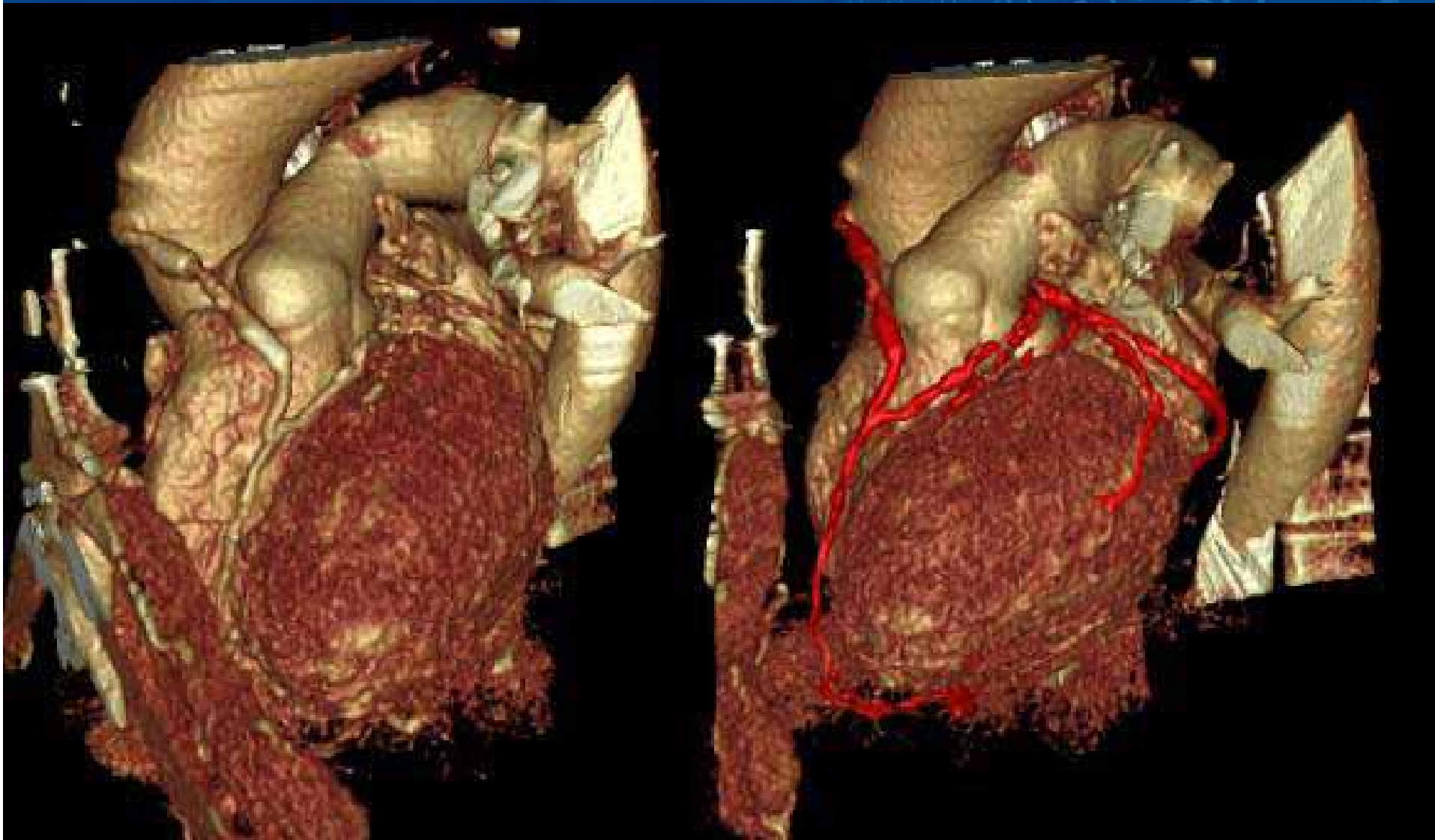
- Discrete Data
- Lab
- Vitals—I & Os

- Documents
- History & Physical
- Discharge Summary

Medical Images

The screenshot displays a web-based interface for a Primary Care Physician Portal. It features several key components:

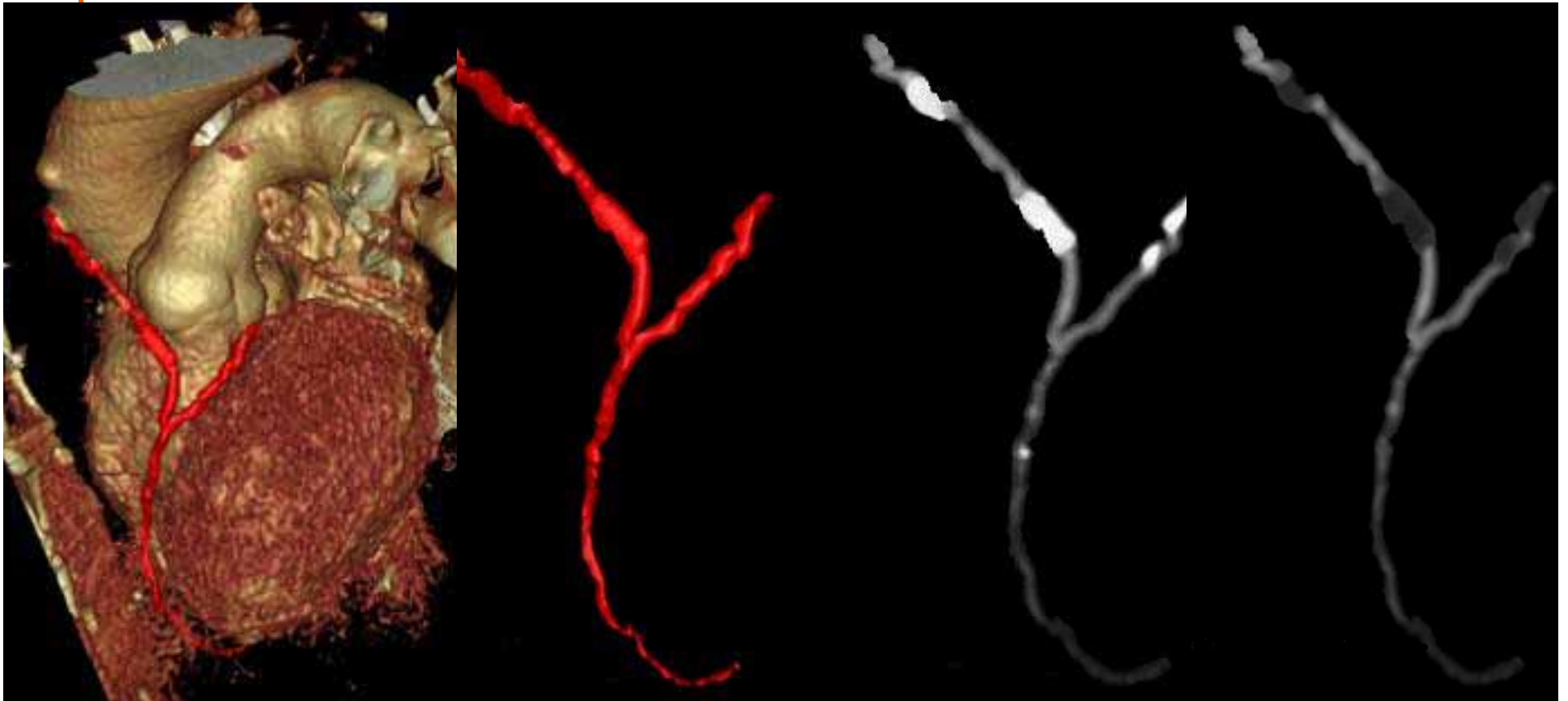
- Lab & Result Viewer:** A table with columns for 'Item', 'Order Number', 'Dept Status', and 'Priority'. It lists various lab tests and their results.
- EDIT Patient Vitals Graph - Temperature:** A line graph showing temperature over time, with a title 'Temperature (02/03/2001 00:00 - 04/04/2001 16:04)'. The x-axis represents time and the y-axis represents temperature.
- Medical Images:** Two chest X-ray images are displayed side-by-side, showing the lungs and heart.
- Textual Data:** A section titled 'Normal' contains a table with patient information, including name, address, and contact details. Below this, there is a 'Vitals' section with fields for height, weight, and temperature.



Extraction of heart and vessels

MCKESSON

Vessel extraction and Visualization



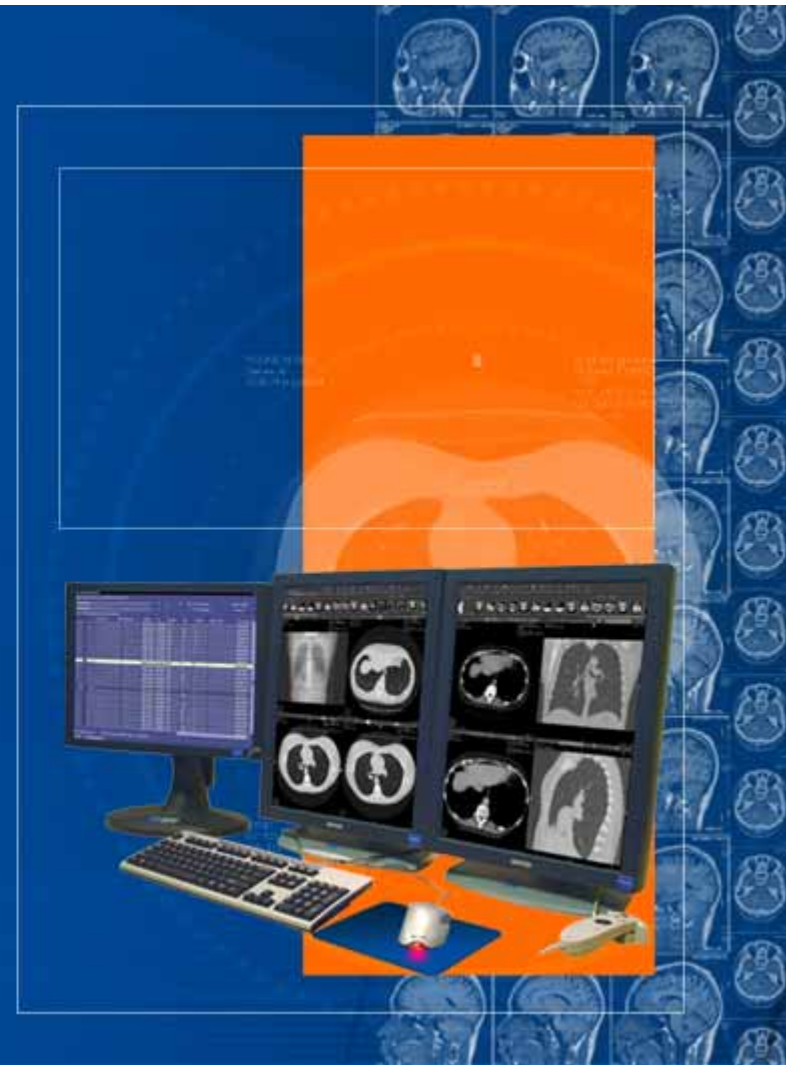
Heart Volume Rendering

Extraction

Interpreted

Calcium Cleansed

Image data volume increasing....



MCKESSON

Large image-volumes require advanced image processing tools to interpret and create accurate diagnosis

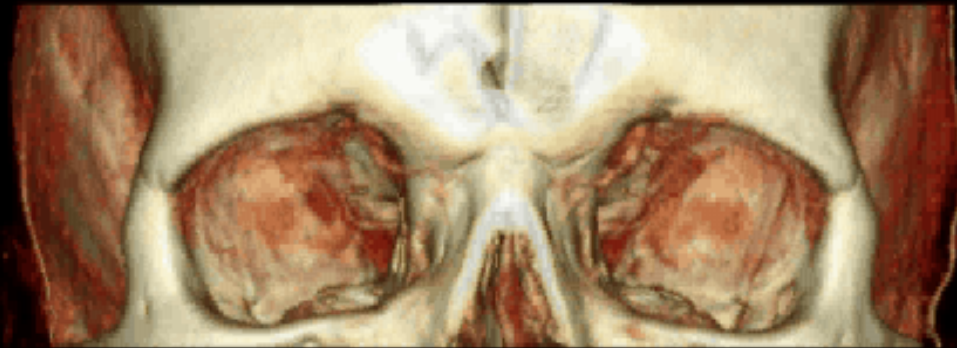
3D Color Volume

Im:1
DERIVED\SECONDARY COMPRESSED
512x512

S

Anonymized

R



kVp:120 mA:230 ms:1426

512x512x93 Transverse
(0.38x0.38x0.60mm)



CT
Pos:HFS
McKesson Medical Imaging Group

Voxar 3D

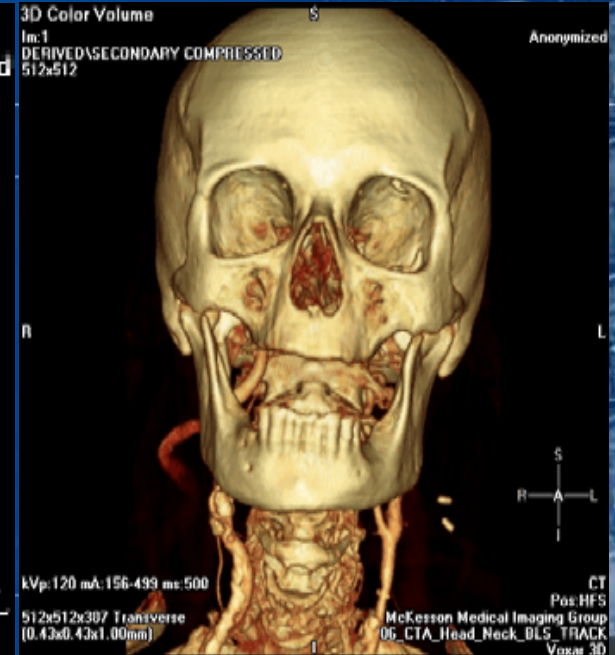
3D Color Volume

Im:1
DERIVED\SECONDARY COMPRESSED
512x512

Anonymized

R

L



kVp:120 mA:156-499 ms:500

512x512x307 Transverse
(0.43x0.43x1.00mm)

CT
Pos:HFS
McKesson Medical Imaging Group
06_CTA_Head_Neck_BLS_TRACK
Voxar 3D



Thank You!



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