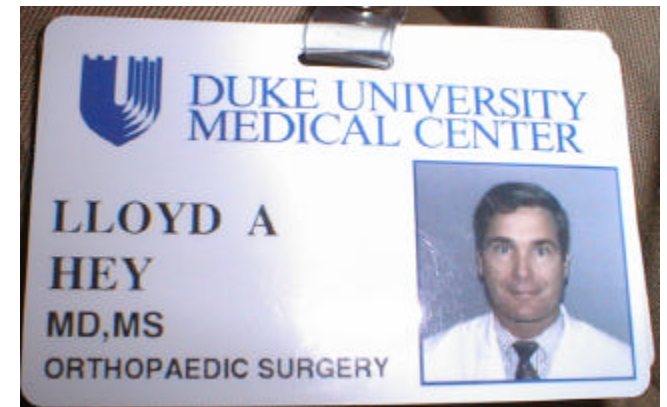


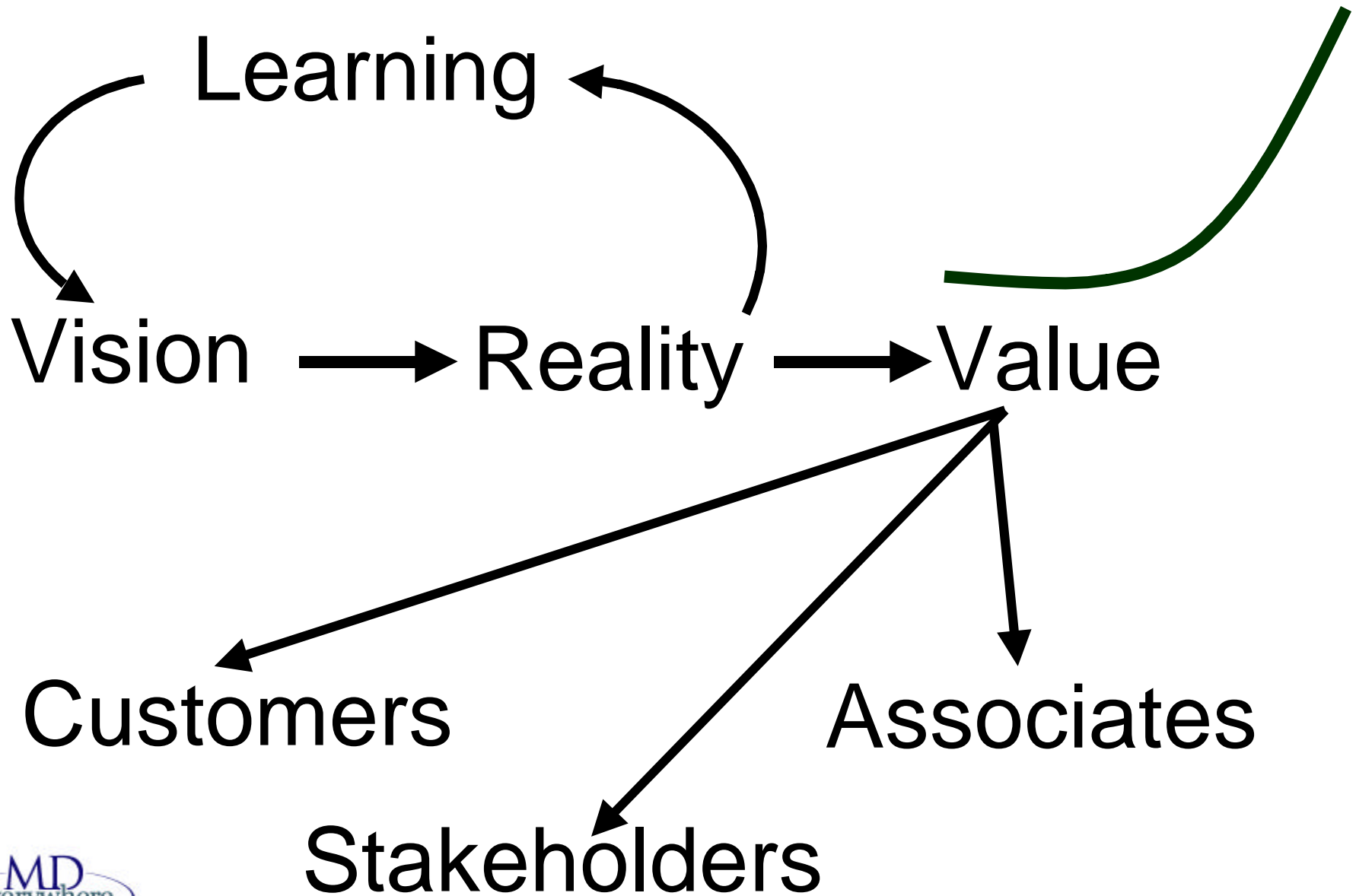
Enabling the Mobile Healers: “An Orthopaedic Surgeon on the Go” Lloyd A. Hey, MD MS L.HEY@DUKE.EDU



MD
everywhere



Learning Organizations



“Imagine”

***. . . . Now Come and See the
Vision Become Reality***



Where Healthcare Needs to Go

Compassionate,
Effective, Lean
Production

Effective
Satisfaction
Mistake-Proof

Patients, Doctors,
eHealth Companies

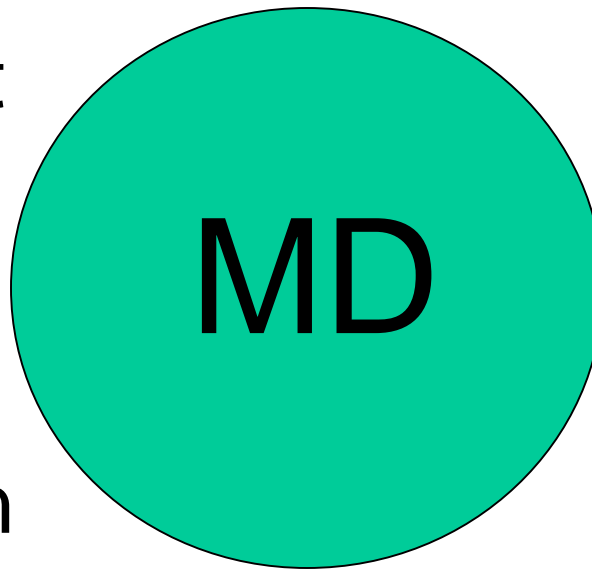
Cottage
Industry

Waste
Frustration
Mistakes

Barriers to Process Control in Healthcare

INPUTS

Patient Contact
Lab Results
Knowledge
Communication



OUTPUTS

Diagnoses
Procedures
Orders
Prescriptions
Documentation
Communication

98+% of Outputs are still done manually on paper

The “Wired” Physician is evolving along with technology

- Pager
- Cell Phone
- Dictaphone
- Palm
- Clinic/Hospital Workstation
 - Lab Results



Other Electronic Tools

- E-Mail
 - Patient Contact
 - Other staff and faculty contact
- The Web...Rarely Go there
 - My Web Pages
 - Literature Searches
 - Booking Flights, Trading Stocks

1. 1978-80: In Patient Shoes

Inside This Issue
Osteomyelitis of the Femoral Neck in an Adolescent

Orthopaedic Consultation

Volume 1 Number 8 October 1980

ALBERT B. FERGUSON JR., M.D., Editor
*Professor and Chairman, Department of Orthopaedic Surgery
University of Pittsburgh School of Medicine*

Upjohn
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The Problem:

Severe Compound Tibial Fracture With Marked Bone Loss

Presenting Orthopaedist:
MARK I. PITMAN, M.D.
*Assistant Clinical Professor of Orthopaedic Surgery,
Albert Einstein College of Medicine, New York*

Consulting Orthopaedist:
VERT MOONEY, M.D.
*Professor and Chairman, Division of Orthopaedics,
Department of Surgery,
The University of Texas Health Science Center at Dallas,
Southwestern Medical School, Dallas*

Case Presentation
DR. PITMAN

After an accident involving his moped and an automobile, a 16-year-old boy was brought to our hospital with a severe injury to the left leg. Except for the leg injury, the rest of the physical examination was completely unremarkable; the patient never lost consciousness.

The lower left leg showed a compound wound affecting the middle and lower third of the tibia and fibula, actually extending from about two inches below the knee to two inches above the ankle, with loss of three inches of bone from the tibia. There was bone protruding the length of the wound. The posterior tibial pulse was full.

Examination of the foot showed a good, strong



The severity of comminuted compound fracture of the tibia and fibula is readily apparent in the initial view. The gap in the tibia actually measured in about three inches. The entire anterior leg compartment was open, and muscle was damaged throughout.

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2. 1980-88: Engineering and Med School

- Wow Technology!
- Wow the Body!
- Wow is Healthcare System Broken!

The Biggest thing broken in
Healthcare is the System
Itself

3. 1988-94: Residency

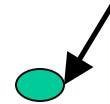
- Pager attached to hip
- First interaction with cellular phone
- “Scut”
- Show me the data

Problem: Trillion \$\$ Healthcare Cottage Industry

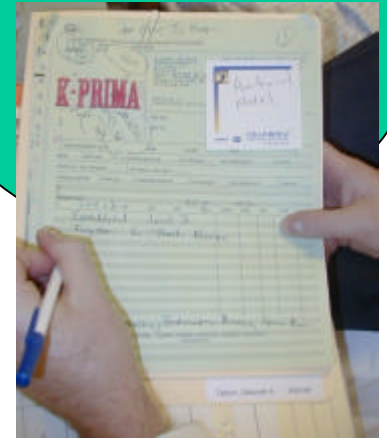
Clinical



Outcomes



Admin



- Lots of duplicated effort/rework
- Decreased Reimbursement per transaction
- Increased compliance regulation
- Billing databases often needed for outcomes, but are inaccurate

1989 Vision: Lean Production at Point of Care

**“Point of
Care Energy
Spike”**

Clinical

**ReEngineer
the Process**

**Prevent
Mistakes
before they
happen**

Admin

**Eliminate
Rework**

Outcomes



4. 1989-1994: Make Vision Real

- PC Windows-based physician charge capture, outcomes and query tool
- Excellent initial results, including increased publications
- What happens when you get out of the trench too long
- Brought system with me to Duke
- They really liked it

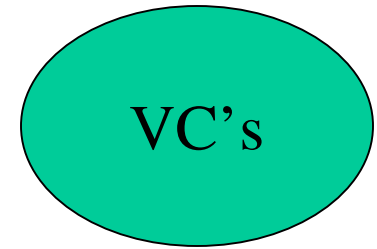
5. 1994-1995: Proving the Concept really worked

- Leadership buy-in
- Physician “In the Trench” Buy In
 - Physician Usability and workflow
 - Speed, Speed, Speed
 - Extenders
- “Baby Steps”
- Excellent Results
 - 105 Surgeons on line in 1 year
 - Increased Revenue
 - Decreased time to billing
 - Better quality data

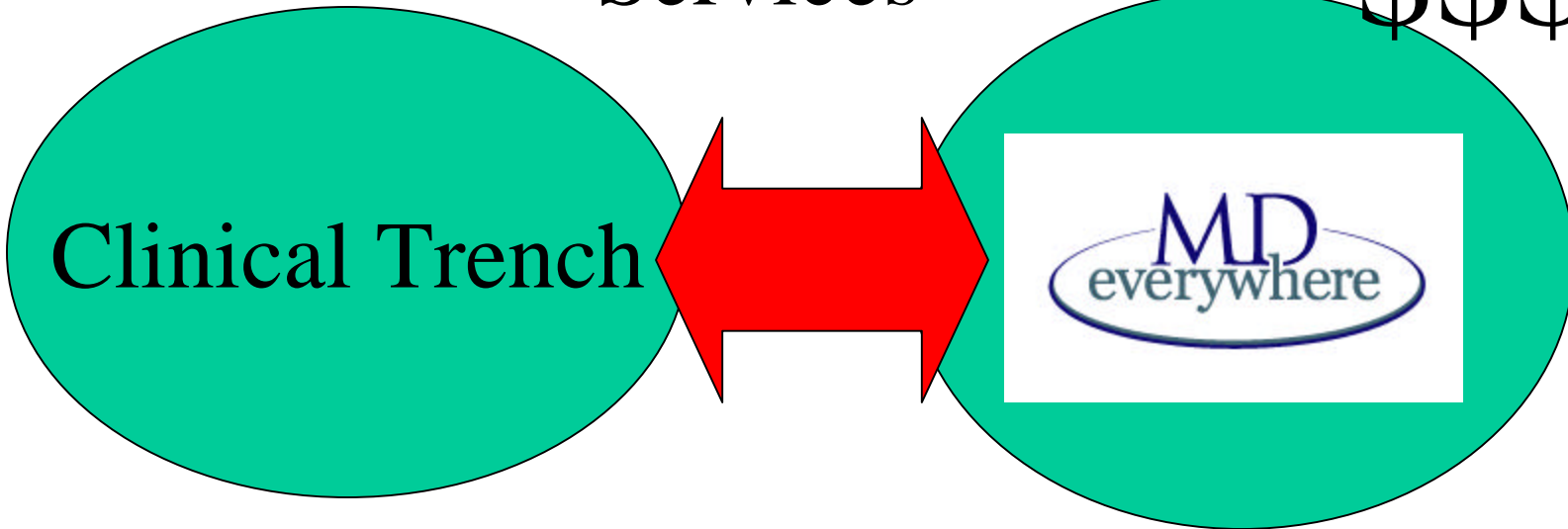


6. Getting “Outside Help” from Business World

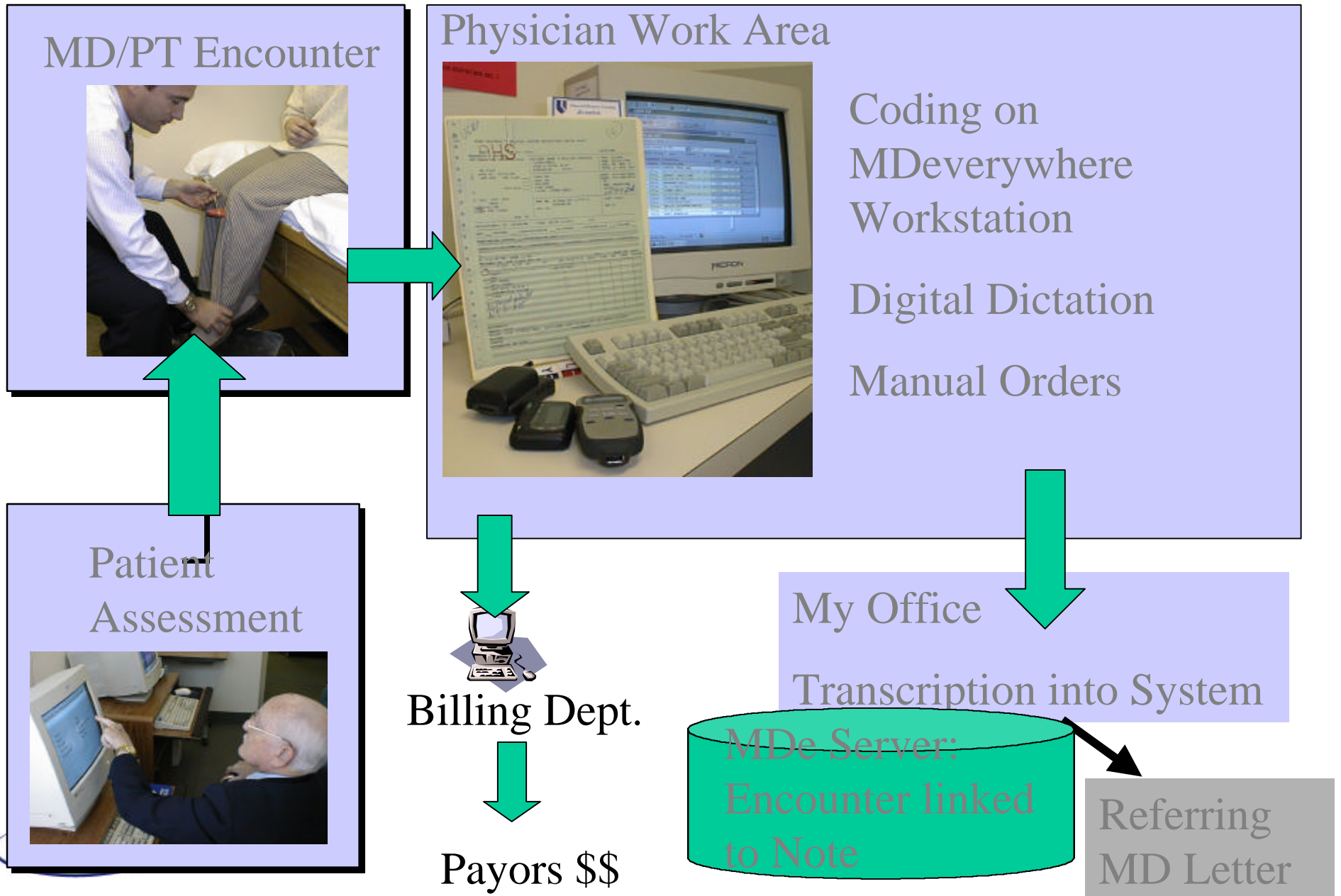
Get a Real Company to build Scalable Product and Services



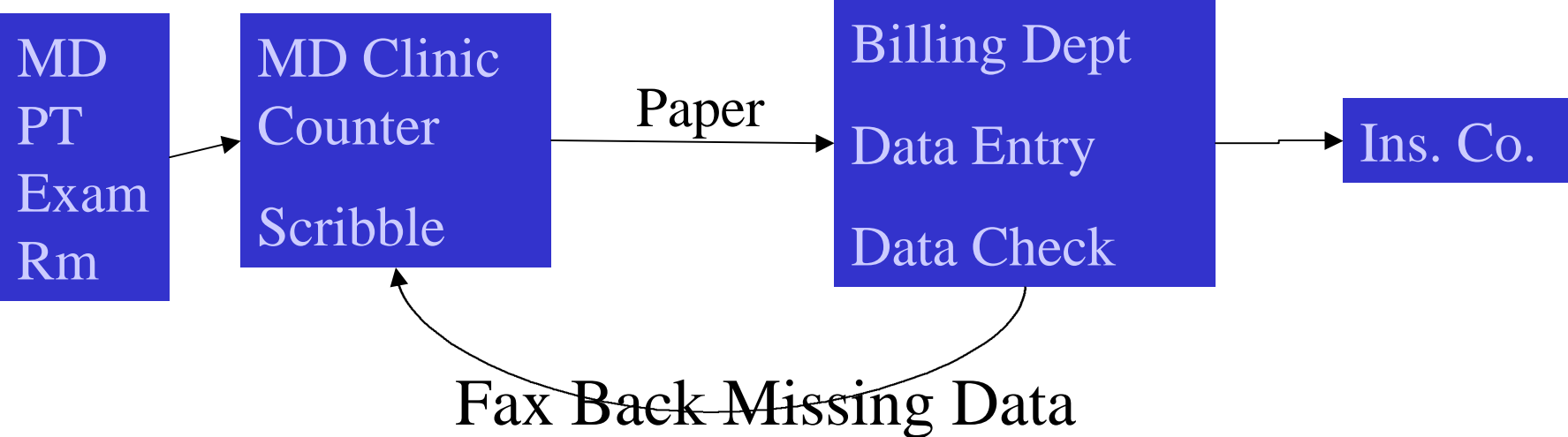
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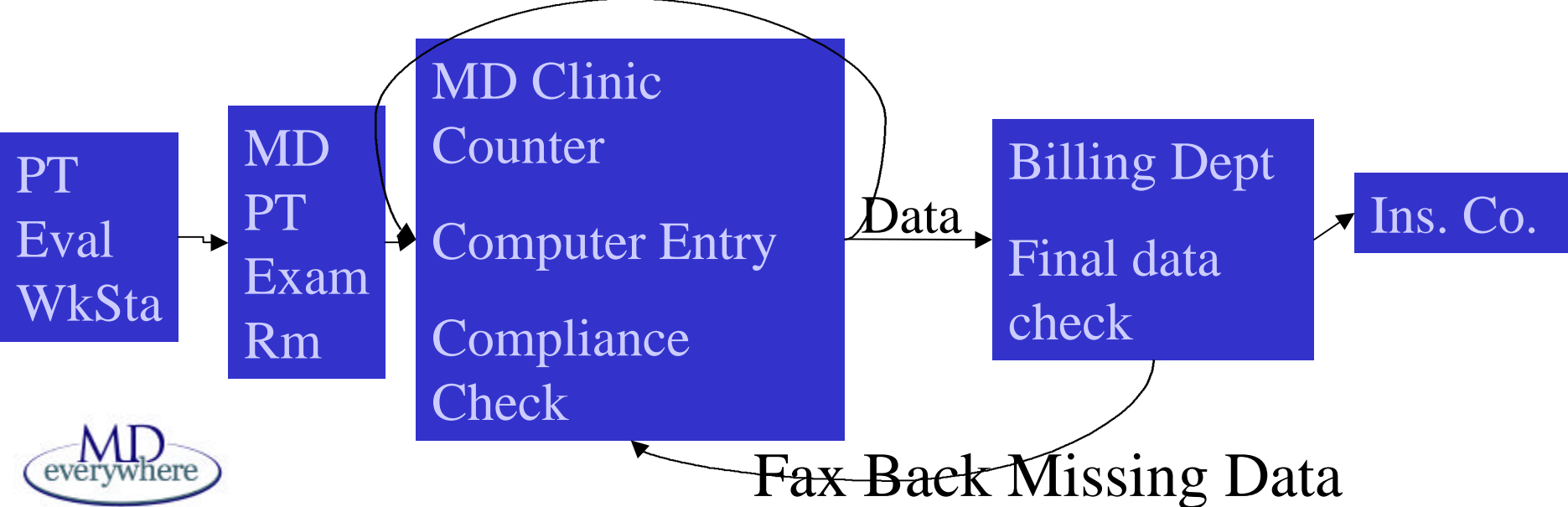
How my Clinic Works Now.



Paper Encounter Form



Encounter "On Line"



Results: Better Data

- PAPER Form: 1.1 dx/enc
- Electronic 2.8 dx/enc
- Implications
 - Reimbursement
 - Outcomes

6. The Product Really has helped my practice and life

- I'm Happy
 - Less wasted time
 - Fewer missed charges and notes
 - More accurate and available data for outcomes
- Patients are Happy..Practice is Booming
- My Administrators are Happy
 - Billing Rework and time to send bill down
 - Compliance Improved
- My nurses and assistants are happy
- Wife happy!



6. Implementing Client-Server Software had Problems

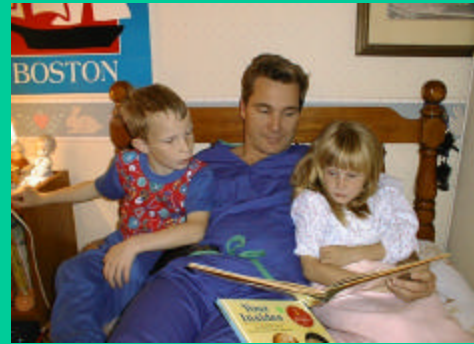
- Still not truly point of care
- Not Everywhere
- Big up-front capital expense
 - Software
 - Hardware
 - Wiring
- Interface and Implementation Expense and hassles

7. 1999 Vision: Go Mobile, Go Internet Outsource

- Palm Pilot takes doctors by storm
- Outsourced Servers via Internet
- Proprietary Rules engine from Client-Server could be ported over to Palm and CE
- Using Web for MD customization and reporting
- Eliminate up-front expenses. Pay for per-encounter value only via service model.



View from the Doctor's Eyes



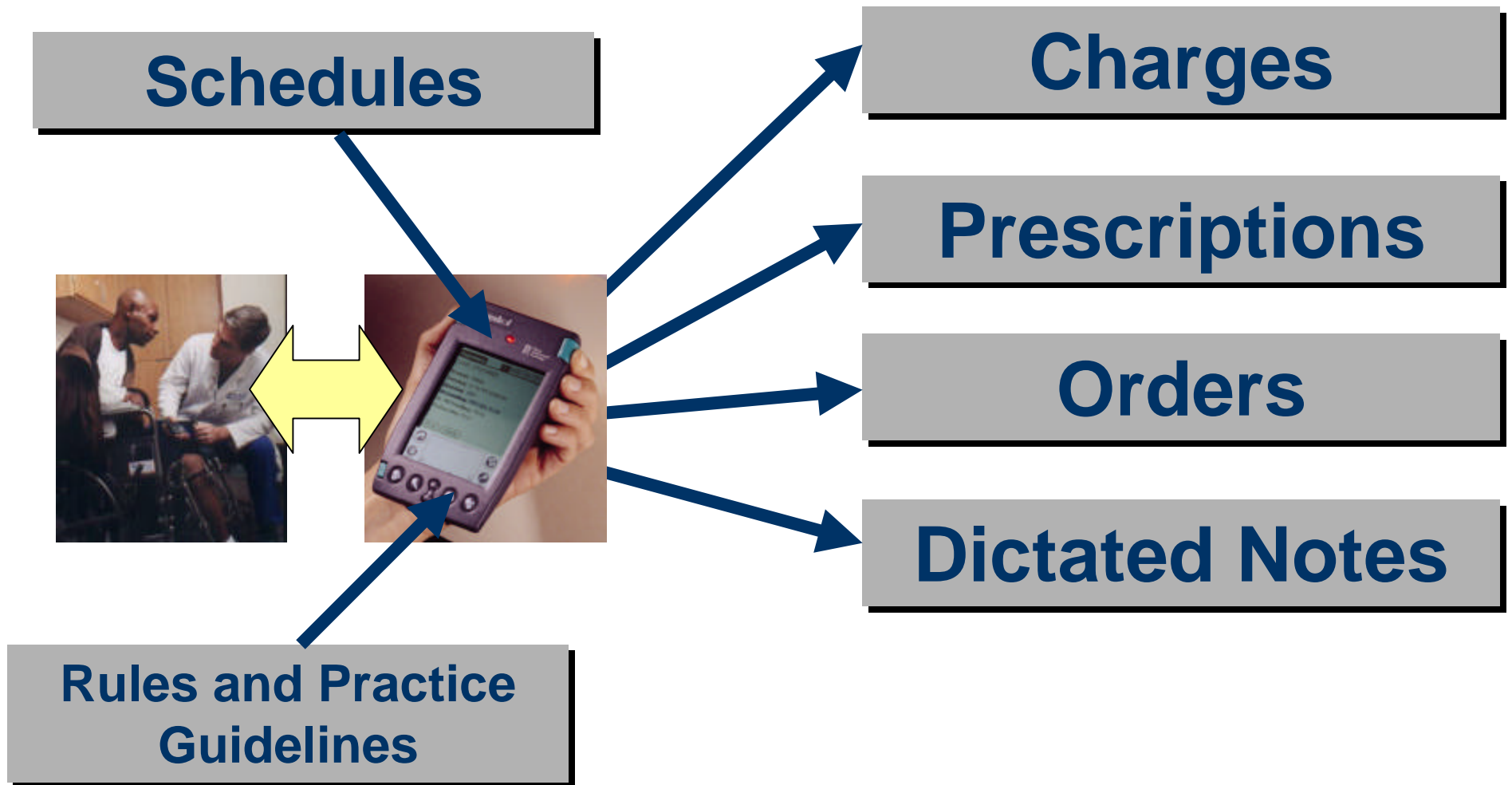
Home



What criteria to use for selecting physician applications?

- Value for Physician and Patient
 - Valuable interaction, but does not interfere w/ patient interaction
 - Workflow practical: Time
 - Available: Portability
- Value for Practice Administrator
 - Minimizing lost revenue, and admin rework costs
 - Leveraging existing IT investments
 - Minimizing upfront cost and hassle factor
 - Minimizing maintenance and support hassle + costs

Tools enabling productivity for the MD Everywhere



The new day in the life of the “Mobile Healer”

- Log In
- Synchronize to get schedule
- See patients everywhere - capturing the value with MDeverywhere:
“Zap, Zap, Rules Check, Done”
- Synch and review charges via Web

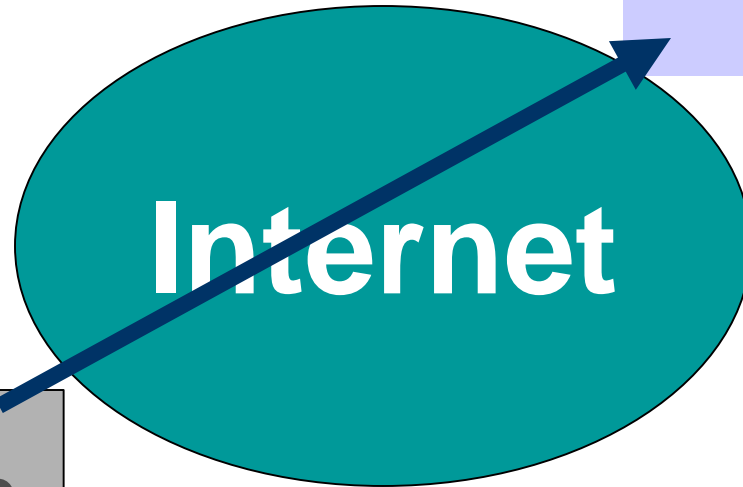


What MDeverywhere does: Mobile ASP for Doctor.

Zap, Zap, Rules
Check..Done!



**Synch
& Run!**



**MDeverywhere
Secure
Transaction
Servers**

Billing File

Billing System

The Future

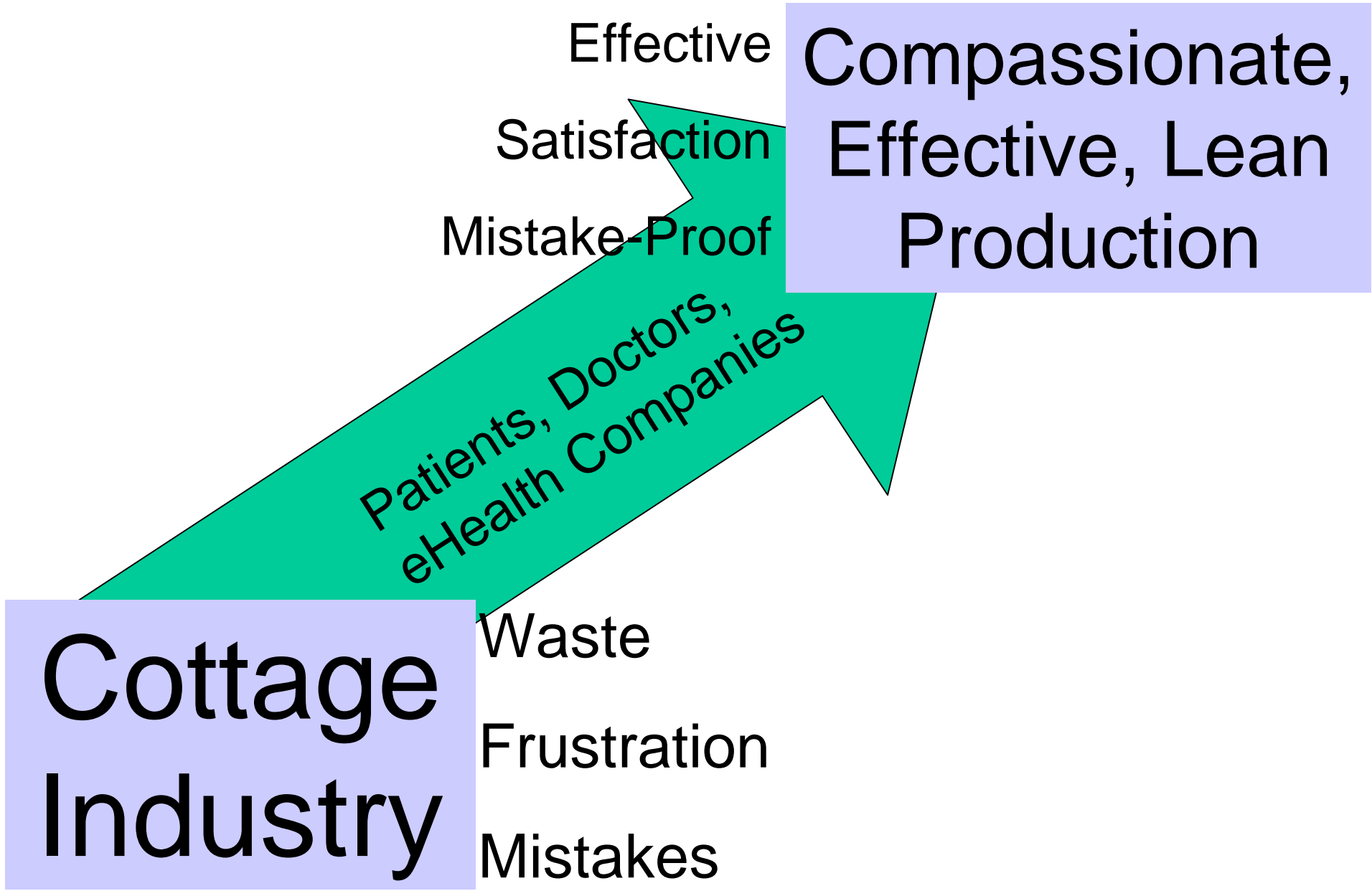
- Outsourcing/ASP
- Wireless.
- Combining Devices into one
 - Dictaphone
 - Cell phone
 - PDA
 - Pager
- Expanded functionality
- Physician Culture Change
- Outcomes

Lessons learned

- Patient-Doctor relationship is extremely special
 - eHealth can **ENABLE** it, not replace it
- Bringing Process Control to healthcare is hard, but necessary and **POSSIBLE**
 - Trust
 - Tension between infinite worth individuals and finite resources
 - Top Down, **and** Bottom Up Approach
 - “Baby Steps” culture change and functionality
 - Physician physician leadership and usability
 - Team effort with:
 - Physicians, and other healthcare providers
 - Patients
 - Corporate America, including eHealth and financial worlds



Where Healthcare Needs to Go



Enabling the Mobile Healers: “An Orthopaedic Surgeon on the Go” Lloyd A. Hey, MD MS L.HEY@DUKE.EDU



Thank You

