



HIT in Chronic Care

Really Cool Stuff...

Speeding Up a Broken Process?

March, 2007

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Introduction

- Chronic care IT not about standards, interoperability, exchange, or RHIOs,
- Chronic care IT about tools to care for patients
- Confronts the business problem: no new money
- Confronts the broken health care system

Introduction

- Broken health care system
 - Costs out of control
 - Wide variation & unreliable quality
- Opportunities abound
 - 30% of care is unnecessary
 - 30% of the remainder is muda (waste)
- IT-enabled business process reengineering
 - In the chronic care category

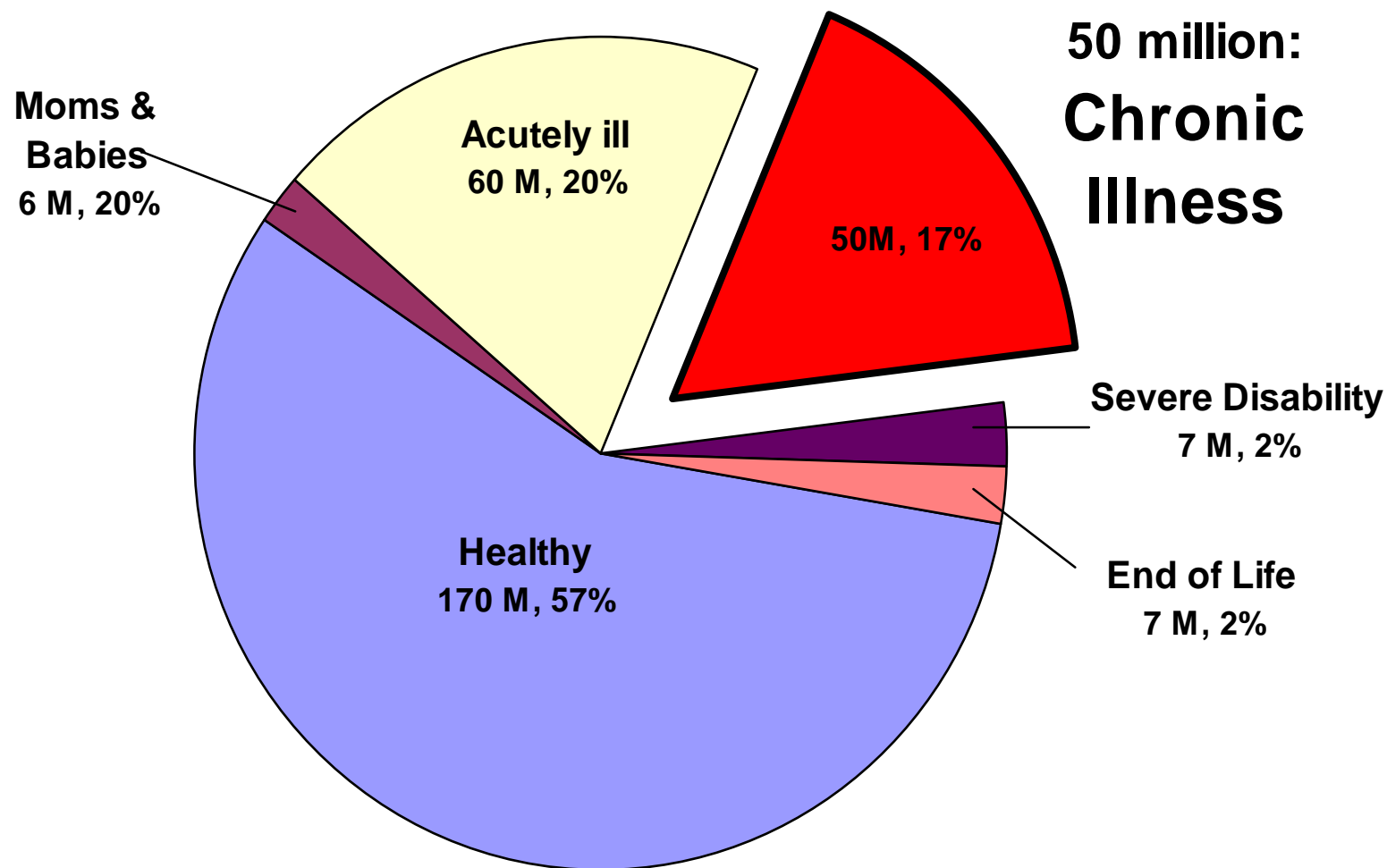
IT-Enabled Business Process Reengineering

- Not a technology problem
- A business / system problem
- No new money
- Chicken-egg problem
 - No new expensive toys
 - Need IT for the reengineering

Chronic Illness Business Case

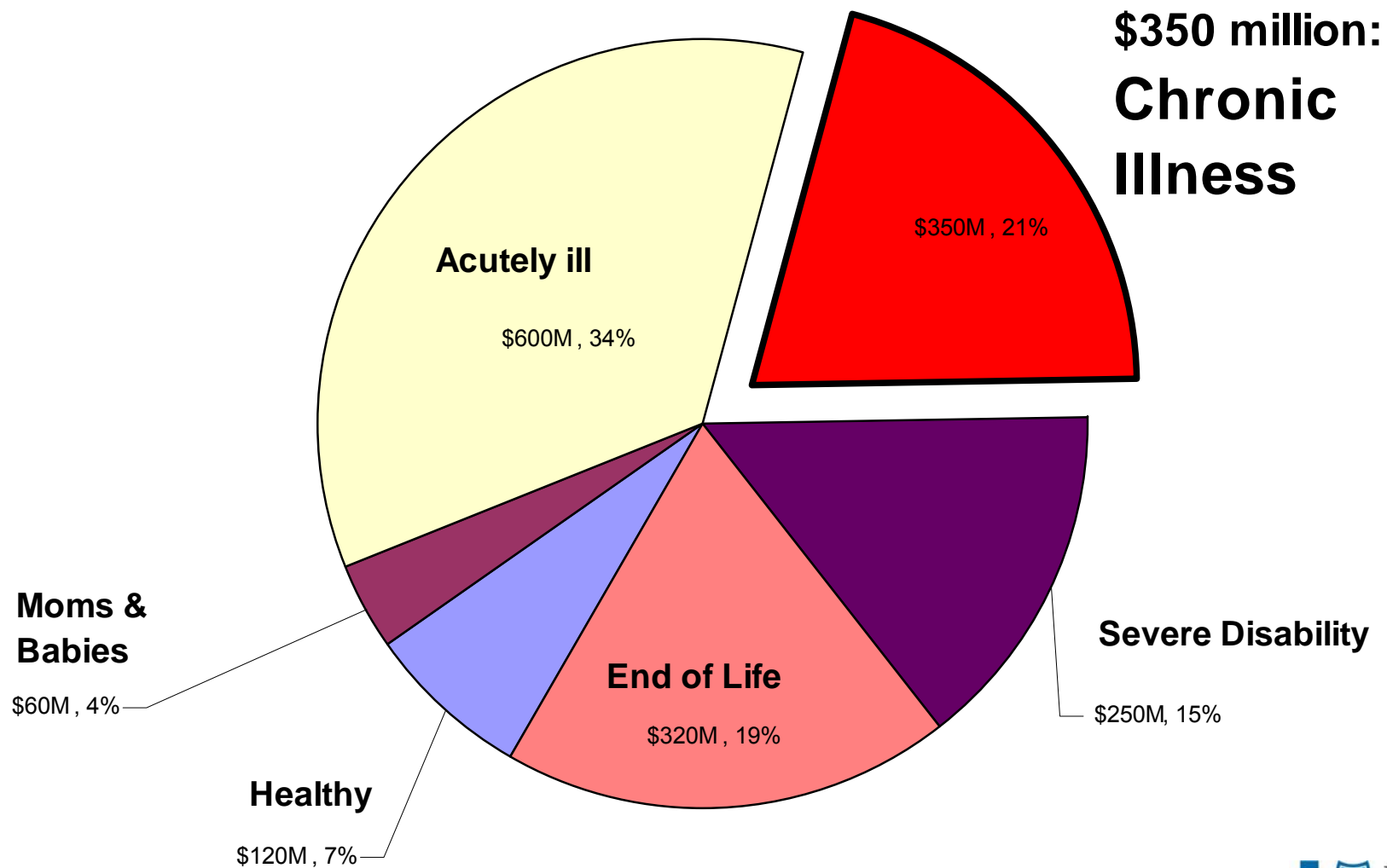
- Major Chronic Diseases
 - Diabetes [16 million]
 - Heart disease (CAD, CHF) [18 million]
 - Lung disease (Asthma, COPD) [30 million]
- Others
 - Arthritis/back pain
 - Obesity/metabolic syndrome
 - Hyperlipidemia
 - Depression
 - Some cancers

300 Million Americans



Source: HHS

Total Health Care Costs = \$1.7 Trillion



Source: HHS

The Vision – Star Trek Utopia

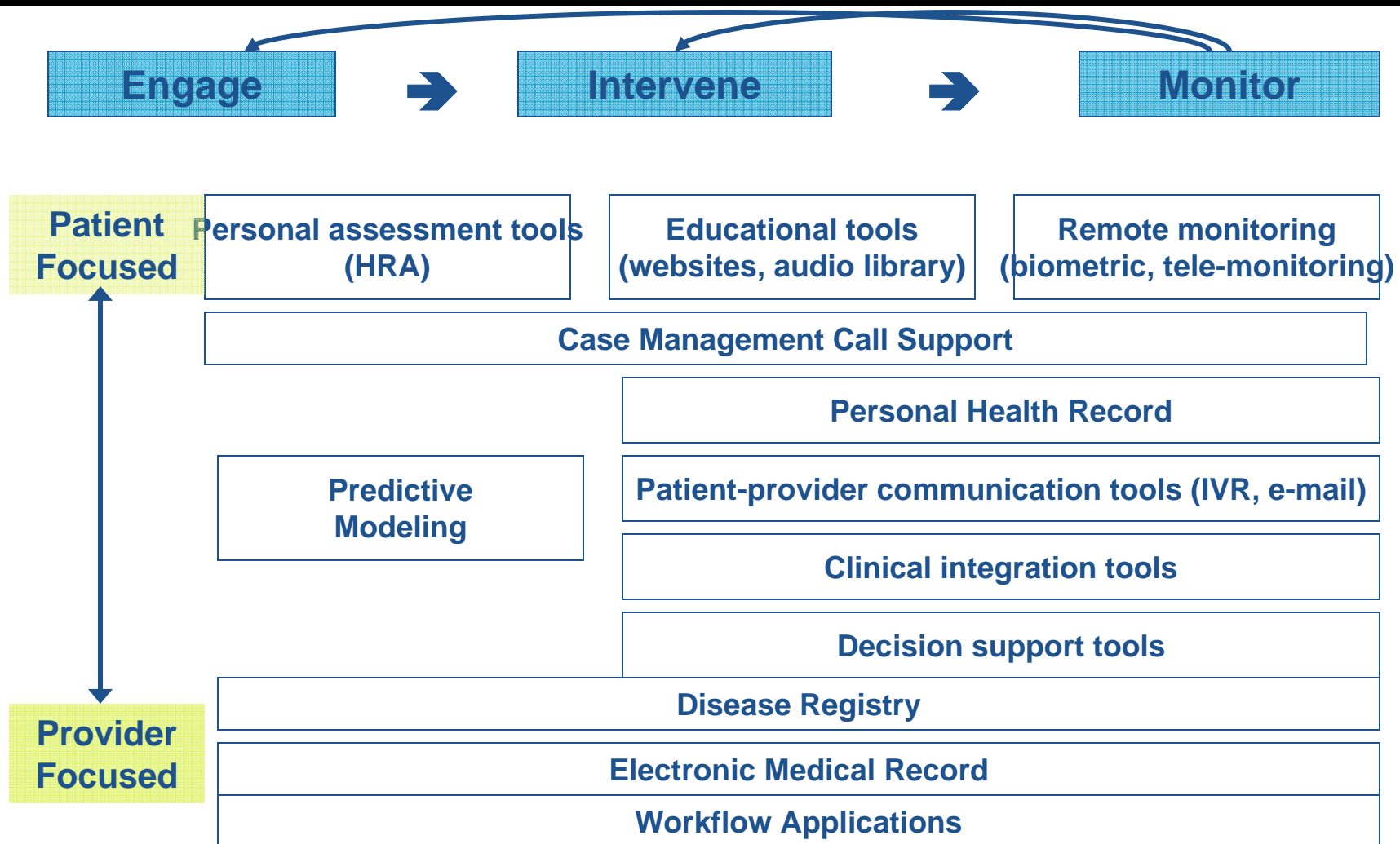
(Technology is here today)

- Communication channels
- Remote monitoring devices
- Back-end support
 - Decision support, data analysis
 - Content & algorithms
 - Workflow apps, registries
 - EMRs, PHRs, HRAs

Remote Monitoring on Starship Enterprise



Chronic Care Applications



Source: Disease Management Association of America

More Chronic Care Applications

- System focused (parameter upload)
 - Push F7 to upload quality data
 - Push F8 to upload cost data
 - Push F9 to upload syndromic surveillance

The Technology

- Communication channels
- Remote monitoring devices
- Back-end support
 - Decision support, data analysis
 - Content & algorithms
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 - EMRs, PHRs, HRAs

Communication Modes

- Synchronous
 - cellphone, chat, video conf, walkie-talkie
- Asynchronous
 - Unstructured
 - Email (secure or not), SMS text, IM messaging
 - Web posting
 - Text, rich images, multimedia, video
 - Structured Web visits & requests

Communication Channels

- Patient – care team channel
 - Scheduling appointments
 - Prescription refills
 - Online consultation
 - Requesting referrals
 - Receiving routine test results
 - Content push--
 - Care plan reminders & instructions
 - Treatment options
 - Motivational

Web Visits – Relay Health

https://www.relayhealth.com - RelayHealth - Patient Quick Tour - Microsoft Internet Explorer

Christina King


Home Your Doctors Message Center Health Records Account


Visit Your Doctor Online


A webVisit® asks you questions that help you relay what your doctor needs to know. It may save you a trip to the office.


 [Start a webVisit](#)


Message the Office

 [Make/Cancel Appointment](#)

 [Request a Lab/Test Result](#)

 [Request Medication Refills](#)

 [Request a Referral](#)



 [Note to the Doctor's Office](#)

Hello Christina


Welcome to your home page. Use the options on the left to begin a message to your doctor. You will be notified at your email address listed below when your doctor's reply is ready. Use this service only for non-urgent communications.


New Messages

You can view all messages in your [Message Center](#)



	RE: Schedule Appointment	Kathryn Jones, MD	Aug 10, 2004
	Medication Renewal	Kathryn Jones, MD	Aug 10, 2004

Reminders

 [Add a Doctor](#) to your list of doctors

 [Add a family member](#) to your account

Health Records

	Christina King	cking@noma
	Scott King	cking@noma

Use RelayHealth to request and view your lab and test results privately at your convenience. Like all RelayHealth communications, your results are securely delivered, and never deleted so you can keep a record of your tests.

Last Updated: Aug 10, 2004

Receive Lab Results Section 9 of 13 Options

Done Internet

Communication Channels

- Team – team channel
 - Care plans
 - Specialist referral (cellphone, chat, video)
 - Transfer of care
 - Registries, visit summaries, even chat and cell phone for real time specialist consultation.
- Other channels to family, case manager, other practitioners & technicians

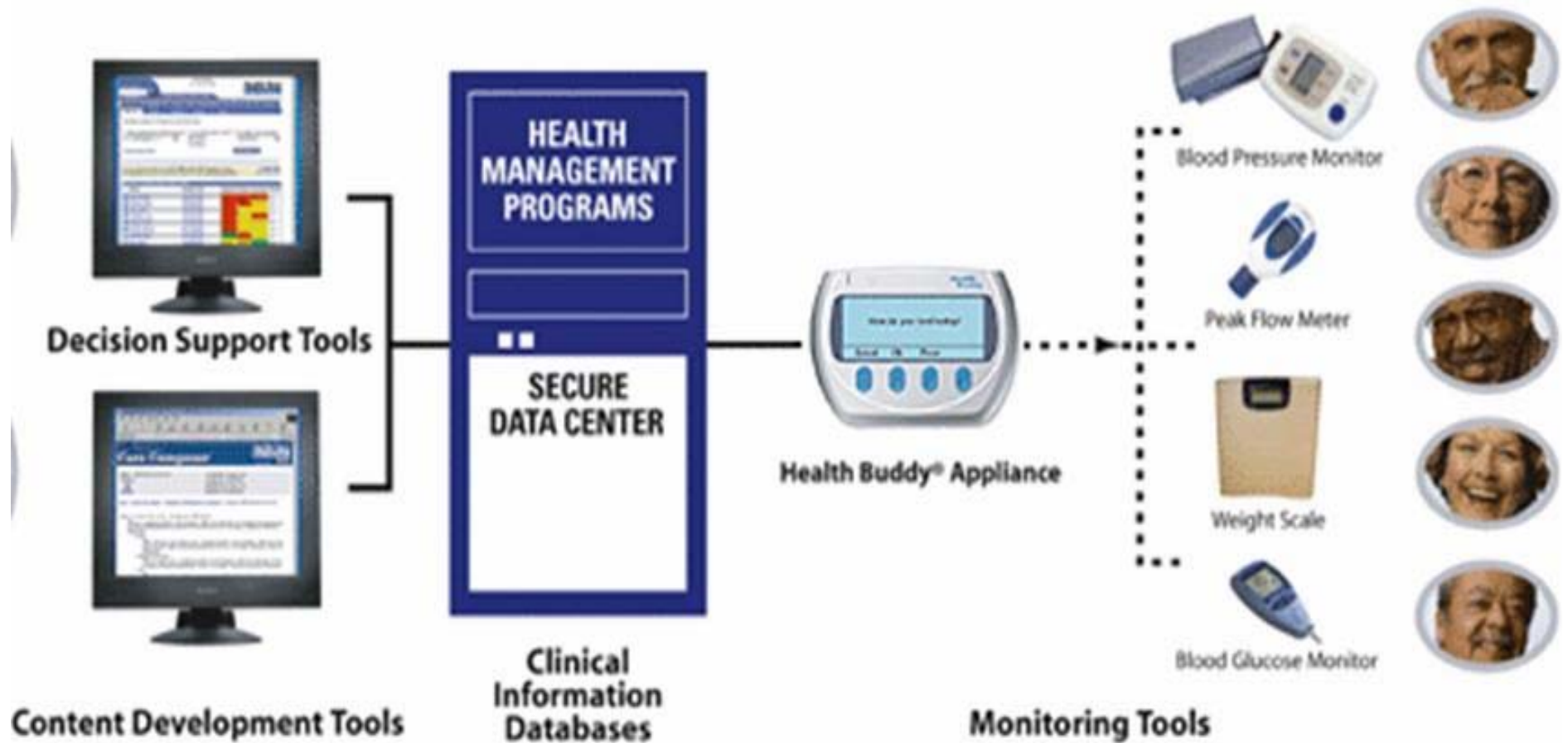
Communication Channels

- Channel to outside environment
 - Payer / purchaser for benefits
 - To performance monitoring entity
 - To syndromic surveillance monitoring bodies

Remote Monitoring

- Seamless / realtime / wireless
- Blood sugars
- Peak flow & O2 Sat
- Weights
- Falls
- Blood Pressure
- Pill box monitors
- Future: lipids, HbA1c, INR, any variable worth monitoring

Health Hero Network ® / Buddy



Remote Cardiac Monitoring

- **Boston Scientific Latitude®**
 - wireless defibrillator readings (+battery level)
 - Includes wireless BP device, scale
- **Medtronic Chronicle®**
 - Intracardiac (RV) pressure, temperature, patient activity, heart rate
 - Clinicians view data on secure Web site

Continua Health Alliance



GE Healthcare



Baxter



Boston Scientific



KONAMI



microlife



OMRON

ORACLE

Panasonic
ideas for life



PHILIPS

POLAR
LISTEN TO YOUR BODY

PRECOR USA
move beyond

PRICE
WATERHOUSE
COOPERS



SAMSUNG

SHARP

SIEMENS



Tunstall

WelchAllyn

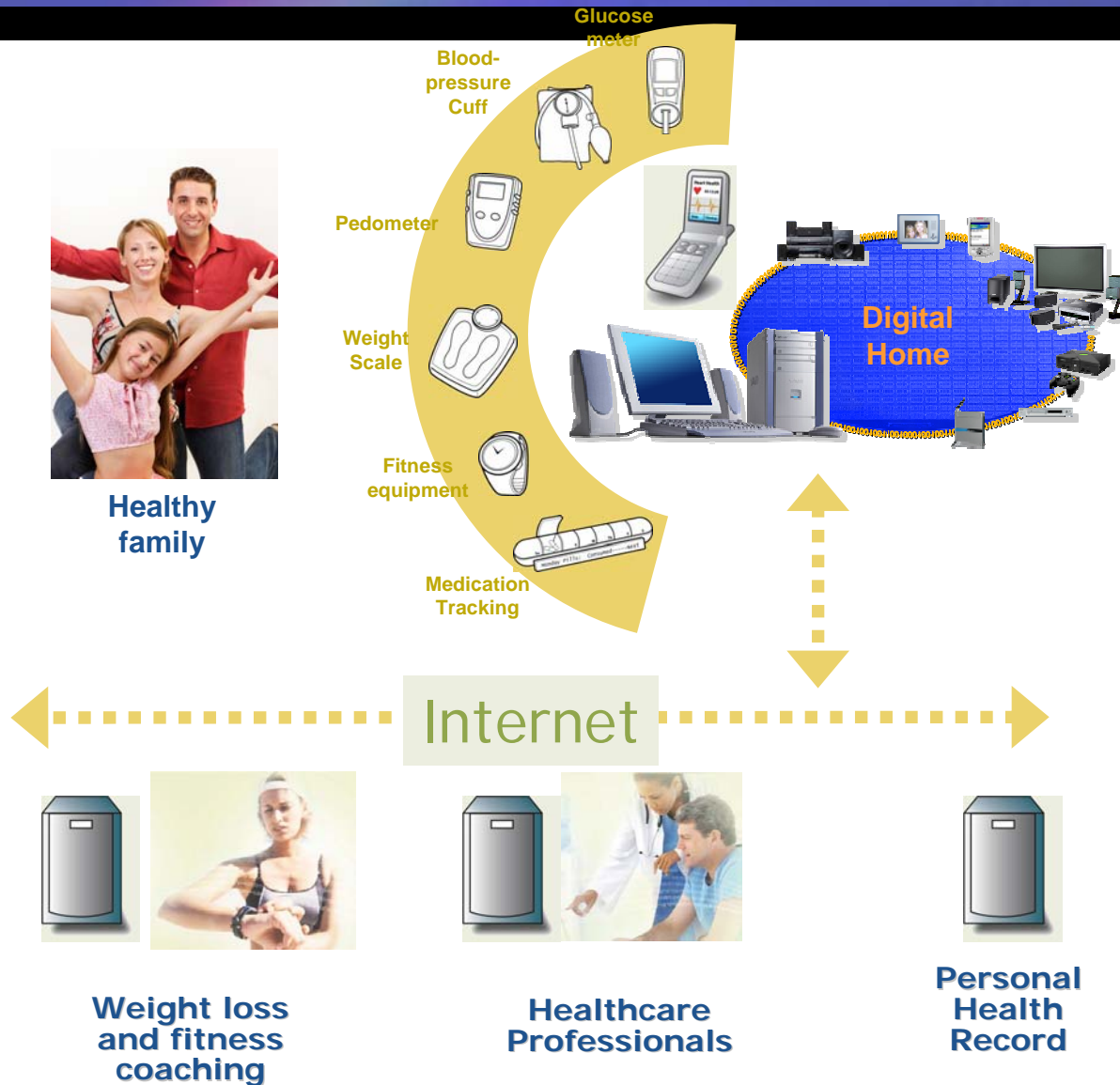


 **TEXAS
INSTRUMENTS**

 **Regence**

Health & Wellness

One billion adults overweight world wide



Health & Wellness

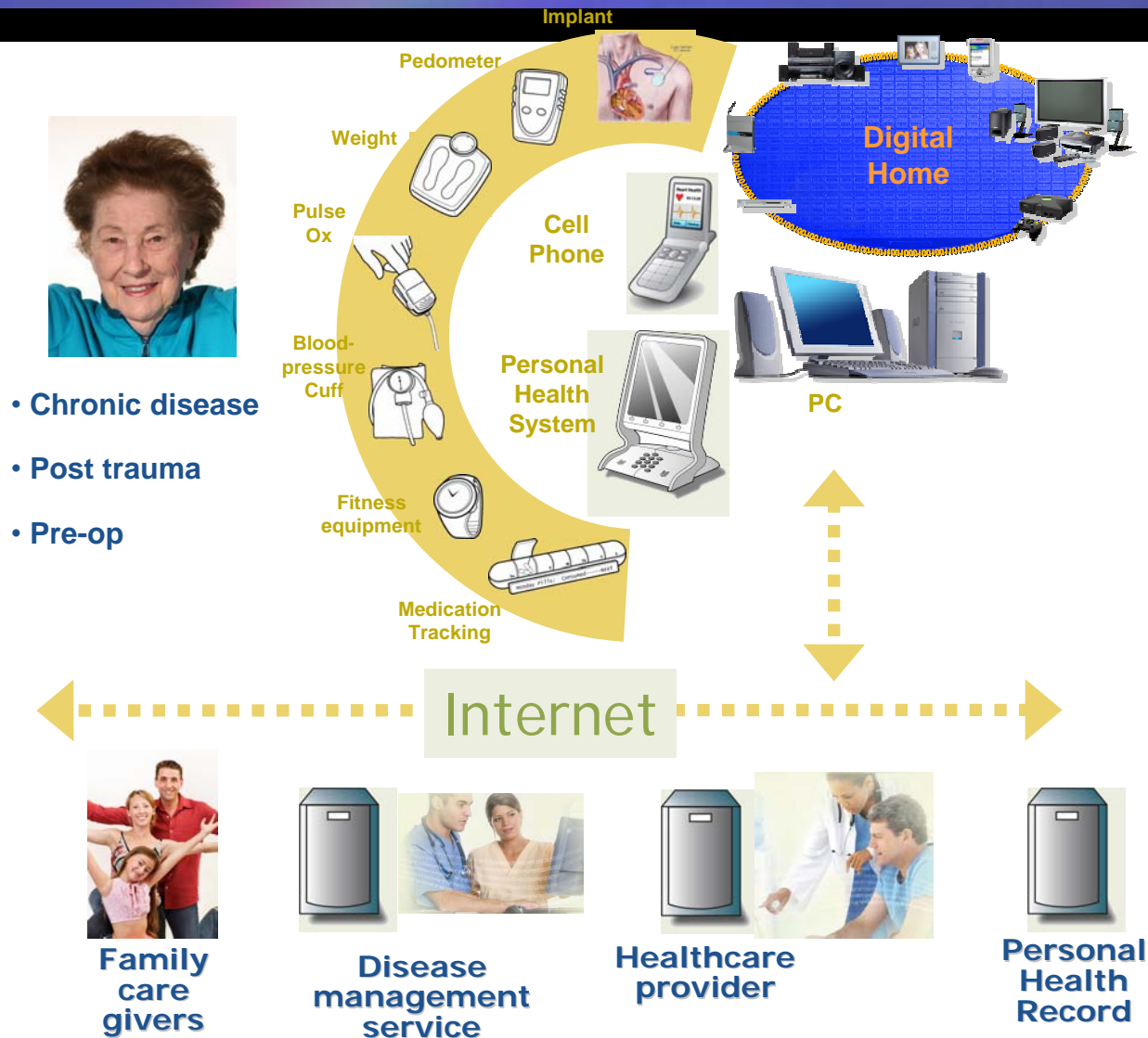
- Weight loss
- Fitness
- “Worried Well” vital sign monitoring:
 - Weight
 - Blood pressure
 - Glucose
 - Cholesterol
 - Activity level
- Personal Health Records

In the future...

- Extension of healthcare system into the home
- Initial triage of conditions
 - Vital signs
 - Images
 - Email / chat / video
- Appointment scheduling

Disease Management

860 million chronic disease patients world wide

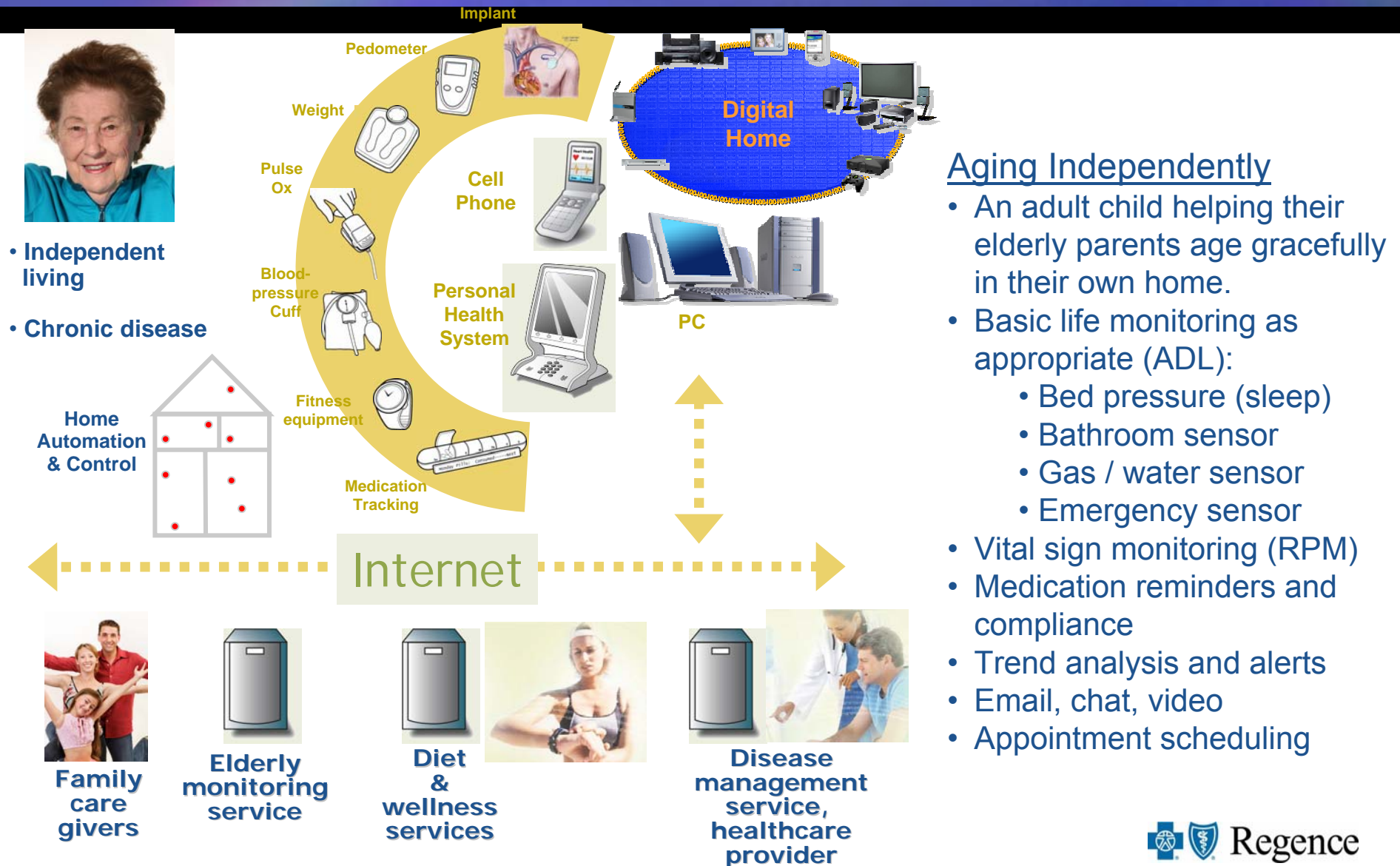


Disease Management

- Vital sign monitoring (RPM)
- Medication reminders and compliance
- Utilize home network to locate devices in logical places:
 - Scale in bathroom
 - Pill minder in kitchen
 - BP cuff in living room
- Trend analysis and alerts
- Email, chat, video
- Appointment scheduling

Elderly Monitoring

600 million elderly individuals world wide



Personal Health Eco-system

SENSORS

Home
sensing &
control



Bed / Chair
Sensors



Implant
Monitors



Baby
Monitors



PERS



Consumer
Electronics



Weight
Scale



Blood-
pressure



Glucose
Meter



Pulse
Oximeter



Spirometer



Medication
Tracking



Pedometer



Fitness
equipment



CONNECTIVITY



MICS / MEDS

Ethernet



AGGREGATION COMPUTATION



PC

Personal
Health
System



Cell
Phone



Set Top Box



Aggregator

SERVICES

Healthcare
Provider
Service



Disease
Management
Service



Diet or
Fitness
Service



Personal
Health
Record
Service



Implant
Monitoring
Service



NETWORK
(POTS, Cellular, BB)



Back-End Applications

- EMRs & registries
 - Chronic Disease Management Systems
 - Standalone -- DocSite, i2i Systems
 - CDM integrated w EHR – Epic, Allscripts, others
- Guideline management
- Care plans / decision support
- Alarms

Back-End Applications

- Workflow apps—
 - Predictive modeling / outreach
 - DxCG, Impact Pro
 - Call center management
 - DM firms -- Healthways
 - Clinical CRM
 - ERM & document management
- Business Intelligence
 - Incl Quality / ETG analysis

Reality -- Disarray in Chronic Care

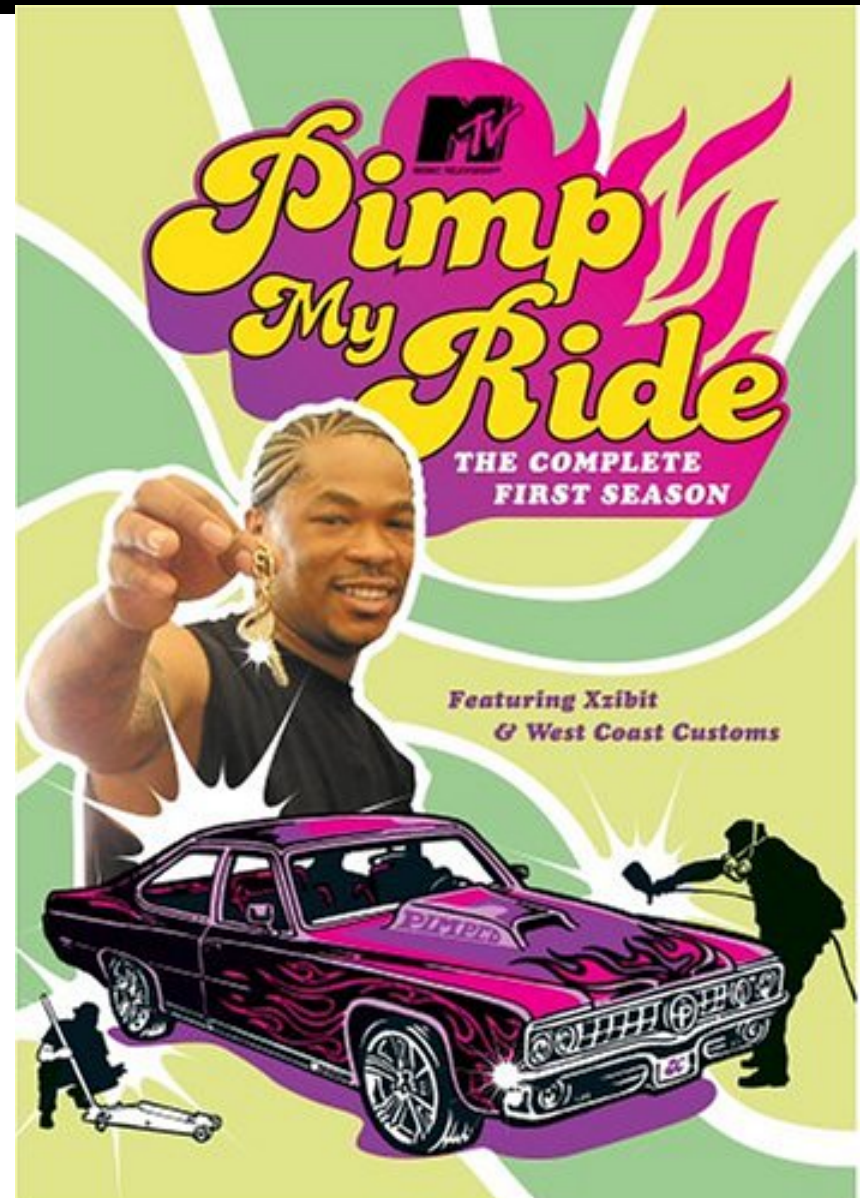
- Episodic care model from 50 years ago
- Constant in-office MD supervision of chronically ill now required
- Care provided in offices, schools, home, at work; by MDs, nurses, techs, and diverse therapists
- Spotty evidence-base for care decisions
- And only 45% get that right

Pimp My Ride Health Care

The Prevailing Vision of
Technology Adoption in
Healthcare:
“Pimp My Ride”

The IOM Vision of Tech
Adoption:
Nordstrom + Mayo Clinic
+ E*TRADE

Source: Ian Morrison



Pimp My Ride Health Care

- Really Bad Chassis
- Unbelievable amounts of high technology on a frame that is tired, old and ineffective
- Huge expense on buildings, machines, drugs, devices, and people
- People who own the rides are very grateful because they don't have to pay
- It all looks great, has a fantastic sound system, and nice seats but it will break down if you try and drive it anywhere
- Chronic care the perfect new pimp my ride

Source: Ian Morrison

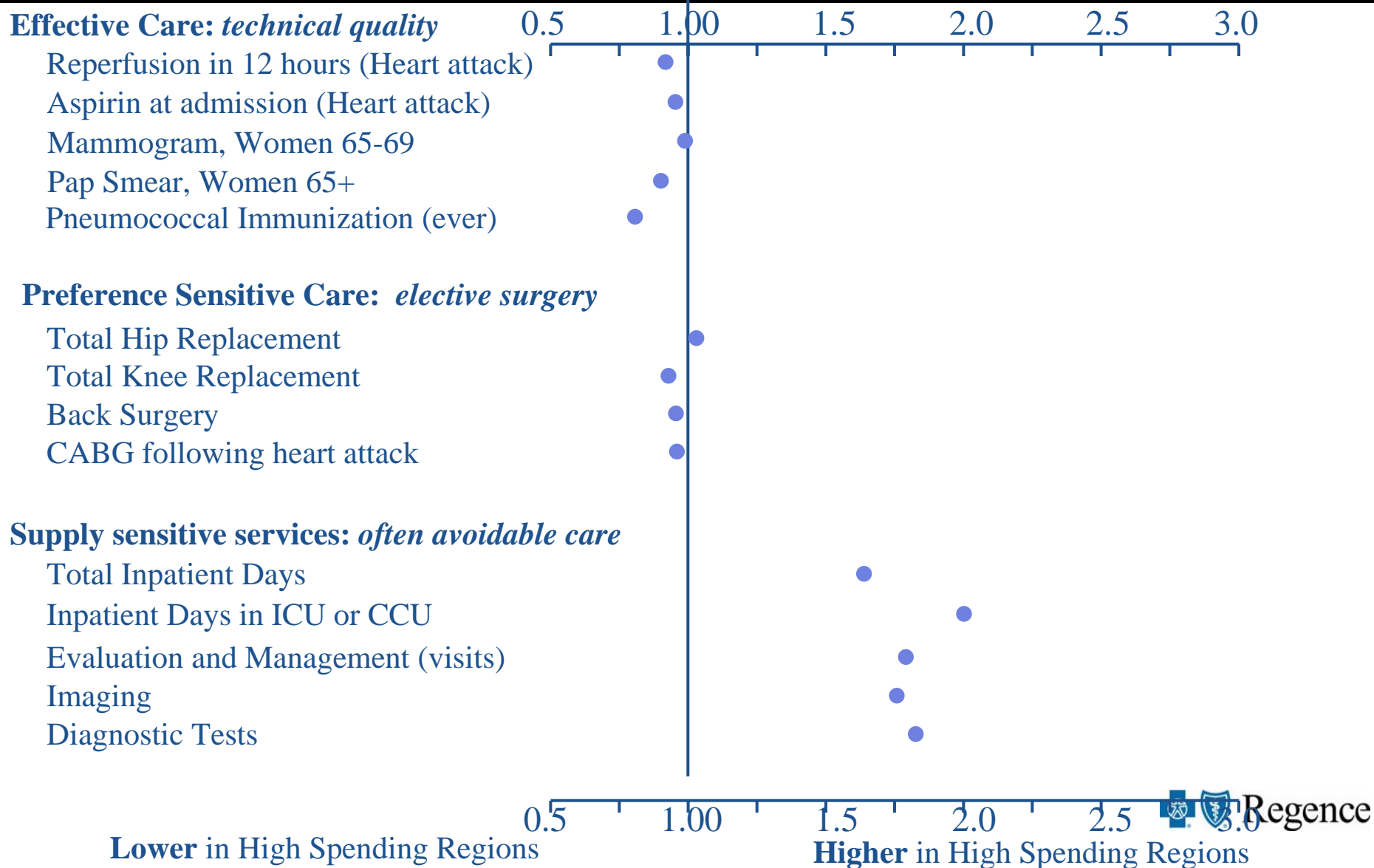
Variations in spending

Content of care -- three categories

- **Effective care:** Evidence-based services that all patients should receive. No tradeoffs involved.
Acute revascularization for AMI
- **Preference-sensitive care** Treatment choices that entail tradeoffs between risks and benefits. Patients' values and preferences should determine treatment choice.
CABG for stable angina
- **Supply-sensitive services** Services where utilization is strongly associated with local supply of health care resources
Frequency of MD visits, specialist consultations use of hospital or ICU as a site of care, tests, imaging and minor procedures

Ratio of Use Rates in High vs Low Spending Regions -- in similar patients

If dot is to right, high spending regions get MORE

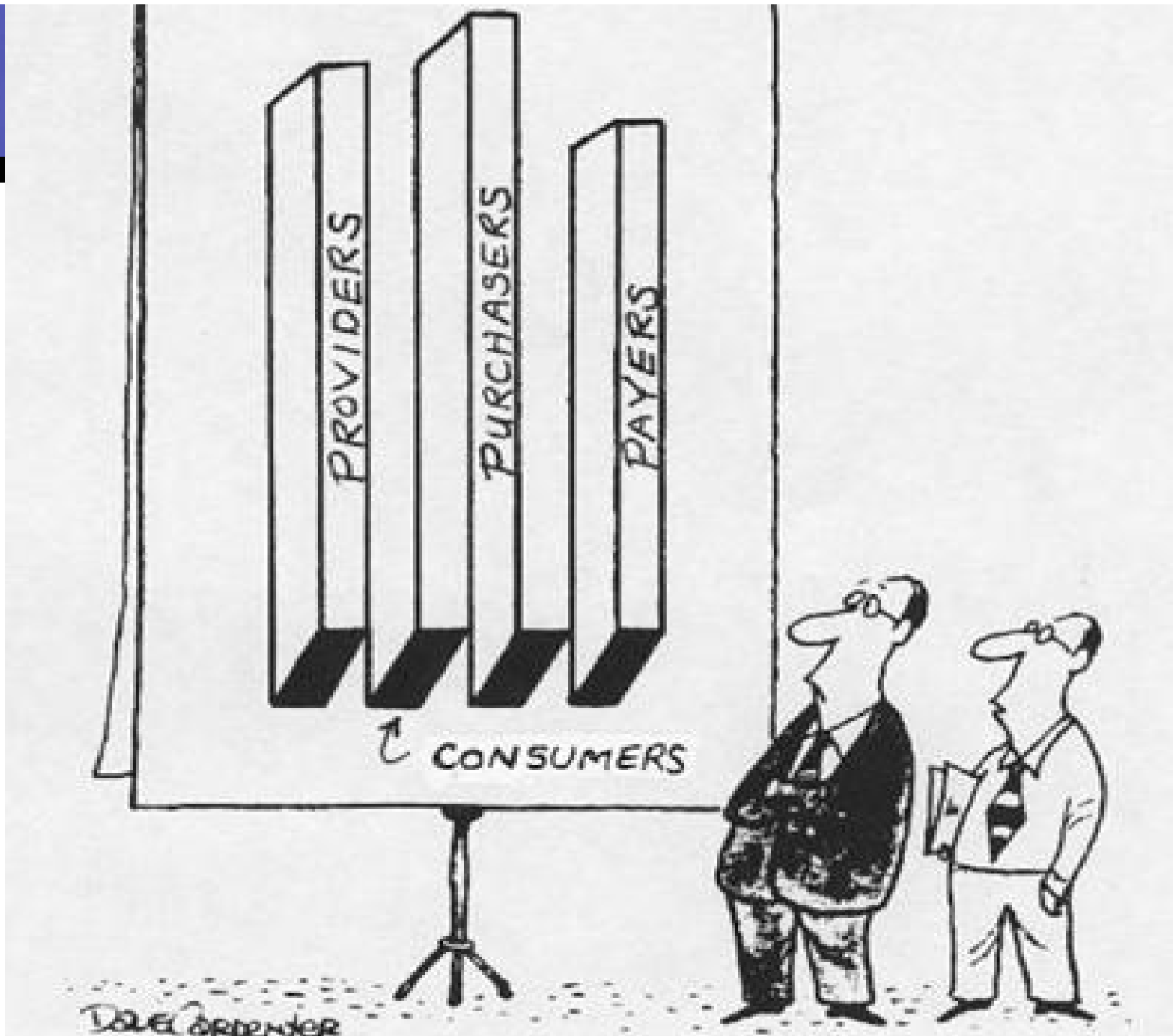


Speeding Up A Broken Process

- Currently, chronic care system is designed to optimize # of episodic discrete MD-visits (with 45% guideline defect rate).
- Will speeding this process improve it?
- Classic mistake of automating to fix a broken system
- Turbocharging & speeding on a really bad chassis

Speeding Up A Broken Process

- Re-define to team-based, proactive continuous care model with performance incentives
- Automate this model after new processes in place
- Re-define CC delivery → *enabled* by information technology but not *driven* by it.
- Finally, re-engineer new system to optimize cost, quality, time



gence

Value Proposition for Patients

- First understand outcome values, then optimize them
 - Big tickets, doctor probably knows best
 - But we don't understand subtler shades of "utility"
- Tools to optimize & manage the cost / value trade-offs

American Health Information Community

- Paper Kills: Bush 10 - year plan
- ONCHIT & birth of AHIC
- Federally chartered advisory committee
- Need for “breakthrough projects”
 - Electronic Health Records (lab data)
 - Chronic Care (messaging)
 - Consumer Empowerment (PHR & Rx data)
 - Biosurveillance (flow of de-identified data to gov't)

Chronic Care Work Group

- Advisory body to the Community (AHIC), ONCHIT, Sec'y HHS, and all other constituents
- Breakthroughs in adoption of secure messaging & remote monitoring
- Hears testimony from vendors, gov't agencies, academics, specialty societies & industry consortia

Chronic Care Workgroup Charges

- **Broad Charge for the Workgroup:**
 - Make recommendations to the Community to deploy widely available, secure technology solutions for remote monitoring and assessment of patients and for communication between clinicians about patients.
- **Specific Charge for the Workgroup:**
 - Make recommendations to the Community so that within one year, widespread use of secure messaging, as appropriate, is fostered as a means of communication between clinicians and patients about care delivery.

Unstructured (Text) Secure Email

- Good place to start, baby steps
- Patient \leftrightarrow MD channel only, for now
- Technology already available
- Many providers using it
- Aim at widespread adoption within 1 year
- Analyse barriers

Key Issues in Committee Report

1. Reimbursement
2. Medical Liability and Licensure
3. Standards for Secure Patient-Clinician Messaging and Supporting Systems
 - S/MIME for secure email
4. Consumer and Clinician Access
5. Privacy and Security

What Is The Justification For Reimbursement?

RECOMMENDATION 1.0:

HHS should develop and regularly update the evidence base for informed reimbursement policies with respect to secure messaging between clinicians and their patients. This should include monitoring and reporting the effect of secure messaging on cost, quality of care, patient and caregiver satisfaction, and medico-legal issues.

Reimbursement Controversy

- Payers:
 - Pilots show new workflow causes MD practice disruption, patients don't trust it. Increases costs. Not ready for prime time?
- CMS:
 - New payments need to ↓ costs & ↑ quality; need to study cost / quality effects of many pilots;
 - Not ready to open up new CPT Code for payment
 - Don't expect reform in one year
- Office of Inspector General:
 - New opportunity for inappropriate billing practices

AHIC Pilot Projects

- Current state of CC Workgroup: federal policy can promote adoption, but no appetite for increased costs
- Call for research to study chronic care HIT with most bang for buck
 - Then, Federal promotion levers
- Dovetails with reimbursement reform concepts
 - P4IT and other accountability / incentives

Intensive Outpatient Pilot (IOP)

- Sponsored by large employer
- Ambulatory ICU theory
- Process reengineering for lower costs / higher quality
 - But firm cost expectations
- Sickest ambulatory 10%

Intensive Outpatient Pilot (IOP)

- Three Seattle-area clinics
 - The Everett Clinic, Virginia Mason, Valley Medical Center
- Case rate + fee-for-service
- High touch / high comm
- Reduced MD visits, ER, Hosps expected

IOP Communication Technology

- Patients -- phone & ordinary email
- Specialists -- cell phone channel
- Clinic-clinic -- Sharepoint blogs, best practice sharing & clinic-pilot problem resolution
- Clinic-payer – fax notification of events (hospitalizations)

IOP Back Office Technology

- Care plans
- Registries
- Guideline management
- Performance measure upload
- Rx & claim data download
- ETG efficiency ratings of specialists
- Surveys online: surveymonkey

IOP Remote Monitoring

- Fancy gadgets too expensive
- Frequent: weights, BP, peak flow, blood sugar
- Episodic: HbA1C, LDL
- Non-MD clinic visits & home / neighborhood visits

Conclusion

- Huge opportunity in Chronic Care
- Technology necessary but not sufficient
 - Ditto standards, interoperability, etc etc
- It's about business processes in a messy service industry

Conclusion

- Start with accountable business units
- Measure all variables / document processes
- Add a pinch of Toyota lean
- Introduce technology slowly
- Insist on proof of cost savings for fancy gadgets