Information Technology and Chronic Care
The Business Case, the Technology, and Two Studies

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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

- Healthy: 170 M, 57%
- Acutely ill: 60 M, 20%
- Moms & Babies: 6 M, 20%
- Severe Disability: 7 M, 2%
- End of Life: 7 M, 2%
- 50 million: Chronic Illness: 50M, 17%

Source: HHS
Total Health Care Costs = $1.7 Trillion

- Acutely ill: $600M, 34%
- Moms & Babies: $60M, 4%
- Healthy: $120M, 7%
- End of Life: $320M, 19%
- Severe Disability: $250M, 15%
- Chronic Illness: $350M, 21%

Source: HHS
• Chronic care today
  – 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
The Technology

• Communication channels & groupware
• Remote monitoring devices
• Back-end support
  – Decision support, data analysis
  – Content & algorithms
  – Workflow apps, registries
  – EMRs, PHRs, HRAs
• (Health 2.0 )
Chronic Care Applications

Engage
- Health 2.0 communities
- Case Management Call Support
  - Personal Health Record
  - Patient-provider communication tools (IVR, e-mail)
  - Clinical integration tools
  - Decision support tools
  - Disease Registry
  - Electronic Medical Record
  - Workflow Applications

Intervene
- Educational tools (websites, audio library)

Monitor
- Remote monitoring (biometric, tele-monitoring)

Source: Disease Management Association of America
Communication Channels: Modes

- **Synchronous**
  - phone, chat

- **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
Communication Channels

• Team – team channel
  – Specialist referral
  – ER & Hospital notification
  – Care plans
  – Registries
  – Clinical Groupware
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

- **Business Intelligence**
  - Incl Quality / ETG analysis
Remote Monitoring

- Blood sugars
- O2 Sat & exercise tolerance
- Weights
- Blood Pressure & heart rate
- Future: Pill box monitors, lipids, HbA1c, INR, any variable worth monitoring
- Seamless / real-time / wireless
Remote Monitoring on Starship Enterprise
Communication Channels

PCP

Specialist

ER / Hospital

Case Manager

PBM / RxHub

Payer

DM vendor

Case Mgmt
Two studies

- **Medicare High-Cost Beneficiary Demonstration Project**
  - Wenatchee Valley Clinic
  - Remote monitoring devices for chronically ill

- **Boeing Intensive Outpatient Care Program**
  - Seattle – 3 large clinics
  - Intense care to sickest decile
Medicare High-Cost Beneficiaries

- Three sites; Wenatchee Valley Clinic here in WA
- Remote monitoring with Health Hero
- Chronic illness Medicare beneficiaries enrolled
- Site has 5 dedicated case management RNs; 25 MDs participate
- Reporting 20% lower costs, improvement in quality variables
High-Cost Beneficiaries Workflow

• Small number of monitored variables
• CHF:
  – Weight, BP, HR
• COPD / Asthma
  – O2 saturation, exercise tolerance, weight
• Diabetes
  – Blood sugar
• Mostly self-entry to device
• Device uploads to Web
High-Cost Beneficiaries Workflow

- Nurse reviews daily info
  - Variables flagged red, yellow, green
- Phones patient when into red
- Manages patient by algorithm
  - MD support if necessary
- Nurse skill is critical to success
Boeing Intensive Outpatient Care Program

• Three sites: Everett Clinic, Virginia Mason, Valley Medical Center – 150 patients each

• Each site creates a new ambulatory intensivist practice for the predicted highest cost 5-20% of members

• Practices are staffed by specially identified MD, RN “health coach”, and other support

• Sites implement shared care plans, increase access, proactively manage care

• Started 2007, now results coming in
Boeing Intensive Outpatient Care Program

- No benefit changes, so sites continue to bill fee-for-service for MD visits
- Copays for 1st intake visit is waived, rest continues as usual
- Sites are paid a case rate pmpm to cover non-traditional services
- Consideration will be given to a shared savings model if expanded in future
IOCP 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)
- Clinic-Regence-Healthways – Case mgmt info
- RxHub-clinic – info on fills
- NO remote monitoring devices
Communication Channels

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Intensive Outpatient Care Program
Overall Summary Results

- IOCP program shows improvement over prior care in virtually all measures of care experience including:
  - Access
  - Communication
  - Provider relationship and care coordination.

- Significantly increased workup costs (radiology, outpatient facility, other MD costs) seen in some sites, consistent with similar pilots elsewhere; paid off over time
Commonalties of two studies

• Avoiding hospitalizations
• Patients upload information
• Nurse case management / relationships
  – High – touch
  – Frequent communication
  – Variety of interventions, advice, self-help, coaching
• Physician oversight
  – Timely and informed
  – Teammates, no perverse incentives
Can We Go Lean?

• Lean theory – gadgets are expensive
• Who really needs daily upload of variables?
  – IOCP: 10% of 10\textsuperscript{th} percentile, and only for a few weeks
• How to segment workflow by level of severity
  – IOCP: most patients need upload weekly
  – Low tech – emails & Excel files
• How many patients can be trained to monitor their own variables, & how to get them there?
Conclusions of Two Studies

• It’s not the gadgets, it’s the case management
• It’s the workflow
• It’s the whole “medical home”
• It’s keeping pts out of the hospital
• Value of experienced nurse with people skills
• “Training” patients to self care
• Some level of home monitoring can be helpful
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

• It’s all about the nurse talent
Conclusion

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

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