Just in Time - Inventory Control

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JIT - Manufacturing Inventory Parts

- Inventory storage supply parts
  - Large storage area required - cost storage
  - Maintain inventory of parts in storage
  - If dynamic manufacturing process
    - Existing parts out of date
    - Delay in obtaining correct new parts

- JIT Inventory
  - Dynamic small inventory
  - Work with supplier to get parts only when needed
  - No out of date, no delay in obtaining

Knowledge Access - JIT

"Evidence-based decision making. Patients should receive care based on the best available scientific knowledge. Care should not vary illogically from clinician to clinician or from place to place."


JIT - Clinical Knowledge

- Sources of Clinical Knowledge - In site
  - Long term memory of medical school
  - Long term memory of past experience
  - Short term memory of last few patients
  - Books
  - Journals
  - Lectures, seminars, conferences
  - Hallway conversations
  - Wing it

JIT-Physician as Information Manager

- Evidence Based Medicine
- ‘Best’ Clinical Practice
- Guidelines/Protocols Diagnosis/Treatment
- Administrative/ Paper Work Tasks
- Insurance issues
- Link Knowledge Access to Workflow
- Link Knowledge Access to Recording
TOS - Text on Shelf
- Lack of availability of appropriate text
- Massive amount information in text
- Time consuming to find relevant content
- Text is not focused on specific issue
- Inadequate indexing
- Often out-of-date

IPA - Internet Provides All
- Massive amount of information
- Variable quality - much is worthless
- Poor authentication, reliability
- Inadequate indexing -
  - a keyword is not a concept
- Often not maintained up to date
  - recent review AHRQ - 75% need updating

PCOI - Primary Care Office in Site
- Primary Care Unit leadership
- Evidence-based Medicine
- Easy to Use - rapid access
- Problem/ Issue Specific, Relevant, Focused
- Organized, Indexed Content
- Authenticated, Updated
- Workflow support and integration
- Financially supported by hospital

Knowledge/Guidelines (Just In Time)
- Primary Care Guidelines
  - Evidence based
  - MGH developed
  - Specific recommendations
- Patient Instructions - consistent content
- Formulary - drug information
- Medical Calculators
- Alerts

Workflow Support
- Formulary - insurance coverage
- Forms
- How To
- Referral Information
- Administrative - MGH events

A Portal – One-stop Shopping
- PubMed
- Up To Date
- Scientific American
- PDR
- DXplain
- What’s New
- SEARCH
- FEEDBACK
Screening for Prostate Cancer
Recommendations for Prostate-Specific Antigen (PSA) Testing

Recommendations for MCH Primary Care Practices

1. PSA tests should not be ordered routinely for screening purposes.
2. PSA testing should not be raised with men under age 50 without risk factors or men over age 70.
3. For men with lower urinary tract symptoms consistent with BPH of any age, men with an abnormal digital rectal exam, men age 50-74, and men of other ages who inquire about PSA testing, who would be candidates for aggressive therapy for a diagnosed prostate cancer, should be given standardized literature and an explanation about the harms and benefits of PSA testing.
**PCOI Survey Result Comparison for 2001 to 2003**

**Importance of Web Site in Patient Care**

- **2003:** 206 out of 294 surveys returned = 70%
- **2002:** 180 out of 257 surveys returned = 70%
- **2001:** 99 out of 139 surveys returned = 71%

On a scale from 1-5 where 1=Of no use and 5=Very useful—“It helps me give much better patient care.”

**Saves Time Per Day**

- 31% of users, or half of this 63%, said PCOI saves them 25-30 minutes per day

**What Factors Contribute to Success at MGH?**

- Strong, continuing clinical leadership
- Personal contact - visionary and technical
- Takes time - continuing promotion to change habits
- Feedback - continuing user interaction
- Adding new material and updating the old
- Workflow support - formulary, patient letters

**Dissemination – One Year**

- Franklin Memorial Hospital, Farmington, Maine
- Boston Health Care Homeless Program, Boston, Massachusetts
- Meharry Ambulatory Clinics, Meharry Medical School, Nashville General Hospital
- Tuba City Indian Medical Center (Indian Health Service), Arizona
- Supported by NLM grant; Server at MGH, Internet

**Problems in Dissemination - Personnel**

- Changing practice patterns is slow - requires months/years
- Local sites usually have to focus on routine care
- Local site leaders are enthusiastic but limited in time
- Lack of personnel to provide and maintain local content
- Very limited local customization and training
- Only limited feedback from individual users
- Research staff not present at local site for training and promotion
- Inability to obtain pre-implementation evaluation

**Problems in Dissemination - Technology**

- Identification and resolution of IP firewall problems
- Computer access on physician desk often suboptimal
- Competing concerns with other technologies
Positives - What has Worked (after 1 year – increasing usage)

- Continuing enthusiasm of site leaders
- Continuing promotion - training, email contacts
- Customization - site-specific material
- Pharmacy - drug coverage, availability
- Patient instructions
- Forms, local guidelines
- Links to commercial sites - one-stop shopping

Next Step? – What is success

- User Survey – impact patient care & time
- Actual use – “vote with their feet”
- Impact on site – organization and providers
- Sustainability – what happens grant runs out
- Scalability – effort to add additional sites
- Attempts to integrate with EMR
- Commercial adaptation – transition

"Diagnostic computers don't make mistakes, Mr. Pommeren. You have Dutch elm disease."