Hôpital général juif
Jewish General Hospital

Lessons Learned From Moving To Web Based Surgery Requests

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Presentation Outline

- **Some background**

- Our story

- Lessons learned

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The Hospital

- The Sir Mortimer B. Davis Jewish General Hospital:
  - **Is a full service university affiliated medical center**
    - **Serves a large and diverse population in Montreal**
    - **Provides a broad range of inpatient and outpatient services**
    - **Has major tertiary & quaternary cardiovascular, neuroscience, oncology(including robotic surgery) and neo-natology programs**
  - **Performs approximately 15,000 operative procedures per year**
    - **This number is expected to grow 2% per year through 2015**
    - **Approximately 40% of these require overnight patient stays after the procedure**
  - **Has 637 beds (154 surgical beds, and 20-22 staffed ICU beds)**

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The Players - Dr. Lawrence Rosenberg

- A surgeon, with a Ph.D. in experimental surgery in the area of pancreatic cell differentiation, Dr. Rosenberg is Professor of Surgery and Medicine and Director of the Division of Surgical Research at McGill, and A.G. Thompson Chair of Surgical Research at the McGill University Health Center.

- The lead researcher in a Phase II clinical trial in the US focusing on regenerating insulin-producing cells for patients with Type I diabetes

- Became chief of surgical services at the Jewish General Hospital in October 2007 with the intent of improving its surgical programme

- Co-chair of the Jewish General Hospital's Transformational Change effort

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The Players – Dr. Phil Troy

- A consultant and researcher with a background in information systems and a doctorate in Operations Research

- Engaged by Dr. Rosenberg to identify approaches for improving the hospital's peri-operative processes using Operations Research approaches including computer simulation, and in particular to build a simulation model that included all of the hospital's peri-operative processes

- Quickly realized that to build the model the hospital needed to collect more data

- Also performs consulting for other areas of the hospital and is significantly involved in the hospital's transformational change efforts

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The Players - Trixie Mairura

- Trixie is the project manager for all IT projects relating to surgical applications (including this one)

- For this project, Trixie has done extensive hand holding with internal users and managers

- She has also been the point person in getting the vendor to deliver

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The Players - Dana Porubska

- Formerly the head nurse of a surgical ward, Dana is now the coordinator of preoperative services, which includes the hospital's pre-surgical screening clinic, and which will include a new preoperative unit.

- Because of the project's potential impact on her clinic, on her own initiative, Dana took on a very pro-active role in this project

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The Hospital's OR Booking Process

- Existing process for submitting surgical requests:
  - **Some requests were directly entered into the surgical system**
  - **Surgeons outside hospital submitted them on paper**
  - **Surgeons specified procedures for specific blocks**

- Problems with existing process:
  - **Technique, anesthesia, & site fields were often left empty**
  - **The procedure code was often filled in incorrectly**
  - **Procedure dates were often set/changed without consideration of preoperative screening; the resulting lack of documentation and consent forms led to procedure delays and cancellations.**
  - **Required lots of manpower**

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Other OR Issues

- There were frequent cancellations of procedures
  - **Anesthetists canceled procedures likely to go past end of shift:**
    - **Due to surgeon overbooking**
    - **Due to long turnover times between procedures**
    - **Due to late start times**
  - **Cancellations also occurred because of unavailability of ICU and ward beds**
- Almost all of the surgeons complained about insufficient OR time, even though some services underutilized their time

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Fall 2007

- Dr. Rosenberg became chief of surgical services

- Phil Troy was engaged to analyze peri-operative processes

- Phil built a simple simulation model to try to understand OR utilization

- During this process Phil realized that:

  - **In some cases there was large variability in individual surgeon times for specific procedures**

  - **While the hospital had a lot of OR usage data, more data was needed:**

    - **For the surgical requests**
    - **On the time spend on more of the activities in the OR**

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Spring 2008

- A consensus was reached that additional data needed to be specified for each procedure

- In the past, similar changes had led to new request forms

- This time, Phil pushed for electronic entry for all requests

- To preclude problems, as much as possible:

  - **All fields would be required to be entered**

  - **All fields would be checked before submission was accepted**

  - **The number of fields with default values was minimized**

  - **Surgeons would be asked to estimate procedure duration**

- This approach was approved by the chief of surgical services

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Spring 2008 – Cont'd.

- Held discussions with relevant parties
  - **Expected the discussions to be about the details**
  - **Instead they were mostly about why we shouldn't proceed:**
    - **Surgeons/secretaries/receptionists were computer illiterate**
    - **Many surgeons didn't have computers**
    - **The capability would lead to more errors/problems**
    - **It would take the surgeons and their secretaries/receptionists more time**
- Finally, chief of surgical services "put his foot down" . . .

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Summer 2008

- The chief of surgical services authorized prototype
  - **Limited budget**
  - **All fields**
  - **Hooked up to local database**
  - **Not hooked up to databases needed for some of the fields**
- A developer was engaged to build the prototype
- Phil expected it to be delivered on time with all capabilities
- Phil requested the vendor of the hospital's surgical system to inform us about the mechanisms we could use to connect prototype to their system

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Fall 2008

- The developer delivered a draft of the prototype
  - **Screen was ugly**
  - **Developer couldn't obtain needed functionality**
- Developer improved aesthetics of screen
- Phil worked with developer to obtain needed functionality
- Resulting prototype:
  - **Very attractive**
  - **Had needed functionality**
  - **Was easy to use**

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Fall 2008 – Prototype Screen 1

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Fall 2008 – Prototype Screen 2

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Fall 2008 – Prototype Screen 3

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Fall 2008 – Prototype Screen 4

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Fall 2008 – Prototype Screen 5

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Fall 2008 – Prototype Screen 6

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Fall 2008 – Prototype Screen 7

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Fall 2008 – Prototype Screen 8

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Fall 2008 – Prototype Screen 9

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Late 2008

- Phil contacted surgical system vendor again regarding:
  - **Making it possible for us to directly access database**
  - **Providing utility for batch data transfer of requests to their system**
  - **Providing application programming interface**

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Early 2009

- The vendor requested meeting to discuss our request
- They proposed that they develop capability
- They agreed to our requirements
  - **Intervention/procedure technique combination**
  - **List of above for each surgeon**
  - **Preclude defaults as much as possible . . .**
- This was approved by IT and the chief of surgical services

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Spring 2009

- Meetings with vendor's programmer and analyst:
  - **They reviewed our requirements**
  - **They verbally agreed that they were feasible**
  - **We waited for them to get back to us**

- They made major progress but did not deliver on several major capabilities

- That lead to a series of meetings where the analyst would tell us he would look into meeting our needs but then he would come back and tell us he couldn't

- The project almost came to a standstill

- We were ready to cancel the work

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Summer 2009

- Vendor delivered a capability that was supposed to meet our needs

- We scheduled a training session

- Many of the major capabilities did not work

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Fall 2009

- Brought in vendor's VP of sales and one of their top analysts
- They built list of deliverables which hospital management approved
- They eventually got system working according to our needs

- Asked them to try to get it to work on a tablet

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First Half 2010

- Working capability was delivered

- We trained users

- We ran a pilot test with 5 users (2 from outside the hospital)

- We rolled system out

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Results Of Implementation

- Paper flow
  - **Still needed as surgical technique wasn't sent to surgical system**
  - **When addressed request paper flow will end**

- Communication time
  - **Initially increased communication time with surgeon's office**
  - **That time is now very significantly reduced**

- Processing time now/when paper is no longer needed
  - **More/Less time for surgeon's secretaries**
  - **About the same/Less time for hospital booking office**

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Results Of Implementation – Cont'd.

- Satisfaction
  - **Surgeon's secretaries are very happy**
  - **Surgeons are not because they have to fill in all of the fields**

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First Half 2010 – Cont'd.

- To determine if capability was surgeon friendly tested it on a tablet

- It worked, but:

  – **The keyboard had to be popped up for each field**

  – **It was too slow for use by surgeons**

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Version 1.1 (In Progress)

• Goal is to refine first version without adding major new functionality:

  – **Fully transfer all data from request to surgical system**

  – **Delete saved requests**

  – **Tablet friendly**

  – **Surgeon friendly**

  – **Add extension to phone numbers**

  – **Make it possible to print schedules**

  – **. . .**

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Version 2 (In Progress)

- Our goal is to eliminate:
  - **Having physician write out all the contra-indications and details**
  - **Physical paper flow**
  - **Having to match paper**
- To do that we needed a capability that would
  - **Make it possible to collect physical**
  - **Make it possible to get patient to sign consent form**
  - **Make it possible to print signed consent form for patients**

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Lesson

- Realizing the waste in using paper surgical requests was a good first step

- A lean analysis with gemba and value chain analysis with personnel in relevant departments would have been more helpful as it would have:

  – **Identified other problems**

  – **Identified more possibilities for improving technology**

  – **Identified more benefits of automating**

  – **Made it easier to sell the project**

  – **Helped to identify in advance other possible future steps**

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Lesson

- Everyone needs regular feedback from the project team:
  - **Prototype developer**
  - **Vendor**

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Lesson

- Make sure that the vendor or developer really:
  - **Understands what you need**
  - **Commits to delivering what you need**

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Lesson

- It's important to include the correct personnel in the effort

- In our case, this implied a strong partnership between:

  - **Information Technology - Trixie Mairura**

  - **Nursing - Dana Porubska**

  - **Preoperative Services – Dana Porubska (Coordinator)**

  - **Physicians**

  - **Surgical Services Operations Management Team – Phil Troy**

  - **A Champion - Dr. Lawrence Rosenberg (Chief of Surgical Services)**

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Lesson

- We should have made more effort to sell the project to customers &staff

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Lesson

- Follow through after implementation is extremely important:
  - **Unimplemented capabilities**
  - **User problems**
  - **Tweaks to make things better**
  - **Additions**
  - **. . .**

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Lesson

- Speed (response time) is important

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Lesson

- Implementation time is important

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Lesson

- After implementation, do gemba on how users are using new capability
  - **To see what problems they are having**
  - **To see if process change made a positive impact
    In our case we didn't achieve one goal – to get surgeons to enter directly**
  - **To identify further improvements:**
    - **Physical**
    - **Consent form**

- This process needs to be repeated regularly

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