Using Agile IT to Improve Multi-Disciplinary Team Coordination

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Presentation Overview

1. MDM Overview & Models
2. Case Studies
3. Research
4. Outcomes
5. Lessons Learned
MDM Overview & Models
What are MDMs

Multi-Disciplinary Care

“Multidisciplinary care is a collaborative approach to treatment planning and ongoing care throughout the treatment pathway”

Multi-Disciplinary Meetings (MDM)

“aims to ensure that members of the treatment and care team can discuss all relevant aspects of a cancer patient’s physical and psychosocial needs along with other factors impacting upon the patient’s care.”

VIC Health
Oncology MDMs

- Surgeons
- Medical Oncologists
- Radiation Oncologists
- Radiologists
- Pathologists
- Nurses
- Allied Health
- Admin
- Other Specialities
MDM Meeting Components

1. Preparation [Pre-Meeting]

2. Administration [Live-Meeting]

3. Follow-up & Coordination [Post-Meeting]
3 Different MDM Information Management Models

1. Manual Model
2. Standalone Model
3. Integrated Model
Manual Model

• Spreadsheets, Paper Files, Meeting Minutes ...

Thanks for making my job easier by creating yet another spreadsheet.
Standalone Model

A single MDM platform to support all Tumour Streams
Integrated Model

MDM workflow built into the Clinical Information System
Case Study
Project Background

• **What**: Project grant by the VCCC
• **When**: April 2012 - January 2013
• **Who**: Royal Women’s Hospital (Initiative leader)
  Royal Melbourne Hospital (Clinical Partner)
  PMCC (Research Partner)
  iCIMS (Technology Partner)

• **Objective**: Design & extend Gynae-Oncology and Breast Cancer CISs to replace decaying systems while providing a potential model for process improvement including MDM & Research.
A different approach: Agile Design

- Clinical Team Led Design (CTLD) is *User-Led* not *User-Centric*.

- **Key Differentiators:**
  - Iterative and continuous design.
  - Captures clinical work processes.
  - The clinical workflow becomes the system.

Clinical work practice is in *continuous Evolution* so as to *adapt Effectively, Efficiently & Economically* (4E). *(iCIMS, 2013)*
Design Framework

- Define Roles
- Identify Tasks
- Map Roles to Tasks
- (Re)Design
- Test
- Baseline Testing & Evaluation
- Desired Overall Workflow
- Define Data Processes
- Define Work Processes (Paper, Screens, Use Cases)

Breast

Gynae-Onc
Example: Gynae Oncology MDM
Objectives of MDM Workflow:
1. Generate a report on demand.
2. Meet the minimum data-set.
3. Follow the flow of discussion points.
4. Auto-complete what is known about the patient.
5. Prompt actions post-meetings.
Case Study: Gynae-Oncology MDM

Gynae Oncology MDM Meeting

Patient Details/History
Name: [Name]
DOB: [DOB]
Sex: [Male/Female]
Presenting Symptoms: [Symptoms]
Past History: [History]
Past Malignancy: [Malignancy]
Investigations:
- [Investigations]
Diagnosis:
- [Diagnosis]
Recommended Treatment Plan:
- [Treatment Plan]

Gynae Oncology MDM Meeting Report

Patient Details/History
Name: [Name]
DOB: [DOB]
Sex: [Male/Female]
Presenting Symptoms: [Symptoms]
Past History: [History]
Past Malignancy: [Malignancy]
Investigations:
- [Investigations]
Diagnosis:
- [Diagnosis]
Recommended Treatment Plan:
- [Treatment Plan]

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Innovative Clinical Information Management Systems
Example 1

- Investigations/Diagnostic Tests

Hospital X:

<table>
<thead>
<tr>
<th>Investigations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review Type</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Hospital Y:

<table>
<thead>
<tr>
<th>Diagnostic Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Histology</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Example 2

Hospital X:

- Key worker responsible for outcome of MDT:
  - [ ] Care Coordinator
  - [ ] Secretary
  - [ ] Clerical Coordinator
  - [ ] Consultant
  - [ ] Chemo Coordinator
  - [x] Fellow
  - [ ] Research Nurse

Hospital Y:

- Not required .... But why?
  
  *Work process, staff size, structure*
Research
Research Challenges & Solution

• Research data is buried in clinical systems and notes.
• It is expensive to compile research data.
• Source of truth and accuracy of data is also a challenge.

Solution: Auto-compiling of research data directly from the clinical system.
### Research Example: Ovarian Cancer

- **Diagnosis**
- **Surgery Details**
- **Clinical Trials**
- **Referrals**
- **Test Results**
- **Radiotherapy**
- **Chemotherapy**

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#### Ovarian Cancer Research System

**Diagnosis**

<table>
<thead>
<tr>
<th>#</th>
<th>Date of Diagnosis</th>
<th>Diagnosis</th>
<th>Primary Site</th>
<th>Staging method</th>
<th>Stage Code</th>
<th>Previous Rx</th>
<th>Previous Rx Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>02/12/2012</td>
<td>Malignant</td>
<td>Peritoneum</td>
<td>FIGO</td>
<td>Ov ca</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**Surgery Details**

<table>
<thead>
<tr>
<th>#</th>
<th>Date of Surgery</th>
<th>Surgeon</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11/08/2014</td>
<td>Other Unit,</td>
<td>Abdominal drainage of multiple liver abscesses 30433.00,</td>
</tr>
</tbody>
</table>

**Enrolment in Clinical Trials**

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Clinical Trial Name</th>
<th>Clinical Trial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25/08/2014</td>
<td>AOC5 - PMCC</td>
<td>AOC5#301313</td>
</tr>
</tbody>
</table>

**Referrals**

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Referral Type</th>
<th>Address</th>
<th>Address2</th>
<th>Reason for Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27/06/2014</td>
<td>Chemo Nurse</td>
<td>Regina</td>
<td>RMH</td>
<td>opinion</td>
</tr>
</tbody>
</table>

**Genetics Testing**

<table>
<thead>
<tr>
<th>#</th>
<th>Date Ordered</th>
<th>Date Received</th>
<th>Related Tumour</th>
<th>Tests</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12/08/2014</td>
<td>12/08/2014</td>
<td>[19007] Peritoneum</td>
<td>BRCA</td>
<td>BRCA1: Mutation not detected</td>
</tr>
</tbody>
</table>

**Tumour Markers**

<table>
<thead>
<tr>
<th>#</th>
<th>Date Ordered</th>
<th>Date Received</th>
<th>Related Tumour</th>
<th>Tests</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25/08/2014</td>
<td>26/08/2014</td>
<td>[19007] Peritoneum</td>
<td>Ca125 dual testing</td>
<td>Ca125, Ca125 (old):</td>
</tr>
</tbody>
</table>

**Radiology**

<table>
<thead>
<tr>
<th>#</th>
<th>Date Ordered</th>
<th>Date Received</th>
<th>Related Tumour</th>
<th>Tests</th>
<th>Sample/Origin</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21/08/2014</td>
<td>27/08/2014</td>
<td>[19007] Peritoneum</td>
<td>MRI</td>
<td>Chest/Abdomen/Head</td>
<td>Evidence of malignancy</td>
</tr>
</tbody>
</table>

**Radiotherapy**

<table>
<thead>
<tr>
<th>#</th>
<th>Date Started</th>
<th>Anatomical Sites</th>
<th>Number of Fractions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>04/08/2014</td>
<td>Brachytherapy. Other -</td>
<td></td>
</tr>
</tbody>
</table>

**Chemotherapy**

<table>
<thead>
<tr>
<th>#</th>
<th>Status</th>
<th>Date Begun</th>
<th>Completed</th>
<th>Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current</td>
<td>11/08/2014</td>
<td>11/08/2014</td>
<td>Immune Regulation Study</td>
</tr>
</tbody>
</table>
Project Outcomes
# Clinical User - Pilot Testing Outcomes

<table>
<thead>
<tr>
<th>Item/System</th>
<th>Breast</th>
<th>Gynae-Onc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenarios built</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>Staff involved in testing</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Training Time (avg)</td>
<td>10 mins</td>
<td>9 mins</td>
</tr>
<tr>
<td>Task Time (avg)</td>
<td>0:01:47</td>
<td>0:01:40</td>
</tr>
<tr>
<td>Task Click-Over (avg)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>User-Survey Scores (avg)</td>
<td>4.2/5</td>
<td>3.9/5</td>
</tr>
</tbody>
</table>
Project Outcomes: Risks/Challenges

• Fear of change & using a new (different) approach.
• Clinicians’ time-constraints.
• Scope Creep.
• Conflicts/Disagreements (between members of design team) >> Solution: Rapid Parallel Prototyping.
Project Outcomes: Advantages

- Workflow analysis and re-design to increase efficiency and work practice.
- 2 clinical & 2 research systems were designed within 9 months.
- High Trainability & Intuitiveness.
- Lower Cognitive Load.
- Demonstrated automatic data delivery to research groups.
Conclusion & Lessons Learned

• The detailed workflow of the MDM team should be the basis of their CIS-design led by them.
• Systems should be readily-expandable to allow for “continuous process improvement” and “incremental development”.
• Clinical leaders use their system as a tool to train staff in clinical best practice.
• Cross-Departmental learnings.
• Agile Design enhances knowledge sharing.
Future of MDMs: Hybrid Hub Model

- Clinical Services Information Systems
  - Patient Admin
  - Radiology
  - Pathology
  - Chemotherapy
  - ...

- MDM Dashboard
  - GynaeOnc MDM
    - Integrated
  - Breast MDM
    - Integrated
  - Lung MDM
  - ...

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Final Thought: Data Quality & Patient Safety

“One point that should not be overlooked is the MDM's function in data verification. If all the clinical, radiological and pathological data for each patient is reviewed at the meeting, errors in initial data entry can be corrected through the meeting and the final diagnosis, grade and stage of the tumour signed off at the point that the outcome and management plan is determined.”

- Mr. David Wrede
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• Victorian Comprehensive Cancer Centre
• Royal Women’s Hospital Melbourne
• Royal Melbourne Hospital
• Peter McCallum Cancer Centre
Questions

Thank You

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