Human Factors in Healthcare Forum
Case Study: Are we there yet? Missed it by that much? Lessons learnt through CTG error.

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Major Issue – CTG Cardiotocography
Lessons learnt from working with Toyota about quality issues.
Jidoka
Build in Quality
Birth of Autonomation

Autonomation
Automation with a human intelligence

• Machines / equipment that detect a fault or problem and stop automatically
• Preventing scrap and machine damage
• Do not need operators to watch over them

Sakiichi Toyoda invented Japan’s first fully automatic loom in 1897
Jidoka

Core concepts:
- No defect is to be passed onto the next customer
- Make problems visible

3 elements:
- Defect detection
- Andon
- Pokayoke
The Three Elements of Jidoka

Develop methods to detect defects and stop automatically.

- Pokayoke
- Andon
- Defect Detection
If a defect is made, we need Team Members to:

1) Have a method to identify the defect
2) Be empowered to ‘stop, call, wait’
When the ‘Root Cause’ is known, we can implement a Pokayoke to ensure the defect cannot be made.

The Three Elements of Jidoka

- Pokayoke
- Andon
- Defect Detection

All three elements are essential to Build in Quality!
The Three Elements of Jidoka

- **Defect Detection**
  - Values
  - Culture
- **Andon**
  - Problem solving
  - Behaviour
  - Culture
- **Pokayoke**
  - Capability
  - Values
  - Behaviour
  - Tools

Capabilty → Problem solving → Values → Culture → Behaviour → Pokayoke → Andon → Defect Detection → Culture → Behaviour → Value → Capability
Jidoka

Prevention (excellent care)

Patient Condition

OBSERVATION CHART

Time

Death
What is problem management?

Judy was 39 years old when she went to the hospital for a hysterectomy. After she died on the operating table, autopsy revealed that the anesthesiologist had placed the endotracheal tube in her esophagus, not her trachea.

Today, anesthesiologists measure a patient's carbon dioxide levels -- which are much higher from the trachea than from the esophagus -- through use of an end-tidal carbon dioxide monitor.

2. Ensure the problem can be seen
What is Jidoka?

- Stop when abnormality occurs
  - Build quality within each process
    - Do not pass on defects
    - Do not produce defects

- Stop after job is complete
  - Less man power needed
    - Separate human & machine work
    - Avoid the need to have team members continuously watch over a machine
What is problem management?

- Ability to detect normal from abnormal
- Abnormality = problem

1. Set the standard (Tall Man lettering)
Which cord where?

Error easy to make and time consuming

Error not as easy to make

Error not possible to make and time efficient
Build in Quality (Jidoka)

Traditional Method

Admission  Care  Error (referral)  Discharge

Defect

Rework
Build in Quality (Jidoka)

- Pathways
- Visual Management
# Makes the job easier

<table>
<thead>
<tr>
<th>No.</th>
<th>Job Sequence</th>
<th>Key Point</th>
<th>Reason for Key Point</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Receive UR stickers, DB4 forms and clinic list from Clerk</td>
<td>Have all paperwork ready for the day</td>
<td>Accurate patient identification</td>
<td>Step 4</td>
</tr>
<tr>
<td>2</td>
<td>Prepare paperwork and equipment for the day</td>
<td>Ready to start first patient at 9.15am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>First patient collected from seating outside Unit C at 9.15 am</td>
<td>Start Clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PAU Admission form completed.</td>
<td>All documentation of care completed on one form.</td>
<td>Quality and Safety</td>
<td>Step 6</td>
</tr>
<tr>
<td>5</td>
<td>Patient signs DB4 form</td>
<td>Medicare form to be signed by patient</td>
<td>Financial revenue</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Patient provided with PAU Outcome slip</td>
<td>If a follow up appointment is required this is requested on this form</td>
<td>Accurate data collection</td>
<td></td>
</tr>
</tbody>
</table>

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Jidoka Summary

**Purpose**

No defects passed on

**Strategy**

System and process for good quality and to avoid error and rework
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