Lean Dementia Care:
Using Toyota Production System principles to improve clinical care.

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Postwar Industrial Japan

• After WWII, Japan’s industrial infrastructure was in shambles
• Recovering auto industry did not have the financial backing or the market to use Detroit-style mass production system
• They needed a system providing
  – Appealing, affordable, high quality product
  – Low volumes of different models, one assembly line
  – Short turn-around time for cash
“85% of the reasons for failure to meet customer requirements are related to the deficiencies in systems and processes.... rather than the employee”

THE 4P’S OF THE TOYOTA WAY

Problem Solving
(Continuous Improvement)

People and Partners
(Respect, Challenge and Grow Them)

Process
(Right Process Will Produce the Right Results)

Philosophy
(Long-term Thinking)
Key Principles of the Toyota Way

• We must build a culture of stopping to fix problems without delay and strive to get quality right the first time.
• Go see for yourself to thoroughly understand the situation.
• Standardized workflows are the foundation for continuous improvement and employee empowerment
• Become a learning organization through relentless reflection and continuous improvement.
CAN THESE IDEAS BE APPLIED TO HEALTH CARE?
Pittsburgh Regional Health Initiative

- Outcomes of Lean projects
  - Eliminated central line infections in 90 days
  - Reduced MRSA infection by 85%
  - Reduced on-the-job injuries to housekeepers
  - Reduced nurse turnover from 12% to 0 in one year
  - Reduced medication errors through low-cost, low tech solutions
  - Reduced wait times for appointments for children and mentally ill patients
ThedaCare
(Appleton, Wisconsin)

• Outcomes of Lean projects
  – Reduced door to tPA time and mortality for patients with stroke
  – Brought an outpatient clinic to a break-even bottom line by increasing patient flow without increasing costs
  – Reduced phlebotomy errors (e.g., no label, wrong label) by 70%
  – Redesigned admission procedures so that a multidisciplinary treatment plan was completed within 90 minutes of admission

Can these ideas be applied to mental healthcare?

Can we do these things . . .
Lean Core Goals for Healthcare Leaders

• Distinguish which processes are:
  – *Value-added*: processes that deliver the goods.
    • e.g., clinical time with patients
  – *Non-value-added but necessary*
    • e.g., auditing for regulatory compliance
  – *Waste*: Non-value-added and not necessary

• Goals are to
  – Focus resources on value-added processes
  – Spend as little as possible on (or eliminate) non-valued-added and unnecessary activities

Create a culture in which everyone is trained, motivated and empowered to identify opportunities for improvement and to participate in improvement efforts?

• People are our most important resource in mental healthcare
• Improvement efforts must include everyone who touches a process, especially those who deliver the service
  – Front-line staff are *most* important
• The main role of managers is not to solve problems themselves but to help staff become “reflective problem-solvers”
Focus on what our patients, families and other “customers” seek?

• Requires us to understand what brings value to the people we serve
  • For example . . .
    – Feeling better as quickly as possible?
    – Functioning better as quickly as possible?
    – Spending less time waiting for care?
    – Obtaining care affordably?

Strive to invest resources on processes that create value, not on processes that don’t?

• Create processes that improve quality
• Reduce waste
• This requires being clear and explicit about the goals of care
  – For example . .
    • Symptom relief?
    • Functional recovery?
    • Safety?
• If processes are not serving the goals of care, they may constitute waste
Measure how good a job we’re doing increasing value?

- Measure whether we are achieving the goals of care and minimizing waste
  - Are symptoms better?
    - e.g., “agitation” scores before and after treatment
  - Is function better?
    - e.g., ability to ambulate
  - Is treatment safer?
    - e.g., med error rates
  - Is the perception of care improving?
    - e.g., family satisfaction
  - Is cost-effectiveness improving?
    - e.g., readmission rates, waiting time, laboratory expenditures

Can we commit ourselves to systematic, continuous efforts to improve? ("Plan-Do-Study-Act" cycle is one way)

- Plan:
  - Create a team of staff at all levels to identify opportunities for improvement (e.g., better outcome and/or less waste)
  - State the problem clearly and in measurable terms (e.g., symptom scale score; readmission rate)
  - Describe and visually depict (“map”) the existing process (“current condition”), highlighting process problems
  - Identify root causes of problems
  - Define the sought-after target condition (“future state”)
Can we commit ourselves to systematic, continuous efforts to improve? ("Plan-Do-Study-Act" cycle is one way)

- Do
  - Develop and test “countermeasures” aimed at root causes of problems.
- Study
  - Measure to see if improvement has occurred.
- Act
  - If target achieved, standardize the countermeasures (i.e., make them part of standard workflow) and disseminate
  - If not, repeat cycle until target improvement is achieved
Problems with **timeliness**

Source of **dissatisfaction** and **compromised aftercare**

**Significant cost** of transcription and time spent by experienced clinicians

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**CURRENT CONDITION**

<table>
<thead>
<tr>
<th>Category</th>
<th>Days to completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>10</td>
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<tr>
<td>C and A</td>
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</tr>
<tr>
<td>Geriatric</td>
<td>10</td>
</tr>
<tr>
<td>Trauma</td>
<td>15</td>
</tr>
<tr>
<td>Eating Disorders</td>
<td>15</td>
</tr>
</tbody>
</table>
Annual cost of transcription alone is >$346,000

Hourly Cost of experienced staff doing dictations

Opportunity Cost of experienced staff doing dictations rather than providing clinical care

CURRENT CONDITION

Reduce to 5 days
Average time to completion

Reduce cost of transcription by at least 25% in the 1st year

GOALS/TARGETS
Dictators participate in revising, testing, and refining the discharge summary template.

Input of aftercare providers is sought as to what aspects of discharge summary are useful.
Reducing Seclusion on an Inpatient Child Unit
The use of “hands-on” interventions such as **seclusion** may cause physical and psychological injury.

**Seclusion** imposes an onerous documentation burden and may lead to regulatory censure.

**CURRENT CONDITION**

**RATES OF SECLUSION**

**WHY DO THIS?**
CURRENT CONDITION

RATES OF SECLUSION BY UNIT

CURRENT CONDITION

RATES OF SECLUSION- BEFORE
Eliminate Seclusion on the Children’s Inpatient Unit
Focus on consequences, not punishment

Planned ignoring instead of providing attention

Focus on controlling staff behavior rather than controlling the patient

RATE OF SECLUSION following introduction of countermeasures

STUDY (Effect Confirmation)
Can we apply these ideas to dementia care?

Plan-Do-Study-Act:
A work in progress . . .

Plan: Make the case for action

• The *behavioral symptoms of dementia* can exhaust caregivers and lead to injury, psychiatric hospitalization, and nursing home placement. On the geriatric inpatient unit they endanger patients and staff, drive up staffing costs, and increase the use of controversial medications (e.g., neuroleptics) that have limited safety and efficacy. Thus these symptoms are dangerous and increase both care costs and liability. We need to find safer and more cost-effective ways to provide care.
Plan: Create a team

- Geriatrics Medical Director
- Principal attending psychiatrists
- Unit Manager (RN) of Geriatric Neuropsychiatry Unit
- Pharm. D. associated with Geriatric Neuropsychiatry Unit
- Charge nurse
- Mental Health Workers
Plan: The process is not working well consistently

- Incomplete diagnostic work-up with respect to . . .
  - Cause of dementia
  - Complicating conditions that may cause behavioral symptoms
    - Important pain problems sometimes overlooked initially
- It is unclear how often behaviors are occurring because there is no standard method for documenting them
- It’s not clear why meds are ordered because the orders often carry highly nonspecific descriptions of “target behaviors” (e.g., agitation)
- Medication consent discussions are inconsistently documented; in terms of liability, this is especially problematic for antipsychotics given the black box warning

Plan: The process is not working well consistently

- Staff training in behavioral interventions is incomplete.
- Medications, especially antipsychotics and benzodiazepines, may be used more frequently, or in higher doses, than necessary, potentially leading to increased risk of sedation, hypotension, falls, and other adverse effects
- Concern about these adverse effects may lead to orders for 1:1 supervision, increasing staffing costs
**Do: Countermeasures**

- Standardize approach to diagnostic work-up and put on checklist.
- Develop standard method for describing and documenting problem (“target”) behaviors.
- Identify “target behaviors” specifically in notes and medication orders.
- Strengthen and standardize documentation of medication consent.
- Broaden and strengthen staff training in behavioral management.
Standard method for documenting behaviors

- Nurse leader, nursing staff, and physician staff reviewed several existing scales
  - Cohen-Mansfield Agitation Inventory
  - Neuropsychiatric Inventory Questionnaire
  - Pittsburgh Agitation Scale
  - RAGE scale
- None was completely acceptable to them
  - Do not capture all desired symptoms
  - Do not speak to interventions
  - Rely on information “across shifts.”

A Neuropsychiatric Clinical Indicator Scale (NCIS)

- Domains
  - Behavioral
  - Psychiatric
  - Somatic/Physical
  - Verbal
- Interventions attempted
- Effectiveness of interventions
- Total number of indicators documented
Neuropsychiatric Clinical Indicator Scale:
Patient R.A., Hospital Day 1, Day Shift

- **BEHAVIORAL INDICATORS:** Disruptive, Hoarding, Intrusiveness and Restlessness.
- Identify Severity of Indicator: Mild.
- Behavioral Indicators Total Score: 4.

- **PSYCHIATRIC INDICATORS:** Delusions, Irritability and Paranoia.
- Identify Severity of Indicator: Moderate.
- Psychiatric Indicators Total Score: 3.

- **SOMATIC/PHYSICAL INDICATORS:** None.
- Identify Severity of Indicators: Not Applicable.
- Somatic/Physical Indicators Total Score: 0.

- **VERBAL INDICATORS:** Complaining, Demanding, Graphic Language and Verbal Aggression.
- Identify Severity of Indicator: Moderate.
- Verbal Indicators Total Score: 4.

- **INTERVENTIONS TO OBSERVED CLINICAL INDICATORS:** Ambulation, Companionship, Distraction, PRN Med, Reading, Staff 1:1 and Toileting.
- Identify Effectiveness Of Intervention: Effective.
- **GERIATRICS NEUROPSYCH CLINICAL INDICATORS (NCI) TOTAL SCORE:** 11.

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**Neuropsychiatric Clinical Indicator Score:**
First two hospital days

![NCIS Score Graph](image)
**Do: Countermeasures**

- Standardize initial work-up
  - Doctors met to agree on set of standard *considerations* for diagnostic efforts and created a checklist
  - Doctors will be meeting to consider a standard approach to treatment, especially medication use
- Expand staff training in behavioral management
  - Training with Teepa Snow
- Use EMR functionality to remind prescribers to document consent and provide specific indications for medications.
- Evaluate emergency medication use
  - Collecting baseline data on rate of use of neuroleptics for behavioral emergencies expressed “per patient day”

**What to monitor during “study” period**

- Principal metrics
  - Rate of adherence to protocol for medical work-up (judged by peer review)
  - Rate of documentation of appropriate indications for meds (monitored by pharmacist)
  - Rate of adequate documentation of consent discussions (monitored by quality department staff)
  - Rate of emergency medication use for aggressive behavior episodes (monitored by RN leadership)
- Other metrics
  - Falls with injury (will these go down with more careful drug use?)
  - Staffing costs (will these go down as fall risk declines?)
If you were going to do this . . . .

– How would you state the reason to try to improve?
– Who would be on your improvement team?
– What would your “current state map” look like?
– What problems would your team identify in the current state, and what are their causes?
– What would you posit as your ideal future state?
– What countermeasures would you propose to move toward achieving ideal future state?
– How would you measure improvement?