Deprescribing: The Why and How

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Lynn Deguzman, PharmD, BCGP, Kaiser Permanente

Monday, December 10, 2018
8:00 – 11:30 AM

#IHIFORUM
Nothing to Disclose

Karen Smethers, Jane A. Taylor, Melissa Knihtila, Nicole Brandt, and Lynn Deguzman today have no relevant financial or nonfinancial relationship(s) within the services described, reviewed, evaluated, or compared in this presentation.
Introductions

Our Team: Melissa, Jane, Karen, and Lynn

Participants

• Rapid fire 10 seconds:
  • Name
  • Organization
  • Role
• Sit with your “mates” if you are here together to enhance collaboration
Getting to know you!

• What questions do you want answered about deprescribing?
Key Questions We Sought to Answer

1) Are there innovations in frontline delivery of health care from other developed countries that can work in the US?; and

2) Could those innovations be sourced with an approach that led to testing and, potentially, adoption in US-based health care systems?
Evidence-based Deprescribing Guidelines – Ottawa

[Diagram showing the Proton Pump Inhibitor (PPI) Deprescribing Algorithm]

**Indication still unknown?**
- Mild to moderate esophagitis or GERD treated 4-8 weeks (esophagitis healed, symptoms controlled)
- Pyloric ulcer disease treated x 2-12 weeks (from NSAID; H. pylori)
- Upper GI symptoms without endoscopy; asymptomatic for 3 consecutive days
- ICU stress ulcer prophylaxis treated beyond ICU admission
- Uncomplicated H. pylori treated x 2 weeks and asymptomatic
- Barrett's esophagus
- Chronic NSAID users with bleeding risk
- Severe esophagitis
- Documented history of bleeding GI ulcer

**Why is patient taking a PPI?**
- If unsure, find out if history of endoscopy, if ever hospitalized for bleeding ulcer or if taking because of chronic NSAID use in past, if ever had heartburn or dyspepsia

**Recommend Deprescribing**
- Strong recommendation (from Systematic Review and GRADE approach)
  - (evidence suggests no increased risk in return of symptoms compared to continuing higher dose, or daily until symptoms stop) 1/10 patients may have return of symptoms

**Decrease to lower dose**
- Stop and use on-demand
- Monitor at 4 and 12 weeks
  - If verbal: Heartburn, Dyspepsia, Regurgitation, Epigastric pain
  - If non-verbal: Loss of appetite, Weight loss, Agitation

**Use non-drug approaches**
- Avoid meals 2-3 hours before bedtime; elevate head of bed; address if need for weight loss and avoid dietary triggers

**Manage incidental symptoms**
- Over-the-counter antacid, H2RA, PPI, alginic acid
  - (e.g. Tums®, Rolaids®), Zantac® (Omeprazole), Nexium®, Gaviscon®
- H2RA daily weak recommendation – GRADE 1/5

**If symptoms recur:**
- If symptoms persist 3–7 days and interfere with normal activity:
  1. Test and treat for H. pylori
  2. Consider return to previous dose

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Session Objectives

1. Understand successful approaches to deprescribing, including impact to patients, safety, and cost savings
2. Understand contextual factors about your system to begin deprescribing
3. Identify a medication class for deprescribing in your system and plan to start deprescribing testing.
Identify problem → Scanning → Case Studies → Feasibility Analysis → Business Case → Pilot
OUR EXPERIENCE
Ascension is the largest Catholic healthcare organization in the country, with over 156,000 associates and 34,000 aligned providers working as one to connect care and deliver solutions to individuals and communities in 21 states and the District of Columbia.

Ascension is a faith-based healthcare organization that delivers personalized, compassionate care to all, especially to those who are poor and vulnerable.

- In FY18, Ascension provided nearly $2 billion for care of persons living in poverty and community benefit.
- Our Mission-driven work is carried out through a number of subsidiaries dedicated to providing healthcare services, delivery and solutions to support personalized care.
### About Ascension

#### Millions served annually

<table>
<thead>
<tr>
<th>Count</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>156,000</td>
<td>Associates</td>
</tr>
<tr>
<td>13,955,260</td>
<td>Physician and clinic visits</td>
</tr>
<tr>
<td>151</td>
<td>Hospitals</td>
</tr>
<tr>
<td>82,991</td>
<td>Deliveries</td>
</tr>
<tr>
<td>618,653</td>
<td>Surgeries</td>
</tr>
<tr>
<td>785,255</td>
<td>Discharges</td>
</tr>
</tbody>
</table>

### FY18 Financials

- **Total assets**: $38.5 billion
- **Care of the poor and community benefit**: $1.98 billion
- **Total operating revenue**: $23.2 billion
- **Income from recurring operations**: $298 million
Our Experience – Ascension

Why was it important?

• Project aligned with Ascension’s quadruple aim
  • Best possible health outcomes
  • Enhanced patient and provider experience
  • Lower overall cost of care

Medication Class Focus

• Proton Pump Inhibitor Therapy
• Opioid and Sedative Use
How do you get started?

- Identify a Senior Sponsor, Participant sites

**Senior Leader/Sponsor**

Ann Hendrich, PhD, RN, FAAN  
Senior Vice President of Quality and Safety  
Executive Director of the Ascension Health Patient Safety Organization (PSO)  
Chief Nursing Officer

**St. Vincent’s East**  
Birmingham, AL

**Seton Medical Center Williamson**  
Round Rock, TX

**Saint Thomas West**  
Nashville, TN
How do you get started?

- Develop an Executive Team and a Team at each site to include Physician Champion, Pharmacist Lead, Informatics support, and Project Manager.

### Our Executive Team:

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day-to-Day Leader</td>
<td>Patrick Leineuer, PMP</td>
<td>Program Manager</td>
</tr>
<tr>
<td>Senior Leader/Sponsor</td>
<td>Anna Hendrich, PhD, RN, FAAN</td>
<td>Senior Vice President of Quality Safety Organization (PSSO) Chief Nursing Officer</td>
</tr>
<tr>
<td>Clinical Champion(s)</td>
<td>Kevin Grady, MD</td>
<td>Vice President of Pharmacy, Chief Medical Officer, St. John Providence Medical Center, WilliamSound Medical Center, WilliamSound Medical Center, WilliamSound Medical Center</td>
</tr>
<tr>
<td></td>
<td>Said Soubra, MD</td>
<td>Chief Medical Officer, Seton Medical Center, WilliamSound Medical Center, WilliamSound Medical Center, WilliamSound Medical Center</td>
</tr>
<tr>
<td></td>
<td>Gregory James, MD</td>
<td>Chief Clinical Officer, Saint Thomas Health</td>
</tr>
<tr>
<td>Informatics Team Lead</td>
<td>Dan Leffler, DPh, MS</td>
<td>Senior Director, Pharmacy Information Technology</td>
</tr>
</tbody>
</table>

### Our Pharmacy Team:

#### On Site Leaders

- **Leanne Phillips, PharmD, BCPS**: Clinical Pharmacy Coordinator, St. Vincent's East Ascension
- **Tamara Knight, PharmD, BCPS**: Network Clinical Pharmacy Specialist – Internal Medicine, Seton Healthcare Family
- **Deborah Hu, PharmD, BCPS**: Network Clinical Pharmacy Specialist – Critical Care, Seton Healthcare Family
- **Tonya Thomas, PharmD**: Clinical Pharmacist, Saint Thomas West Hospital
How do you get started?

- Agree on an AIM statement with clear outcome measures; identify primary and secondary drivers; develop a toolkit with corresponding resources.
- Use existing structure for communication to support implementation.
- Start when you have leadership support and local team’s engagement.
- Focus on a medication class that will support current mission and vision.
How do you get started?

- Identify existing clinical guidelines; complete comprehensive literature review

Proton Pump Inhibitor Deprescribing Resources

**Clinician Resources**

- [Ascension Stress Ulcer Prophylaxis SBAR a(*)](#)
- [Ascension IHI Proton Pump Inhibitor Deprescribing AIM document (*)](#)
- Fourteen page PPI Deprescribing toolkit from Choosing Wisely Canada
- Two page PPI Algorithm from Deprescribing.org (*)
- Nine page general information handout from Rx Files on PPI Deprescribing
- Five page general information handout from Australian Consultant Pharmacists Deprescribing
- Thirteen page newsletter from Pharmacist’s Letter PPI Appropriate Use and Avoidance
- [Citation: Gastroenterology 2017; 152: 706-715. AGA Risks and Benefits of Low versus No Acid Suppression](#)
- [Citation: BMC Medicine 2016; 14: 179-214. Evidence on Indications for PPI Use in Outpatient Care](#)
- [Citation: Ann Pharm 2015; 49: 29-38. PPI Deprescribing Process](#)
- [Citation: Ther Adv Gastroenterol 2012; 4: 219-232. Overutilization of PPIs](#)

**Patient Information Handout Examples**

- Twelve page patient handout booklet from Canadian Deprescribing Network: You can stop the pill
- [Two page patient handout booklet from Deprescribing.org: is a Proton Pump Inhibitor needed? (*)](#)
- Two page patient handout from Choosing Wisely Canada: Using PPI carefully (*)
- [Two page patient handout: Asking Why: PPI? (Microsoft Publisher/Word)](#)
# Measurement Strategy

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Calculation (i.e., Numerator &amp; Denominator)</th>
<th>Data Source</th>
<th>Data Collection (sampling, data collection frequency)</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome Measure</strong>&lt;br&gt;Oral pantoprazole mg / Equivalent patient Day</td>
<td><strong>Numerator:</strong> Number of mg <strong>Denominator:</strong> Equivalent Patient Day</td>
<td>Wholesaler Data</td>
<td>Monthly</td>
<td>50% Reduction</td>
</tr>
<tr>
<td><strong>Number of encounters with IV and PO pantoprazole</strong></td>
<td>Number of resource cases billed for pantoprazole</td>
<td>ACRI</td>
<td>Monthly</td>
<td>50% Reduction</td>
</tr>
<tr>
<td><strong>Pantoprazole Days of therapy per 1000 patient days</strong></td>
<td><strong>Numerator:</strong> Number of doses (IV/PO) <strong>Denominator:</strong> Adjusted patient days</td>
<td>Discern Analytics Finance</td>
<td>Monthly</td>
<td>50% Reduction</td>
</tr>
<tr>
<td><strong>Process Measure</strong>&lt;br&gt;Number of patient alerts</td>
<td></td>
<td>Clinical Decision Support</td>
<td>Monthly</td>
<td>50% Reduction</td>
</tr>
<tr>
<td><strong>Balancing Measure</strong>&lt;br&gt;Bleeding events reported</td>
<td></td>
<td>Equivalent Reporting system</td>
<td>Quarterly</td>
<td>None associated with PPI DeRx</td>
</tr>
</tbody>
</table>
All Sites – Pantoprazole Utilization*

Number of Encounters with Pantoprazole by Facility: JUNE 2017 - FEB 2018

Source: ACRI

*Data Source: ACRI, charging data
St. Vincent’s East – Oral Pantoprazole Procurement mg/EPD

- Provider Education Implemented
- Criteria for Use
- New EHR

July Aug Sept Oct Nov Dec Jan Feb March April
St. Vincent’s East – CDS Oral Pantoprazole Patient Alerts

July 2017-April 2018

Provider Education Implemented

Criteria for Use

New EHR
Saint Thomas West – DOT/1000 Patient Days
Reports of GI Bleed associated with PPI Deprescribing from Event Reporting System

- No gastrointestinal bleeding events reported in the event reporting system associated with the PPI deprescribing in the three trial settings

St. Vincent’s East – IV & Oral PPI cost reduction over six months
System Target Opioid Use
(Milligram Morphine Equivalent Per 1000 Patient Days) vs. Patient Pain Scores

St. Vincent’s HealthCare, FL
Scaling Up

Use of Liposomal Bupivacaine in Hip/Knee Cases

- Measure and communicate success
- Build on success locally; spread practice throughout the region
- Offer coaching calls to discuss how to overcome barriers and share best practices
- Support new teams with mentors, experienced colleagues
Lessons Learned

Most important things learned?

• Small steps of change are effective
• Senior sponsor and local physician engagement are key to achieve success

“The lead physicians have been instrumental with supporting the project and serving as a resource for their peers and colleagues.”

• Measure and communicate current status to keep team engaged

Most useful things we did?

• Share and spread success
• Foster multidisciplinary team collaboration
  • Video describing success

https://www.monster.com/career-advice/article/perfect-your-business-handshake
Questions
Scaling Up

• Submit your work, findings, and learnings to internal and external conferences/journals: share the message, even the basic message about polypharmacy and its risks. It helps normalize the topic.

• Live and breathe deprescribing to continually obtain passive and active buy-in at major and regular meetings throughout your organization. Don’t be afraid to become the point person & subject matter expert on this.

• Collaborations are key to scaling up. Can’t do all of this alone: build partnerships with other departments, research groups, analytics groups, etc.

• Continue to maintain good relationships with your champions and stakeholders, including front-line clinical staff (i.e. PCPs) and of course, patients. Keep them engaged on updates and exciting advancements.
Kaiser Permanente Northern California
Setup

Lynn Deguzman, PharmD, BCGP
Scaling up

- Share your learnings
- Be the “Deprescribing” expert
- Establish collaborations
- Build relationships

Engagement

Lynn Deguzman, PharmD, BCGP
A BETTER WAY TO TAKE CARE OF BUSINESS

Scalable components

Champions/Stakeholders

Playbook/Dashboards

Providers (MD, Pharmacists)

Lynn Deguzman, PharmD, BCGP
## Measurements

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Calculation (i.e., Numerator &amp; Denominator)</th>
<th>Data Source</th>
<th>Data Collection (sampling, data collection frequency)</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance.  1. % who accept recommendation to deprescribe (dose reduction and/or discontinuation)</td>
<td>Numerator: # of patients with dose reduction and/or discontinuation Denominator: # of patients spoken to</td>
<td>KP HealthConnect Smart Data Elements (SDEs)</td>
<td>Interval: Weekly</td>
<td>≥ 50% acceptance of deprescribing recommendations</td>
</tr>
<tr>
<td>At goal. 2. # of patients remaining at Hgb a1c &lt;7.5% and systolic blood pressure &lt;140 after 90 days post-deprescribing action</td>
<td>Numerator: # of patients below these lab/BP ranges Denominator: # of patients with deprescribing action</td>
<td>KP HealthConnect Lab/Encounter data</td>
<td>Interval: Monthly</td>
<td>≥ 90% of patients at goal</td>
</tr>
<tr>
<td><strong>Process Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch points. 1. # of patients touched (chart reviewed at minimum)</td>
<td>Raw #s</td>
<td>KP HealthConnect Smart Data Elements (SDEs)</td>
<td>Interval: Weekly</td>
<td>500 diabetes patients and 50 blood pressure patients per quarter</td>
</tr>
<tr>
<td>PDSAs. 2. # of PDSAs applied</td>
<td>Raw #s</td>
<td>KP Deprescribing Team Notes / Monthly Reports</td>
<td>Interval: Monthly</td>
<td>≥ 2 per month</td>
</tr>
<tr>
<td><strong>Balancing Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adherence 1. Medication adherence to other medications; adherence metrics</td>
<td>Numerator: # of patients with PDC &gt; 80% at end of measurement month Denominator: # of patients with deprescribing action</td>
<td>KP Prescription Claims Data / Acumen Adherence Outcomes</td>
<td>Interval: Monthly</td>
<td>No less than 3% below regional average in Medicare adherence drug classes (statin, ACE/ARB, oral diabetes)</td>
</tr>
<tr>
<td>Restarted medications 2. # of patients who restarted medication post-deprescribing</td>
<td>Numerator: # of patients who had a medication restarted after their deprescribing action Denominator: # of patients with deprescribing action</td>
<td>KP HealthConnect Smart Data Elements (SDEs)</td>
<td>Interval: Weekly</td>
<td>&lt; 10% of deprescribed patients</td>
</tr>
<tr>
<td>Acute utilization 3. # of hyperglycemia &amp; hypertension ED/inpatient encounters post-deprescribing</td>
<td># of ED/IP encounters in post-deprescribing group (coded with hyperglycemia/hypertension) vs non-deprescribed matched control group</td>
<td>KP HealthConnect Lab/Encounter data</td>
<td>Intervals: 6 months, 12 months, 24 months, 3 years, 5 years, 10 years Collected by pharmacy research team.</td>
<td>Statistically significantly equal or less than the control group</td>
</tr>
</tbody>
</table>

Lynn Deguzman, PharmD, BCGP

Kaiser Permanente®
Dashboards

% acceptance of deprescribing recommendation

Hemoglobin a1c results 90+ days post-deprescribing for the diabetes initiative

# Touched per Initiative

Lynn Deguzman, PharmD, BCGP
Lessons Learned

• Most important things we learned
  – Being nimble
  – Questioning the status quo
  – Balancing measures are important too
  – Patient & pharmacist stories

• Most useful things we did
  – Collaborations with various departments across Kaiser Permanente
  – Share the message
Questions?
USING IMPROVEMENT SCIENCE
Progression of learning your way from prototype to spread

Set-up Phase -> Test in One Place -> Test in Multiple Places -> Spread to All
Using the Model for Understanding Success in Quality (MUSIQ)
Successful Quality Improvement is Like Making Beautiful Music...

**PIECE OF MUSIC**
Evidence-Based Care Processes and Bundles

**INSTRUMENTS**
QI Methods—Model for Improvement, PDSA Cycles...

**PERFORMANCE SPACE**
Culture, Leadership, Resources, Training, Motivation...
MUSIQ: Model for Understanding Success in Quality

Kaplan et al. *BMJ Quality & Safety*, 2011
Some of the QI team questions in MUSIQ

<table>
<thead>
<tr>
<th>Question</th>
<th>Totally Agree</th>
<th>Neither Agree Nor Disagree</th>
<th>Totally Disagree</th>
<th>Don't Know N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most members of our QI team have worked on improvement projects before</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>The QI team members have diverse professional backgrounds and experiences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a physician actively participating on this QI team</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one member of the QI team is an authority on the outcome, process, or system being changed in this project</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The QI team leader is an ongoing &quot;presence&quot; in this team--someone who is readily available¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example: Microsystem Motivation

Ideal: complete survey at team meeting to get input, then consensus, of rest of team members

Indicate the extent to which you agree or disagree with this statement on a 1-7 scale:

*Microsystem staff who are not members of the QI team have a strong desire to improve performance in the area of focus of this QI project*

<table>
<thead>
<tr>
<th>Totally Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Totally Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
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<tr>
<td>6</td>
<td>5</td>
<td>4</td>
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</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
MUSIQ CALCULATOR

SUMMARY TAB

Summarizes the assessments from each of the MUSIQ components after they are completed.

<table>
<thead>
<tr>
<th>Contextual Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Motivators</td>
<td>0</td>
</tr>
<tr>
<td>External Project Sponsorship</td>
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</tr>
<tr>
<td>Organizational QI Leadership</td>
<td>0</td>
</tr>
<tr>
<td>Organization Senior Leader Sponsor</td>
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<tr>
<td>Organization QI Culture</td>
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</tr>
<tr>
<td>Organization QI Maturity</td>
<td>0</td>
</tr>
<tr>
<td>QI Workforce Focus</td>
<td>0</td>
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<tr>
<td>Resource Availability</td>
<td>0</td>
</tr>
<tr>
<td>Data Infrastructure</td>
<td>0</td>
</tr>
<tr>
<td>QI Team Leadership</td>
<td>0</td>
</tr>
<tr>
<td>QI Team Diversity</td>
<td>0</td>
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<tr>
<td>QI Team Subject Matter Expert</td>
<td>0</td>
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<tr>
<td>QI Team Decision-Making Processes</td>
<td>0</td>
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<tr>
<td>QI Team Norms</td>
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<tr>
<td>QI Team QI Skill</td>
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<tr>
<td>QI Team Physician Involvement</td>
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<tr>
<td>QI Team Prior QI Experience</td>
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<tr>
<td>QI Team Tenure</td>
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<tr>
<td>Microsystem QI Leadership</td>
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<tr>
<td>Microsystem Motivation</td>
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<tr>
<td>Microsystem QI Capability</td>
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<tr>
<td>Microsystem QI Culture</td>
<td>0</td>
</tr>
<tr>
<td>Task Strategic Importance to the Organization</td>
<td>0</td>
</tr>
<tr>
<td>Triggering Event</td>
<td>0</td>
</tr>
</tbody>
</table>
Summary

- Context is important in the success of QI initiatives and needs to be examined systematically.
- Using MUSIQ you can...
  - Identify aspects of context that must be addressed before or during the execution of your QI projects.
  - Plan strategies to modify context for increased success.
Innovation Phases

Phase 0: Generate new ideas

Observation → Synthesis → Screen

Phase 1: Planning

Concept design → Pilot testing → Prototype testing

Phase 2: Adapt & spread

Phase 3: Prototype testing

Phase 4: Planning

Milestone 1: Generate new ideas

Milestone 2: Test new ideas

Spread new ideas

Jane
What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

### The Model for Improvement

- **Act**
- **Plan**
- **Study**
- **Do**
By July 2018, reduce the use of PPI by 50% in adult patients through Equivalent Patient Day measure at three pilot Ascension ministries.

Aim Statement / Driver Diagram

**Primary Drivers**
- Evidence based protocols and algorithms for de-RX and weaning
- Clinician and Patient and family engagement
- Coaching Calls

**Secondary Drivers**
- Identification of people (patients) receiving targeted medication(s)
- Use of EB algorithm in development of de-prescribing
- Standard and simplified work aids
- Team approach (MD, RPh, RN, RN Educators, Informatics specialists)
- Identify indication for use for PPI
- Patient/Family Education
- Routine Monitoring and Reflection among Teams and Sites: Frank discussions of how things are going and what needs improvement

**Change Ideas**
- Clinical decision support tools on admission transfer and discharge to identify eligible patients (Programming of electronic alerts to identify patients through E.H.R. and Sentri7 application)
- Approach deRx’g as reduce or stop
- Develop single page algorithm work aids for deRx’g
- Designate physician and clinical pharmacist as team leaders Use multiprofessional team to develop project and work with families on deRx’g
- Listen to patients and family to ascertain values and preferences on medications in their life and deRx’g Confirm team’s understanding of deRx’g goals with family and patients. Engage front line staff and trusted staff to discuss deRx’g with family and patient
- Stress safety and advantages of approach to stop and/or de-escalation Use teach back and motivational interviewing techniques Offer safety and key learning points as handouts to support patient and family
- Monitor data routinely together Ask and reflect on how the process is going: what is moving along as planned, where are our predictions different from what is emerging: what are we learning: what surprises us? What are uniquely situated constraints to process?
Elements of a Prototype

- Idea Generation: we got the basics from others and adapted it
- Working Model: low resolution to working model
- Inputs
- Activities
- Outputs
- Stakeholders
- Began testing prototype
- Experience and data from testing
- Built confidence to move to pilot
Learning in the Prototype and Early Pilot Phase

- Set design targets
- Develop a conceptual design to meet design targets.
  - Treat it as a menu of components (unique assembly and application of existing ideas from health care and other industries)
- Hypothesize the high leverage components and develop a brief rationale and change concepts for these components
- Develop tests to evaluate the individual components (or in some cases combinations of components) in small groups of organizations (look for natural opportunities). Define intermediate measures to assist in learning about the impact on the design targets.
- Build degree of belief in the design and the components by having organizations test them under a wide variety of conditions
- Develop one or more “groupings of the components” that if implemented meet the design targets
- Find high performing organizations to test the grouping.
Measures and Changes as a Product of Testing in Prototype

• Sound and robust design with goals
• A set of changes to get results
• A measurement system that reflects breakthrough improvements from the innovation and the key processes that help achieve this
Degree of Belief that Changes Will Result in Improvement

The Improvement Guide, page 97

Jane
Progression to Spread

I. During testing
II. During implementation
III. After implementation
Degree of Belief that the Change Will Result in Improvement

- High
- Mod
- Low

- R&D
- Prototype Phase
- Pilot Phase
- Test

- 1 org
- 5 org
- 25 org
- 125 org
- 625 org

Adapt & Spread
Full Scale
All
Build Scalable Unit

• A scalable unit: the *sine quo non* based on your prototype and pilot
• What are the basic set of people, places, policy, procedures, technology we need to scale the pilot up, i.e., from 5 to 25; from 25 to 125; from 125 to all?
Provoke the systems to reveal barriers and weakness before full spread before full spread.
## 5X Scale-up for Testing

<table>
<thead>
<tr>
<th>Number of Individuals</th>
<th>System issues to overcome or questions to answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 patients and 1 provider</td>
<td>Can we make these changes - within a practitioner’s scope of practice?</td>
</tr>
<tr>
<td>25</td>
<td>Can we test under a wider set of conditions?</td>
</tr>
<tr>
<td>125</td>
<td>Can we settle on standard practice, standard measures?</td>
</tr>
<tr>
<td>625</td>
<td>?</td>
</tr>
<tr>
<td>3125</td>
<td>?</td>
</tr>
<tr>
<td>15,625</td>
<td>?</td>
</tr>
</tbody>
</table>

Developed by Dr. Joanne Lynn, 2009
Scaling Up

- Measure and communicate success
- Build on success locally; spread practice throughout the region
- Offer coaching calls to discuss how to overcome barriers and share best practices
- Support new teams with mentors, experienced colleagues
Jump Start Now: Participant Work Time

- What medication might you select and why?
- Aim: By when, what, for whom, how much improvement
- What do you need to do to prepare for deprescribing?
  - Who are your allies? Influencers? Formal and Informal Leaders
  - How do you plan to engage patients and family in the prototyping, testing, implementing and spreading phase of the work?
- Who should be on your team?
- What improvement tools and approaches might support the work, i.e., PDSA, MUSIQ Assessment, Model for Improvement?
- When can you start?
Pause for the Cause

1. Have you asked both internal (staff) and external (patients, residents, families) what they want from this innovation?
   1. Can you articulate these?

2. Do you know which needs are so basic that customers might not think to mention them?
   1. If so what are they?
      1. Their absence is dissatisfying

3. Have you generated needs that are unspoken, exciting and expand what the customer expects?

4. Have you conducted observations of customers using your current stage of the service?

5. Have you considered how to get customer feedback or participation in your pilot design on an on-going or intermittent basis?
### Criteria for deciding when to implement a change

<table>
<thead>
<tr>
<th>Current Situation</th>
<th>Staff Readiness to Make Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resistant</td>
</tr>
<tr>
<td>Low Confidence</td>
<td></td>
</tr>
<tr>
<td>that change idea will lead to Improvement</td>
<td>Cost of failure large</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
</tr>
<tr>
<td>High Confidence</td>
<td></td>
</tr>
<tr>
<td>that change idea will lead to Improvement</td>
<td>Cost of failure large</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
</tr>
</tbody>
</table>

Langley et. al., IG 2nd Ed
Ready to Move Forward?

- Learned enough to move forward
- Is there promising “breakthrough” results if you manifest the pilot
- Sponsor support
- Engaged the stakeholders needed for spread
- Initial business case is sound
- Deadlines
What is Spread?

Spread = expanding population of focus + additional providers + services

The Total Health Care System

Cycles for testing and implementation and Scale Up
Lessons Learned from Ghana’s *Project Fives Alive!*

A practical guide for designing and executing large-scale improvement initiatives
<table>
<thead>
<tr>
<th>Total Population</th>
<th>350,000</th>
<th>5 Million</th>
<th>11 Million</th>
<th>11 Million</th>
<th>22 Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-5 Population</td>
<td>60,000</td>
<td>500,000</td>
<td>1.7 Million</td>
<td>1.7 Million</td>
<td>3.3 Million</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Number of QI Teams</th>
<th>Number of Sub-Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOV 2007</td>
<td>Start-up: MONTHS 1–8</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>JUL 2008</td>
<td>Wave 1: MONTHS 9–22</td>
<td>228</td>
<td>195</td>
</tr>
<tr>
<td>SEPT 2009</td>
<td>Wave 2: MONTHS 23–63</td>
<td>330</td>
<td>222</td>
</tr>
<tr>
<td>OCT 2009</td>
<td>Wave 3: MONTHS 24–89</td>
<td>430</td>
<td>265</td>
</tr>
<tr>
<td>AUG 2012</td>
<td>Wave 1R: MONTHS 58–89</td>
<td>709</td>
<td>544</td>
</tr>
<tr>
<td>MAY 2013</td>
<td>Wave 4: MONTHS 63–89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Leadership for Spread

♦ Is improvement in this area a key strategic initiative within the organization?

<table>
<thead>
<tr>
<th>Improvement is a strategic initiative:</th>
<th>Circle: Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>If “No” establish top-level commitment before proceeding.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If “Unsure” how can this be clarified?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>--------------------------------------------------</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

♦ Is there an executive(s) who is responsible for the spread?

<table>
<thead>
<tr>
<th>Who:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this person passionate about the change?</td>
<td>Circle: Yes</td>
</tr>
<tr>
<td>Is success in spreading this improvement part of his/her goals/performance evaluation?</td>
<td>Circle: Yes</td>
</tr>
<tr>
<td>Actions:</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

♦ Is there a person or team who will manage the day-to-day spread activities?

Jane
Participant Work Time

• What would you consider the needed components to scale deprescribing work?
• What technology?
• What policy changes?
• What protocols?
• Who are the key team members needed to replicate the pilot?
Participant Work Time

- What is one of the earliest tests you will do?
- And, the next test?
IHI Framework for Spread

Leadership
- Topic is a key strategic initiative
- Goals and incentives aligned
- Executive sponsor assigned
- Day-to-day managers identified

Set-up
- Target population
- Adopter audience
- Key partners

Social System
- Adopter types
- Key messengers

Better Ideas
- Successful tests
- Positive attributes

Measurement and Feedback

Knowledge Management

Communication Strategies

Jane
MEASURING SPREAD
Measures: A family of measures

- **Outcome Measure: The What**
  - Did our changes impact our aim like we thought it would?
  - Are we achieving our aim, the results we want?
- **Process Measure: The How**
  - How did we make the change(s); what key processes improved?
- **Balance Measure**
  - Is the change causing another problem we did not consider; any unintended consequences?
## Working Model of Measures

<table>
<thead>
<tr>
<th>Process Measures</th>
<th>Call &amp; Check</th>
<th>Deprescribing</th>
<th>Experience Based Co-Design</th>
<th>Flipped Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome Measures</td>
<td><strong>Willing to recommend participation in Call &amp; Check (patients, staff and providers)</strong></td>
<td><strong>Willing to recommend participation in Deprescribing (patients, staff and providers)</strong></td>
<td><strong>Willing to recommend participation in EBCD (patients, staff and providers)</strong></td>
<td><strong>Willing to recommend participation in Flipped Discharge (patients, staff and providers)</strong></td>
</tr>
<tr>
<td># of patients engaged in Call &amp; Check services</td>
<td>Percentage of those in the population of interest, on a medication of interest, who stop that medicine due to deprescribing</td>
<td>Identify if/how EBCD changed how you have designed processes or buildings (qualitative review)</td>
<td># of medically ready patients who are discharged from hospital or TCU (comparison TBD)</td>
<td></td>
</tr>
<tr>
<td>Percent decrease in readmissions</td>
<td>Number of [improvement ideas/processes] implemented</td>
<td>Percent decrease in readmissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service volume &amp; productivity (e.g. rounds (or visits) per week by trusted worker)</td>
<td>Percentage of those in the population of interest, on a medication(s) of interest where deprescribing is initiated.</td>
<td>Number of [improvement ideas/processes] tested</td>
<td>Percentage of patients with flipped discharge seen by Active Response Team within 2 [TBD] hours of discharge</td>
<td></td>
</tr>
<tr>
<td>Cost per reduced readmission</td>
<td>Initiation of another class of medications to treat same problem (e.g., H2 blockers if deprescribing PPIs)</td>
<td>Number of [improvement ideas/processes] implemented</td>
<td>Cost per reduced readmission</td>
<td></td>
</tr>
</tbody>
</table>
Pre and Post Analysis

Team/participant Work Time Measurement

• What are likely candidates for your deprescribing measures?
  • Outcome: list 1 or 2 and how each would be collected
  • Process: list 4-5 and how they might be collected
  • Balancing: 1 measure to understand if there are any unintended consequences of this work
When you think of your potential deprescribing project...
  • Do you have bold goals that might catch someone’s breath?
  • How realistic is it that you will reach these goals?
  • Where in your design development are you?
    • A toddler?
    • Child?
    • Adolescent?
    • Teen?
    • Fledgling adult?
All Things Considered

- Most important things we learned
- Most useful things we did
Managing Spread

• Create plan
  • Completeness vs. coverage - all changes vs key changes
• Set schedule
• Anticipate needed support services
  • IT
  • Case management/community liaison
  • Technical expertise
• Eliminate barriers
  • Accessible knowledge
• Measurement and feedback
## Spread Strategy Matrix

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones</td>
<td>A B C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Samz</td>
<td>A B</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garcia</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W. Clinic</td>
<td></td>
<td>A</td>
<td>B C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Pr</td>
<td></td>
<td></td>
<td></td>
<td>A B C</td>
<td></td>
</tr>
</tbody>
</table>

A=sick visit  immun  B=reminders,  C=registry
## Spread Plan

| Service                          | Project introduced to providers & leaders | Identified | Discharge criteria created & reviewed by team | Service | EMR request submitted | Service | Criteria live in EMR | Service | Nursing education complete | Service | Daily feedback reports created | Service | Run chart created | Service | Baseline period complete | Service | Intervention period complete | Service | Sustain |
|----------------------------------|------------------------------------------|------------|-----------------------------------------------|---------|-----------------------|---------|-----------------------|---------|------------------------|---------|------------------------|---------|------------------------|---------|------------------------|---------|---------|
| Hospital Medicine (Adolescent, Community Pediatrics) |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| ENT                              |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| General Surgery                  |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| GI: Lumen & Liver                |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Cardiology                       |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Allergy                          |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Endocrinology                    |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Neonatology                      |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Nephrology                       |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Neurology                        |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Neurosurgery                     |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Pulmonary: General               |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Pulmonary: tracheostomy/ventilator|                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Physical Medicine & Rehabilitation|                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Trauma                           |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Urology                          |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Genetics                         |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Rheumatology                     |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Hematology                       |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Plastics                         |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Bone Marrow Transplant           |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Oncology                         |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Gynecology                       |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |
| Orthopedics                      |                                          |            |                                               |         |                       |         |                       |         |                        |         |                       |         |                        |         |                       |         |         |

*Legend:* Black box = Implemented, Orange box = In Process, Gray box = Testing.
Successful Spread Programs

• Five variables affecting the rate of adoption of new ideas (Rogers):
  • Attributes of the change
  • Type of adoption decision
  • Communication channels
  • The social system
  • Promotion efforts (leadership)

API - 2015
Questions?
Reflections?

THANK YOU!