

Mechanics of Improvement

Evans Center for Implementation
& Improvement Sciences

Quality & Patient Safety,
Department of Medicine

1

Planning for
Improvement



Series Goals

1

- Present Quality Improvement (QI) and Implementation and Improvement Science (IIS) approaches to improving healthcare delivery
- Critical steps, decision-points, challenges

2

- Apply approaches to real-world examples

3

- Build on familiar language: PDSA

Upcoming Sessions

Applying results

Iterative PDSA cycles – Disseminating Results
Planning for Spread – Scaling Up, Scaling Out
Planning for sustainability – Maintenance
Implications for Future Research

Identifying the potential for improvement

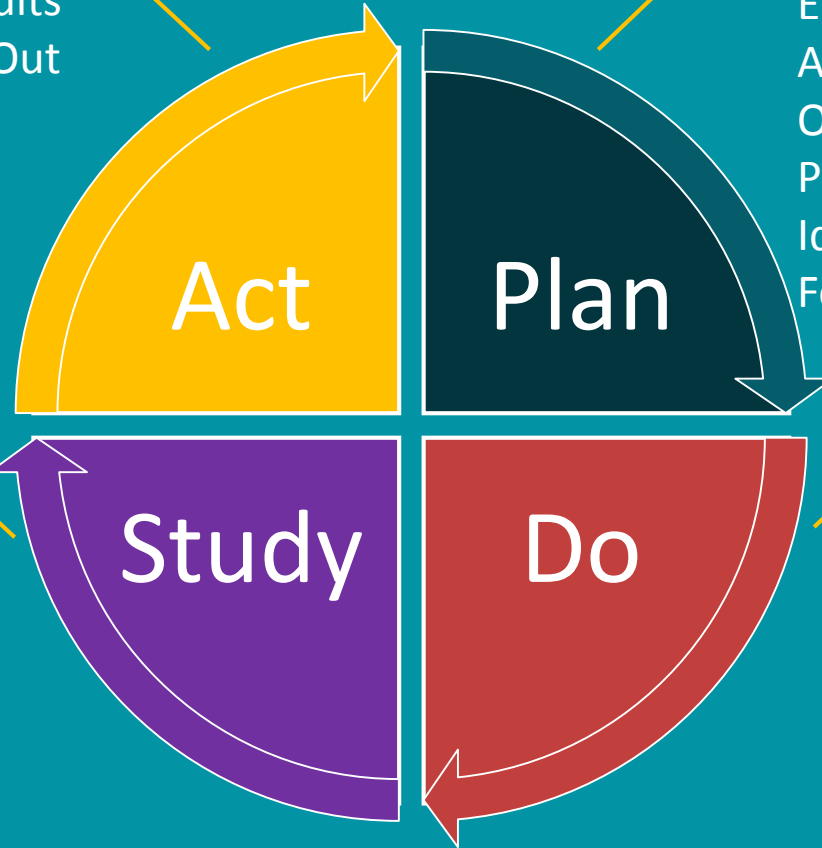
Engaging Stakeholders
Aims Statement/Driver Diagrams – Research Objectives
Process Mapping – Conceptually Modeling
Identifying Best Practices
Focus on Effectiveness – Focus on Process

Measuring results

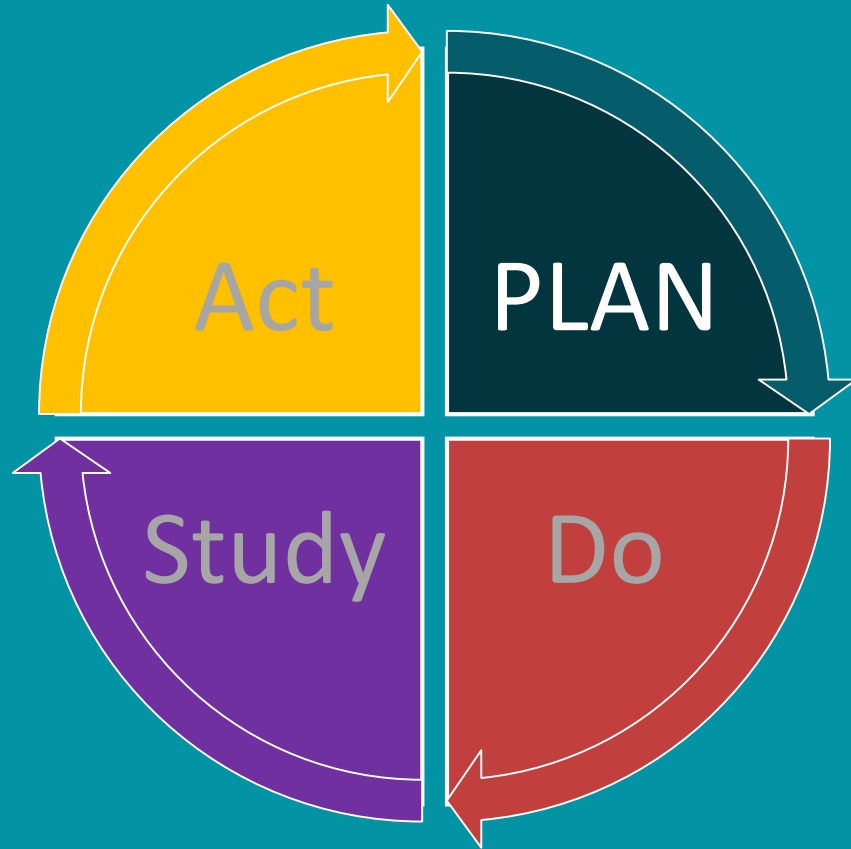
Data Analysis
Measuring Effectiveness –
Measuring Processes
Lessons Learned – Measuring
Barriers/Facilitators

Effecting change

Designing Small Scale Tests –
Study Designs
Organizing Change –
Implementation Strategies
Data Collection



Session 1: Plan



How do we identify the need and potential for improvement?

Session 1 Objectives

1. Identify different QI and IIS approaches to planning that you can include in your improvement initiatives
2. Compare/contrast QI and IIS approaches using BMC case studies
3. Identify pros/cons of each approach

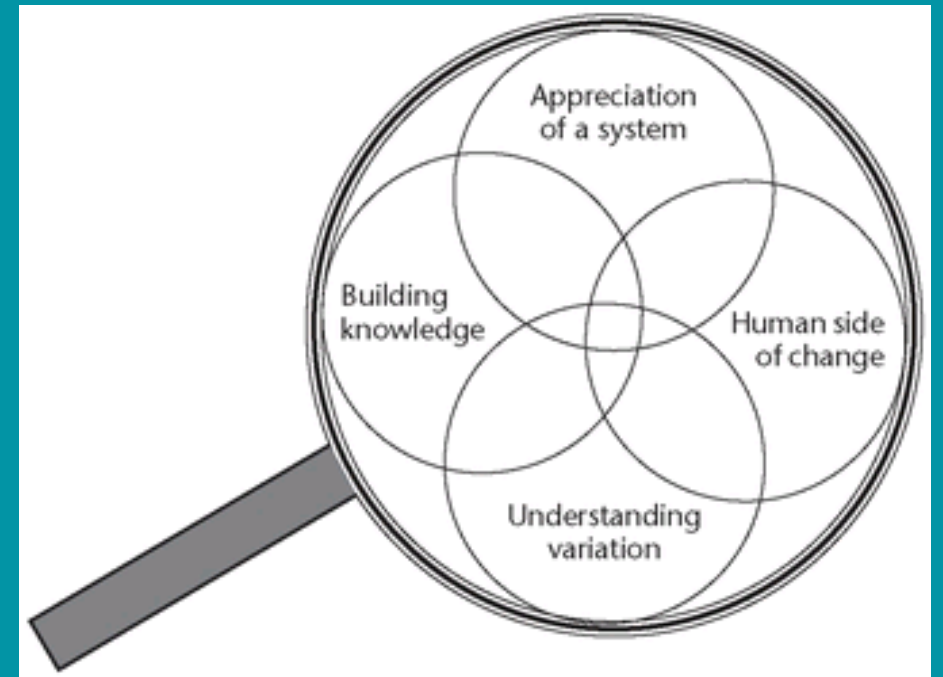
What Are We Talking About?

- Quality Improvement
 - A framework to systematically improve healthcare delivery¹
- Improvement Science
 - Rigorous measurement of outcomes associated with efforts to improve care delivery
- Implementation Science
 - Scientific study of optimal strategies to promote the systematic uptake of research into practice to improve the quality or effectiveness of health services

Improving Healthcare Delivery

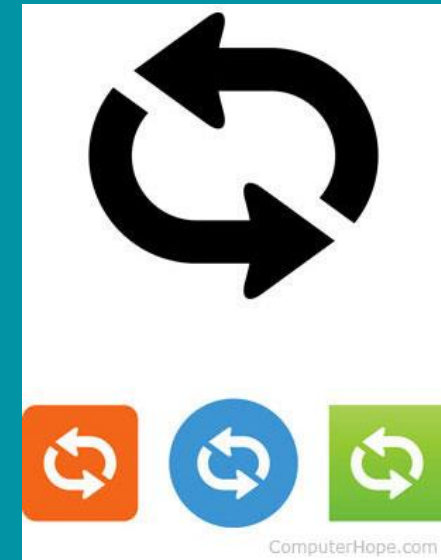
System of Profound Knowledge

- W. Edwards Deming brought the scientific method to industry
- Improvement not made with subject knowledge alone
- SOPK- a body of knowledge which allows understanding of how parts of a system interrelate in order to make improvements



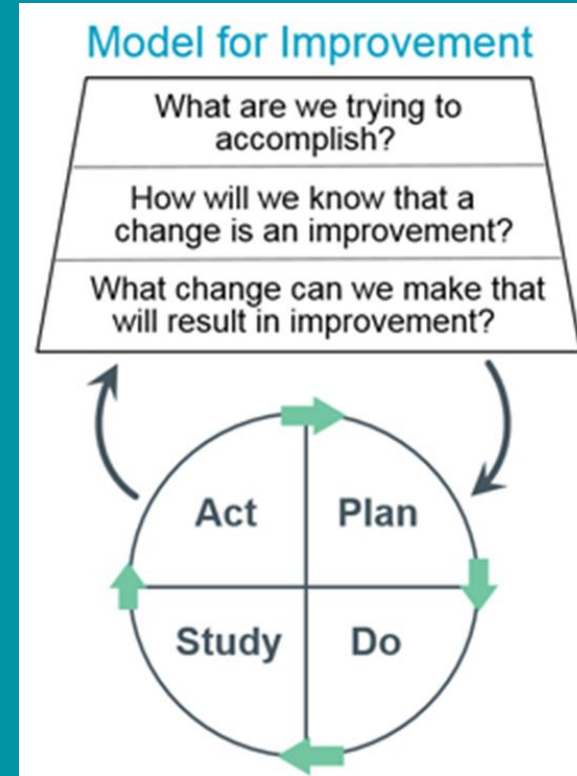
Quality Improvement Approach

- A “practical” means of realizing improvement
 - Focus is on rapid cycle ITERATIVE change to reach goal
 - LEARNING process by deductive-inductive iteration
 - Not research, so there are no “controls”
- Team sport
 - Collaborative skills, collective intelligence
 - Engagement of all stakeholders
 - Appreciation of social complexity
- QI initiatives bridge the implementation gap
 - Initiatives designed for SUSTAINABLE change—what is needed, what can be built?
 - Requires purposefully looking at data from the beginning to the end, not just at beginning and the end



Quality Improvement Approach—Iterative nature of learning

- Model for Improvement²: A Learning Method
 - **AIM**: What are we trying to accomplish?
 - **MEASURES**: How will we know that a change is an improvement?
 - **CHANGES**: What changes can we make that will result in improvement?



Case: Medicare and VTE

- VTE-6 Incidence of potentially preventable venous thromboemboli (VTE)
 - This measure assesses the number of patients diagnosed with confirmed VTE during hospitalization (not present at admission) who did not receive VTE prophylaxis between hospital admission and the day before the VTE diagnostic testing order date.
- BMC FY17 performance
 - 3/67, with rate of 4.48 with goal <2.00
 - VTE risk assessments identify which pts are at high risk for VTEs
 - VTE prophylaxis works to reduce rates of VTEs
 - Completion of VTE risk assessment and administration of prophylaxis within 24 hours of admission is a major CMS quality measure

Critical Steps: Stakeholder Analysis

- Who are the stakeholders? Who wants change and who will be impacted?
 - Who is pushing for change?
 - Patient safety and quality leaders
- Who are the clinical/operational teams that will be impacted by this change?
 - Internal Medicine interns and residents who complete DVT assessments and manage the patients' day-to-day care
 - General medicine attending physicians who manage the medicine teams and oversee all care provided to patients
 - Nurses who administer prophylaxis and document patient refusal for treatment
 - Pharmacists who provide prophylactic medication to the nurses based on orders entered by the physicians
 - Hospital administrators who monitor hospital wide quality improvement measures and adverse events such as hospital-acquired DVT/PE
 - Patients who are at risk for DVTs, who are prescribed medications when not indicated, who are subjected to repeated injections in order to administer prophylaxis
 - IT in integration of supportive tool to workflow

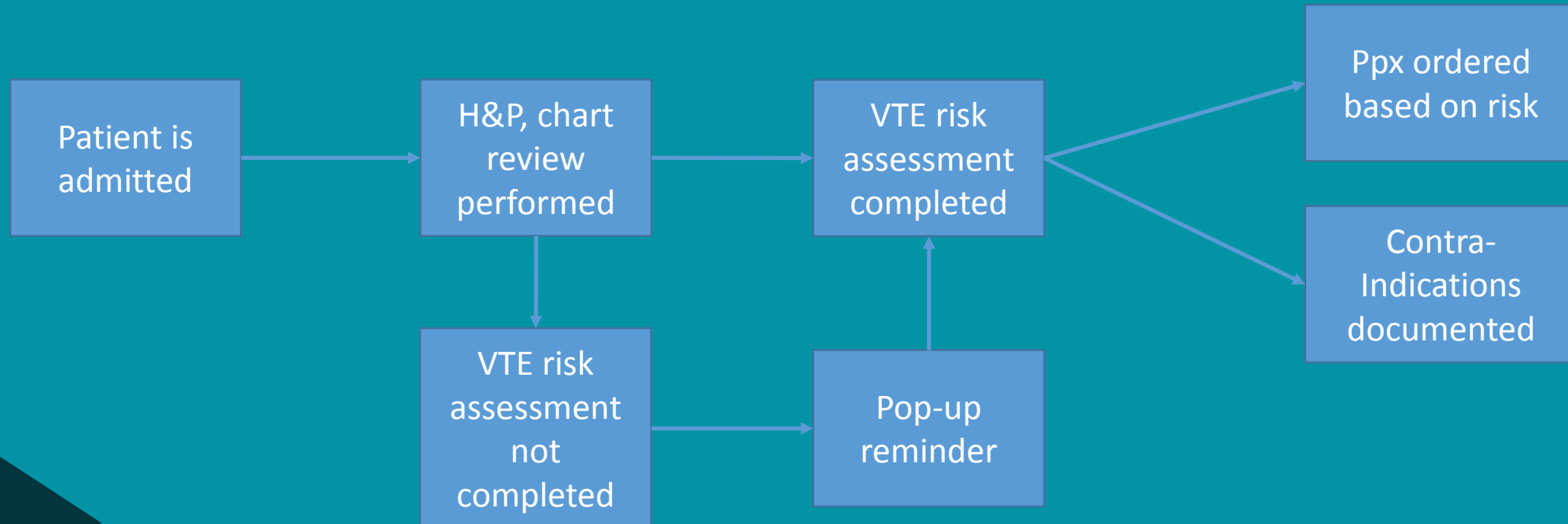
Critical Steps: QI Aim and Charter

- QI Aim
 - A brief statement of the problem or opportunity
 - **Aim Statement:** Improve VTE risk assessment completion rates by internal medicine house staff from baseline completion rates of 60% 2017 to 90% by May 2018
- QI Charter—based on the Model for Improvement
 - Identification of project team
 - Documents the Aim as well as beginning to address all three questions
 - Description of measures
 - Identify outcome, process, balancing measures which show how the system is responding to change
 - **Process Measure :** Percentage of patients with VTE assessment completed prior to placement of VTE prophylaxis orders
 - Change ideas

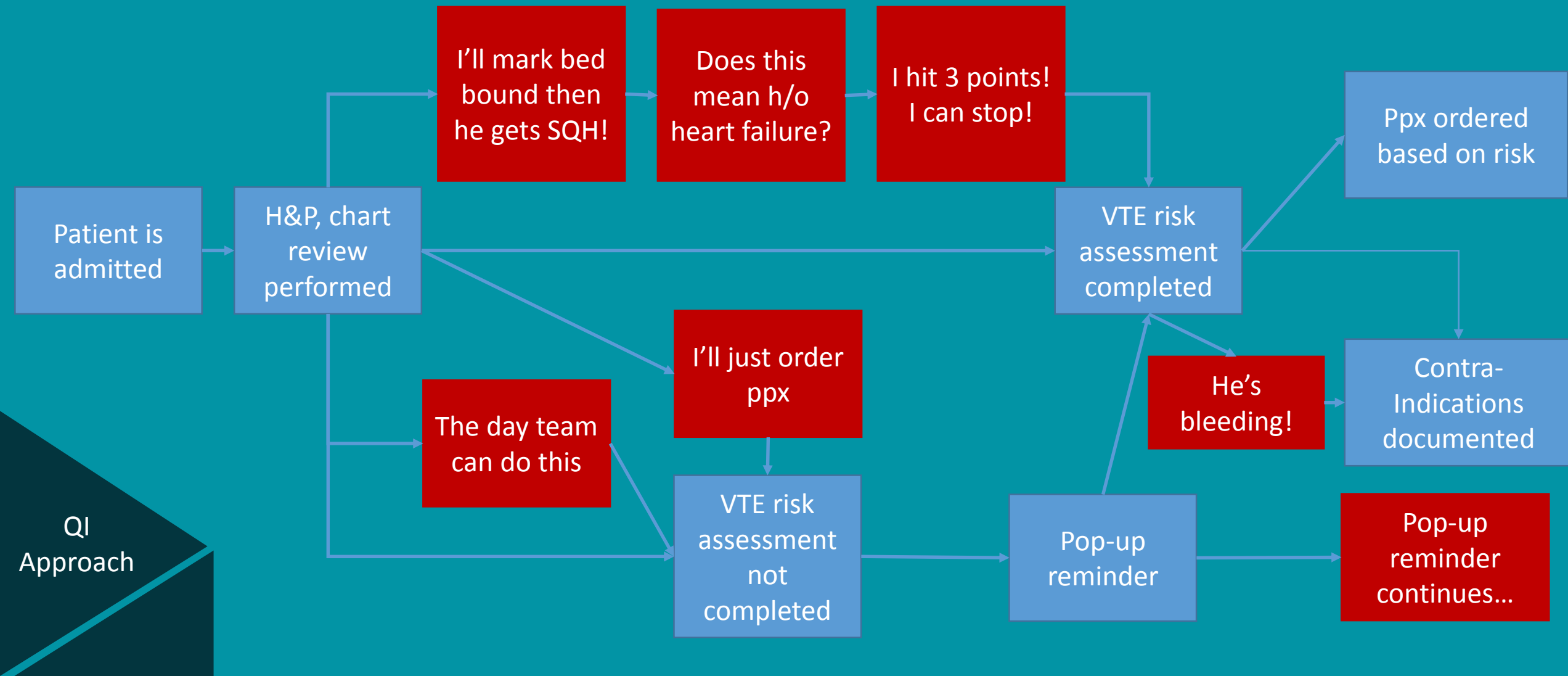
Critical Steps: Current State Analysis

- Team uses tools to understand current process and identify possible area (s) of change to achieve project aim
- Tools may include
 - Process map
 - Fishbone /Ishikawa diagram
 - Driver diagram
 - Cause and effect diagram

VTE Risk Assessment Current THEORETICAL Process Map



VTE Risk Assessment Current ACTUAL Process Map

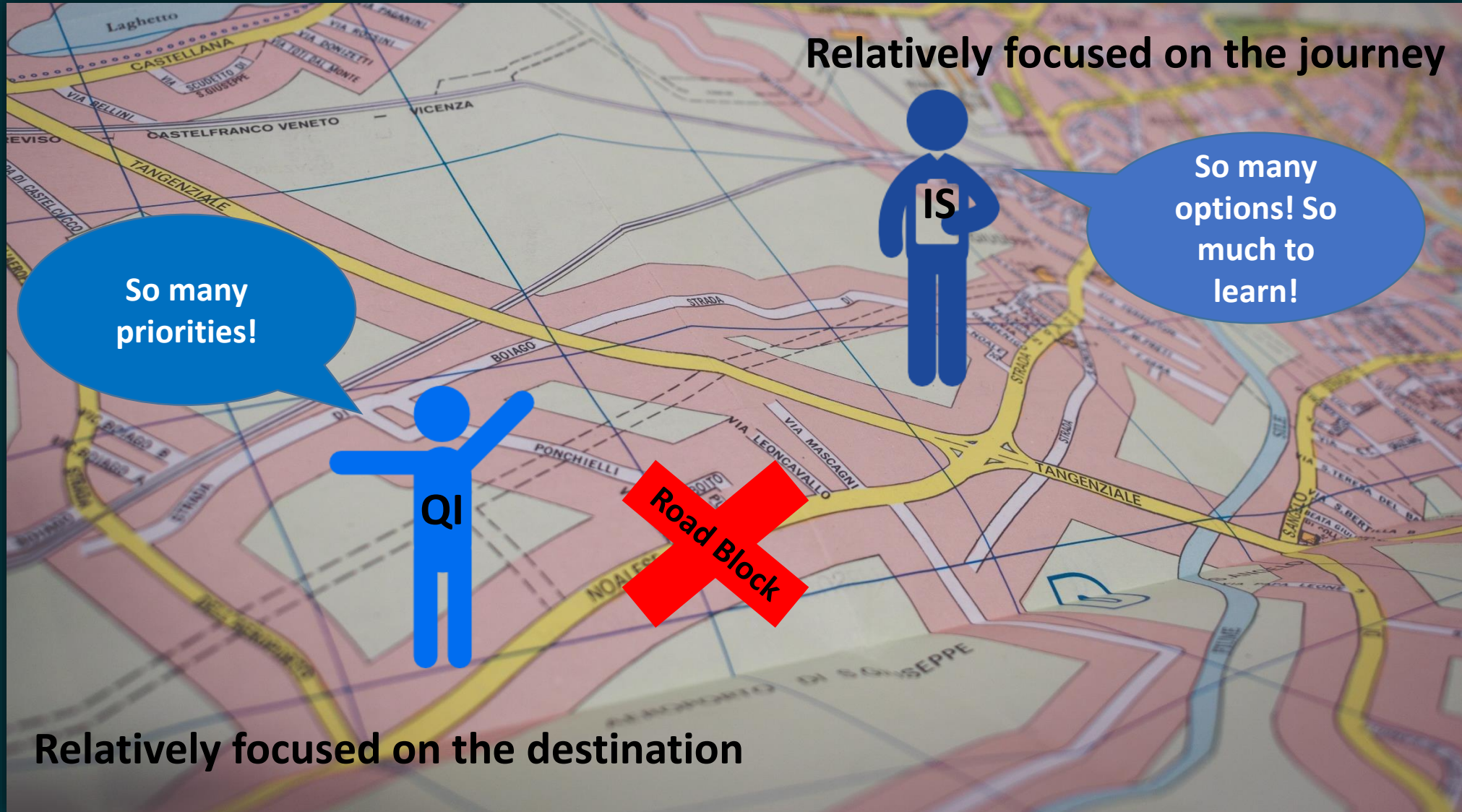


Critical Steps: Planning Changes

- Assess
 - What have others done? What hunches does the group have?
Recognize that learning will go on as the project proceeds
- Define
 - Specific objective for the first test of change
- Identify
 - Who, what, where, when, how for the first test of change
- Predict
 - Make predictions for each test of change

QI Planning Challenges

- PDSA cycles are about learning
 - It's never a straight line and the journey is sometimes messy
 - Avoid “analysis paralysis”—solving problems requires DOING
- Sustaining gains is difficult
 - Many journeys, few successes
 - Appreciation of the complexity of health care delivery



Implementation & Improvement Science Approach

- A few misconceptions:
 - Research, so not responsive to immediate improvement needs
 - Enhance responsiveness by doing pilot studies, formative evaluations
 - You need a lot of training
 - Like most things – training is needed
 - Practitioners of implementation (it's an approach, not a degree)
 - Outsider solutions aren't sustainable
 - Good IIS engages local stakeholders at all points
 - Implementation strategies should be designed for sustainability

Critical Steps for IIS

Clarifying research objectives

*Using a conceptual model to
specify variables, strategies,
outcomes*

What is the problem?
Identify care/quality gap

**Apply a
Conceptual
Model**

**How do you want to
change things?**
*Identify implementation
intervention*

**What do you want to
change?**
*Identify outcomes of
interest*



IIS
Approach

IIS Example: Implementing a New Severe Alcohol Withdrawal Protocol

- Problem:

- Current BMC protocol includes benzodiazepine and phenobarbital
- Anecdotal knowledge that nurses find current protocol confusing
- Concern that benzodiazepines promote mechanical ventilator use

- Goal for change:

- Improve nurses' acceptability of protocol
- Reduce mechanical ventilator use in patients with severe alcohol withdrawal

- How to achieve change:

- Non-benzodiazepine protocol
 - Other hospitals increasingly use protocols without benzodiazepines (evidence-informed practice)

Critical Steps: Using a Conceptual Model

Systematic
method for
operationalizing,
navigating,
evaluating
complexities of
implementation

Study design

Variable identification, outcome measures

Recipe for replication

Inform future research, scalability

Generalize knowledge

**Promoting Action
on Research
Implementation
(PARiHS)**

Evidence:

Stakeholder beliefs about evidence of problem with current benzo protocol, attitudes toward non-benzo protocol

Facilitation:

Strategies that facilitate implementation – utility of Health Stream trainings, department orientations

Context:

Culture, leadership resources that hinder/support implementation readiness – Readiness for change survey items

Implementation

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graph TD; Evidence[Evidence] --> Implementation((Implementation)); Facilitation[Facilitation] --> Implementation; Context[Context] --> Implementation;
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Identifying and Engaging Stakeholders

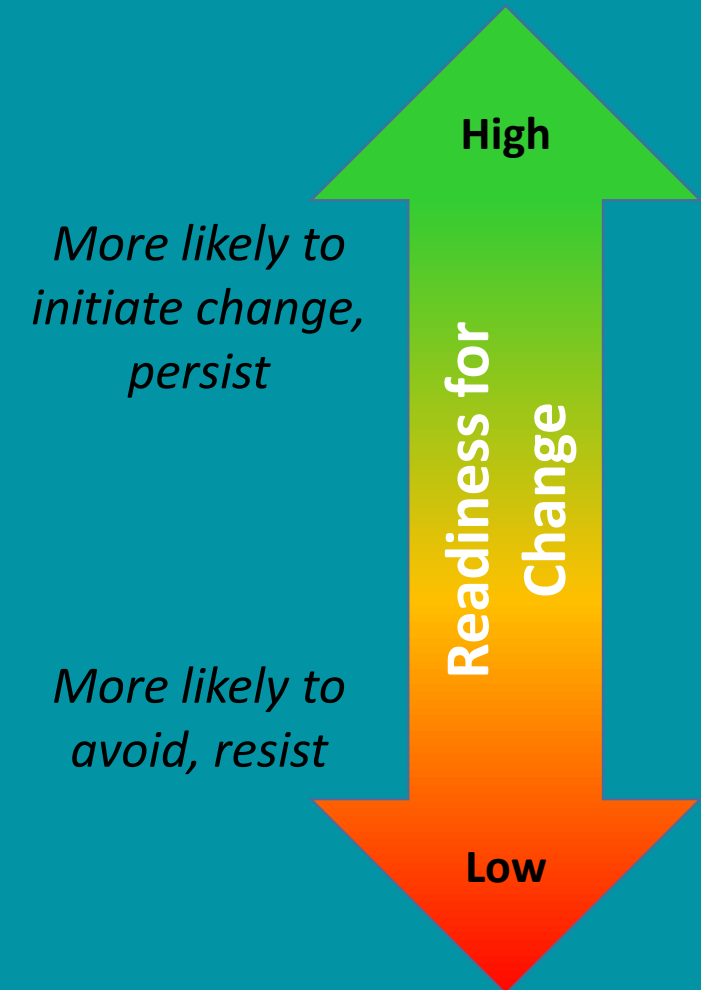
- Throughout the whole process:
 - Weigh in on quality gap, acceptability/feasibility of implementation strategies
- Support local ownership of implementation efforts
 - Initial adoption
 - Long-term sustainability
- Tool: Stakeholder analysis matrix
 - Same as QI! Hands on learning next session!

Stakeholder's Attitudes, Knowledge, Use of Evidence

- Assessed stakeholder attitudes, knowledge around benzo/non-benzo treatment protocols
- Example survey questions:
 - I would prefer to use an alcohol withdrawal treatment protocol that does not include any benzos
 - I am concerned about prolonged infusion of benzos for patients receiving treatment for alcohol withdrawal
 - Barbiturates are safe medications for treating most patients experiencing severe alcohol withdrawal

Critical Steps: Assess Setting Readiness

- Organizational-, individual-level readiness
 - Psychologically, behaviorally, structurally prepared to implement change
- Tool: Surveys, qualitative approaches
 - Organizational Readiness for Change Assessment (ORCA)
 - Organizational Readiness for Implementing Change (ORIC)
 - Interviews



Readiness for a New Severe Alcohol Withdrawal Protocol

- Surveying agreement with readiness statements:
 - I am reluctant to learn a new approach to treating severe alcohol withdrawal
 - Treating patients with the benzo protocol hinders ICU workflow
 - The benzo protocol requirement to assess patient symptoms and dose titration every 15 minutes is burdensome

Critical Steps: Planning What to Measure

- Focus on implementation/ process outcomes:
 - Acceptability
 - Adoption
 - Appropriateness
 - Costs
 - Feasibility
 - Fidelity
 - Penetration
 - Sustainability
- Doesn't mean you can't also measure
 - Intervention effectiveness
 - Service outcomes
 - Client/patient outcomes

Implementation Outcomes: Severe Alcohol Withdrawal Protocol

Outcome	Definition
Acceptability	Satisfaction with benzo- and non-benzo protocols (pre/post)
Adoption	Actual utilization of new non-benzo protocol
Appropriateness	Perceived fit of using barbiturates to treat withdrawal Delivery of new protocol
Feasibility	Suitability of using new protocol in routine practice
Fidelity	Following new protocol steps as directed in Health Stream training
Penetration	Degree of institutionalization of new protocol
Sustainability	Short- and long-term maintenance, durability of new protocol

IIS Planning Challenges

- Good knowledge of context
 - Pre-implementation data
- Identifying sustainable strategies
- Determining degree of fidelity needed

Summary

Quality Improvement

- Stakeholder analysis
- Aims statement
- Process map
- Intuitive & evidence-informed practices
- Testing changes
- Outcome measures > process measures
- Plan for iterative changes

Implementation and Improvement Sciences

- Stakeholder analysis
- Research objectives
- Conceptual model
- Evidence-informed or -based interventions
- Testing implementation strategies
- Process measures \geq outcome measures
- Protocol-driven change

Next Time: Using QI/IIS Tools

- Stakeholder analysis matrix – *for QI and IIS*
- Processing mapping – *QI > IIS tool*
- Conceptual models – *IIS > QI tool*
- Help us make this series useful
 - What QI/IIS questions do you want answered?
 - What tools do you want to learn about?

Your Experience Planning for Improvement

- Big Picture – think of a time you wanted to improve healthcare delivery
 - What did you want to change?
 - Type of project?
 - How did you approach it?
 - Which QI/IIS planning strategies did you use?
 - Biggest planning challenges?
 - What do you wish you knew/did to prepare before you started implementing change?