Using Quality Improvement Methods to Improve Depression Care on College Campuses

Carlo Ciotoli, M.D., M.P.A.
Associate Vice President for Student Health, NYU

Allison J Smith, M.P.A.
Manager of Public Health Initiatives and Assessment, NYU

Learning Objectives

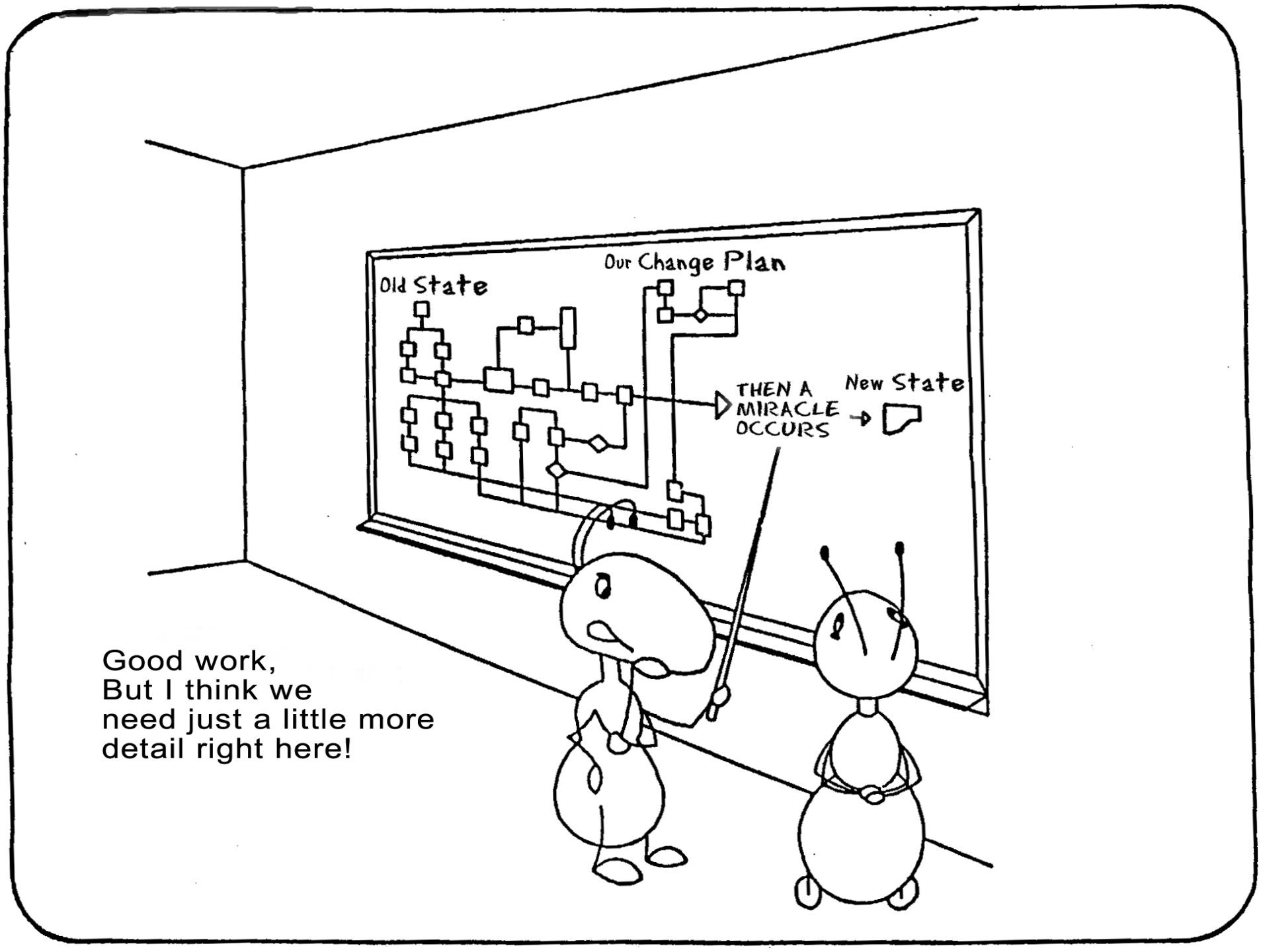
1. Describe how the Model for Improvement facilitates the consistent delivery of evidence-based depression care for college students

2. Explain key concepts of using data to drive improvements in depression care

42 Partnering Institutions since 2006

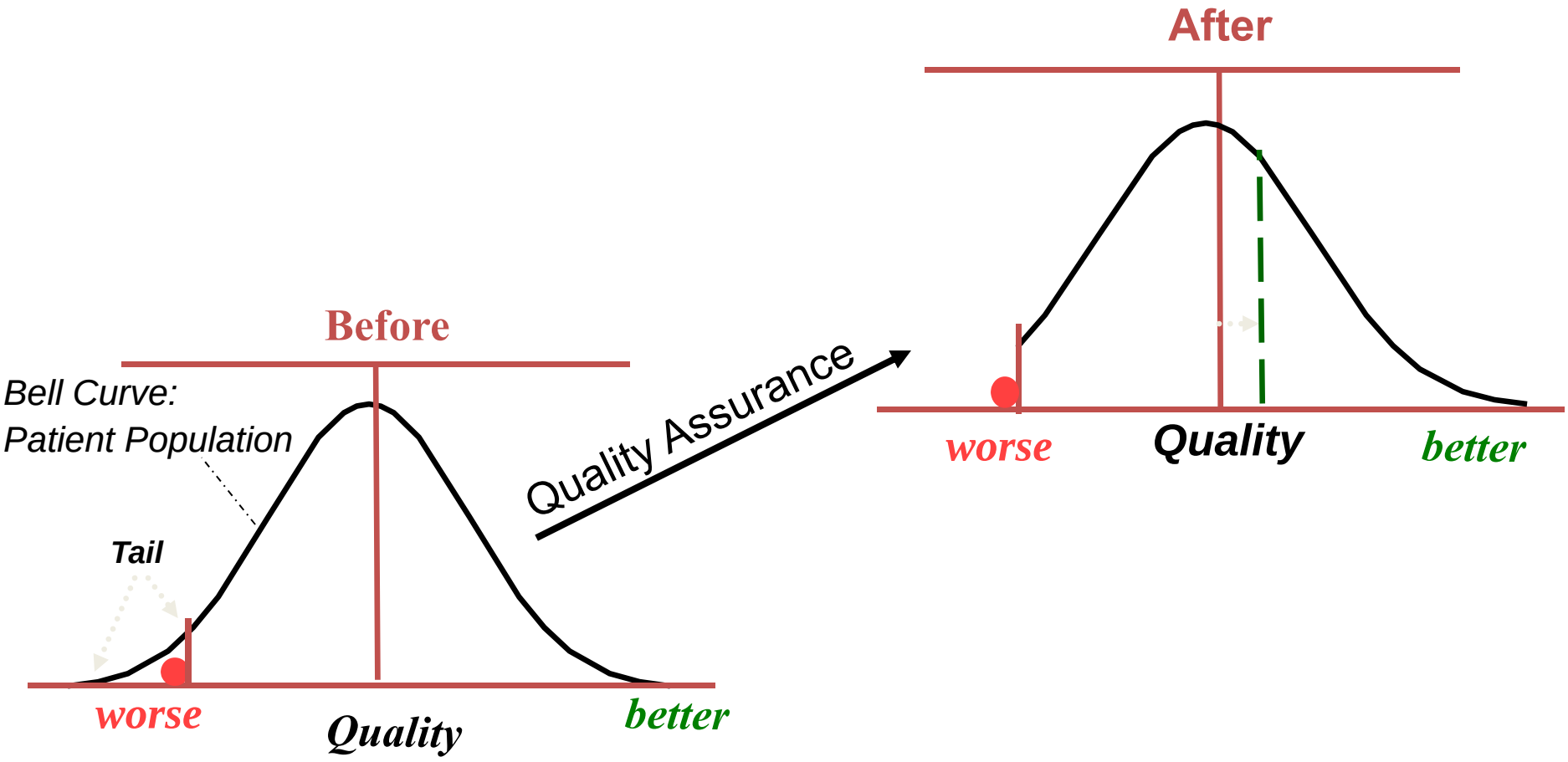
- Baruch College
- Boston University
- Bowling Green State University
- Case Western Reserve University
- Colorado State University
- Columbia University
- Cornell University
- Evergreen State College
- Finger Lakes Community College
- Hunter College/CUNY
- Lewis-Clark State College
- Louisiana State University
- McMaster University
- Michigan State University
- Montana State University
- The New School
- Northeastern University
- New York University
- Penn State – Altoona
- Princeton University
- Rensselaer Polytechnic Institute
- Rio Hondo College
- Rutgers University
- Sarah Lawrence College
- School of the Art Institute of Chicago
- St. Lawrence University
- Skidmore College
- Texas A&M University
- Texas Christian University
- Tufts University
- University of Arizona
- University of California, Los Angeles
- University of Central Florida
- University of Louisville
- University of Maryland
- University of Missouri - Columbia
- University of Nevada, Las Vegas
- University of Pennsylvania
- University of Vermont
- University of Wisconsin - Madison
- Wagner College
- West Valley College

Why QI?

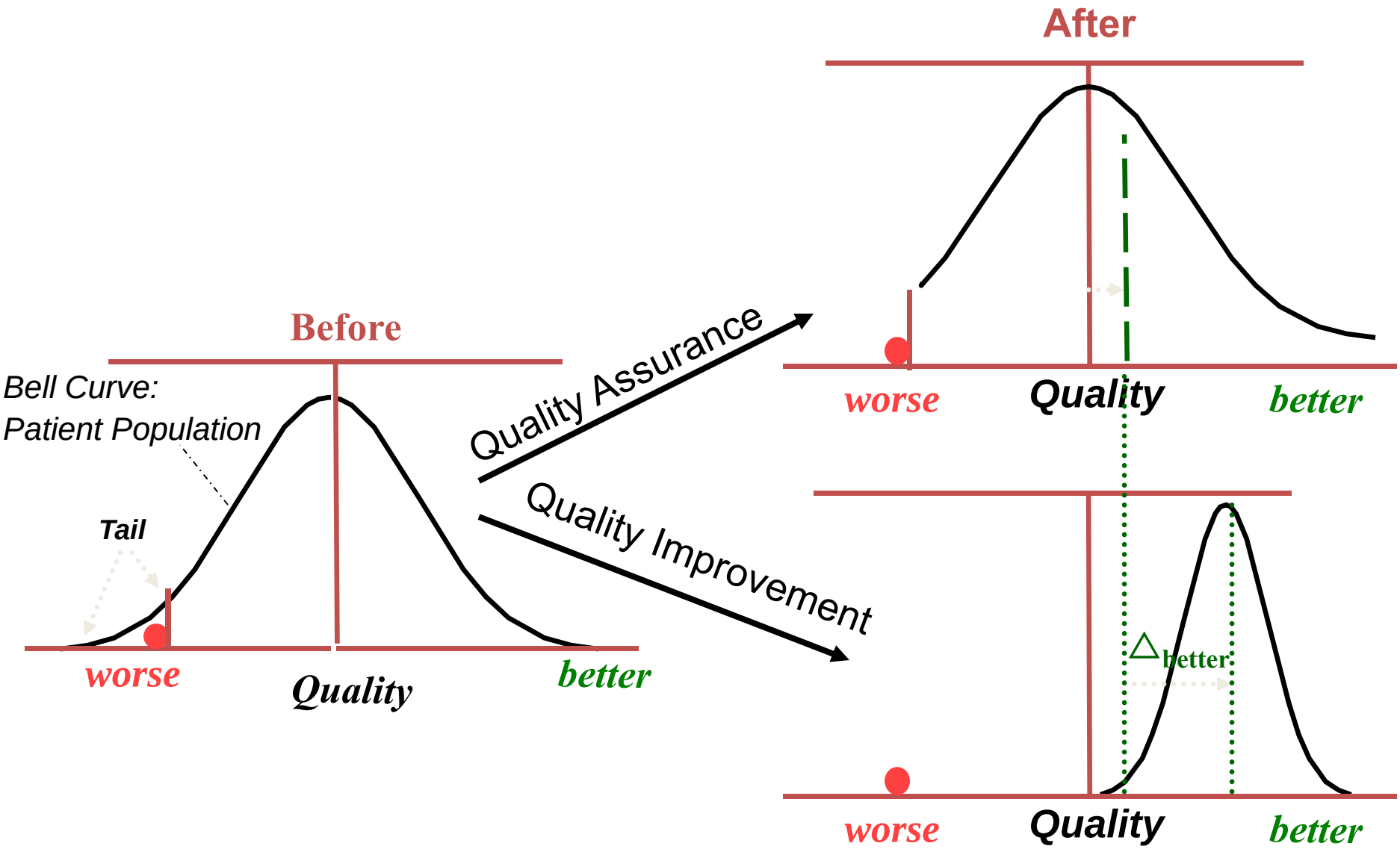

Old State
Our Change Plan
THEN A MIRACLE OCCURS
New State
Good work,
But I think we
need just a little more
detail right here!

Reactive Change	Fundamental Change
Changes required to maintain the system at its highest level of performance previously achieved	Changes made to exceed the highest level of performance previously achieved
Made routinely to solve immediate problems or react to a special circumstance	Fundamentally alter how the system works and what people do
Typically take the form of a trade-off among competing interests or characteristics	Often result in improvement of several measures simultaneously
Impact is usually felt quickly	Impact is felt into the future

Moving from QA…..



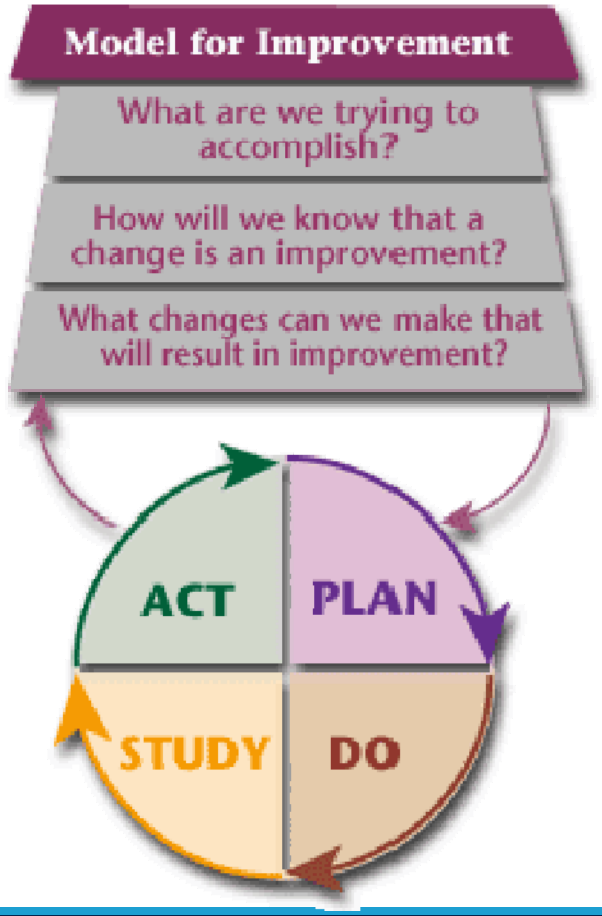
….To a QI Approach



LEARN. NETWORK. IMPROVE. LEAD.

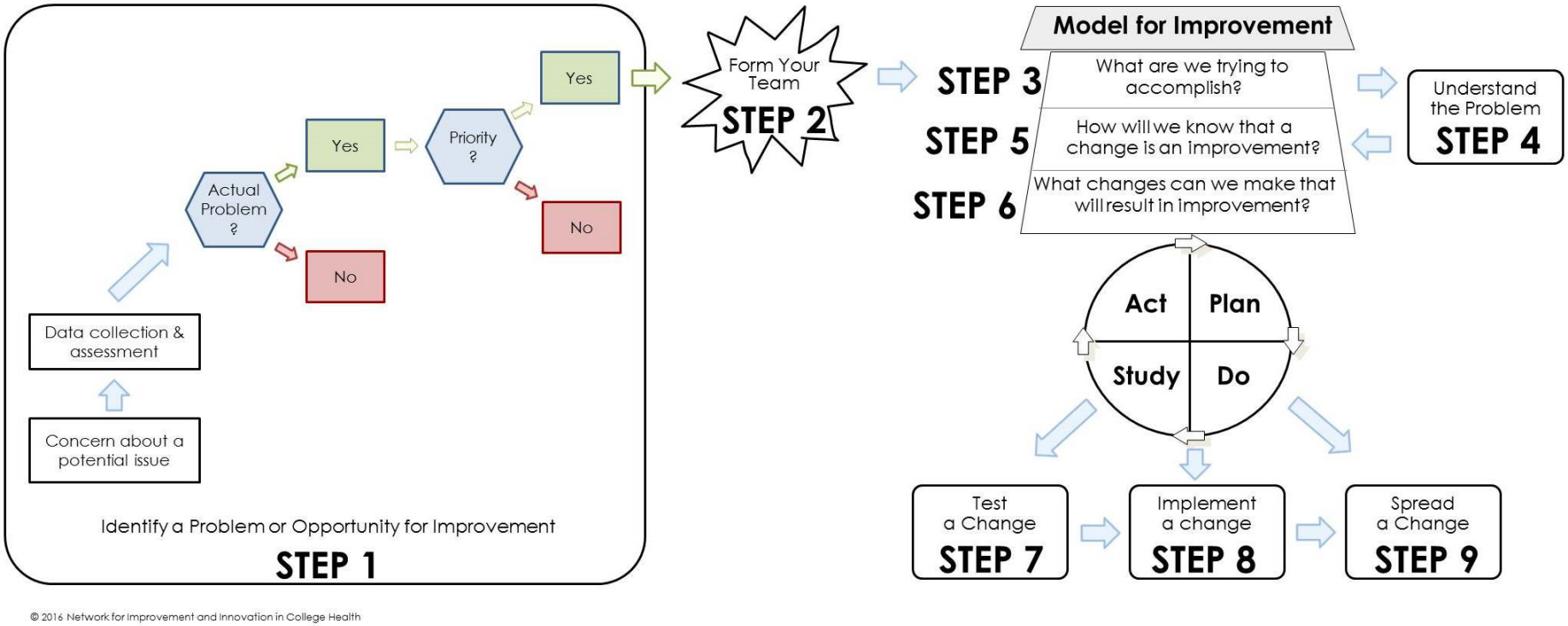
NETWORK FOR IMPROVEMENT & INNOVATION IN COLLEGE HEALTH

The Model for Improvement

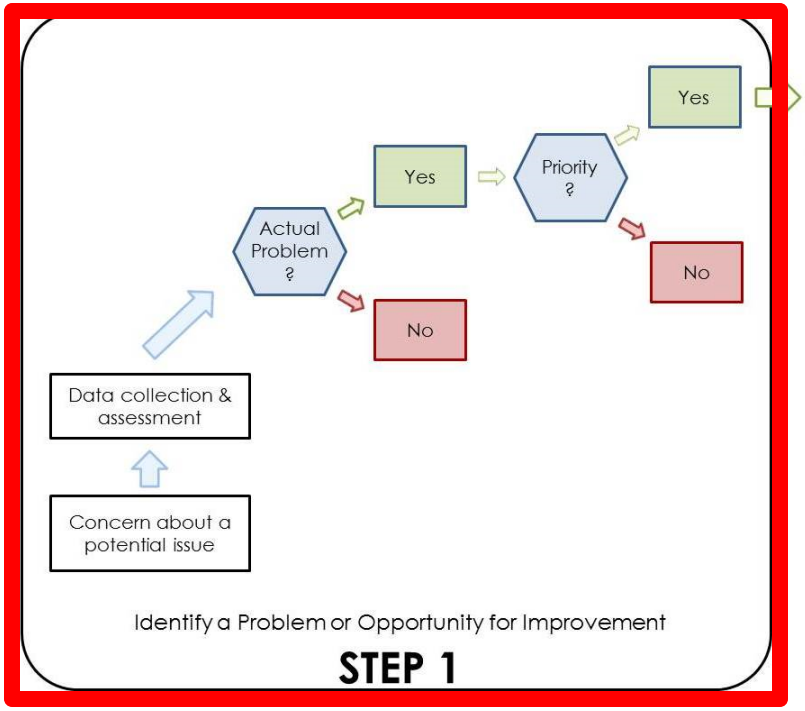


Source: Deming, Shewhart, Langley, Provost et al.

Improvement Journey



Step 1: Identify a Problem or Opportunity for Improvement



Form Your Team
STEP 2

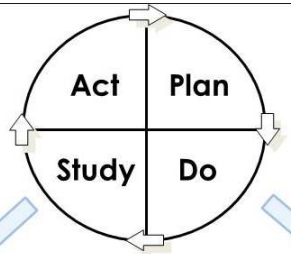
Model for Improvement

STEP 3 What are we trying to accomplish?

STEP 5 How will we know that a change is an improvement?

STEP 6 What changes can we make that will result in improvement?

Understand the Problem
STEP 4

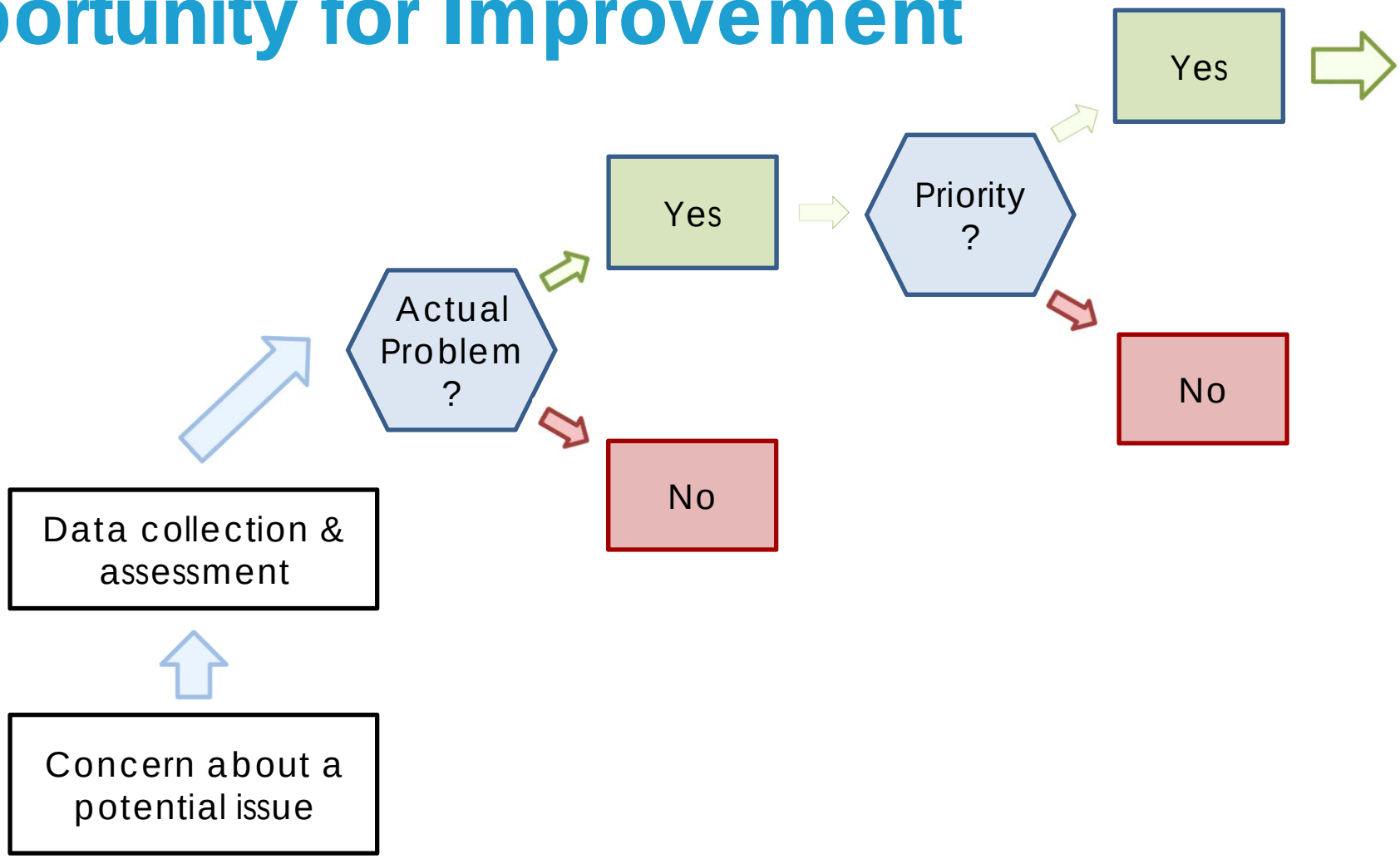


Test a Change
STEP 7

Implement a change
STEP 8

Spread a Change
STEP 9

Step 1: Identify a Problem or Opportunity for Improvement



Problem and Opportunity

PROBLEM:

"Minimally adequate depression care" (Wang et al, 2005 Arch Gen Psych): 8+ psychotherapy visits, or 2+ months of antidepressant use with 4+ discussions with provider

–Only **20% of students** with past-year depression

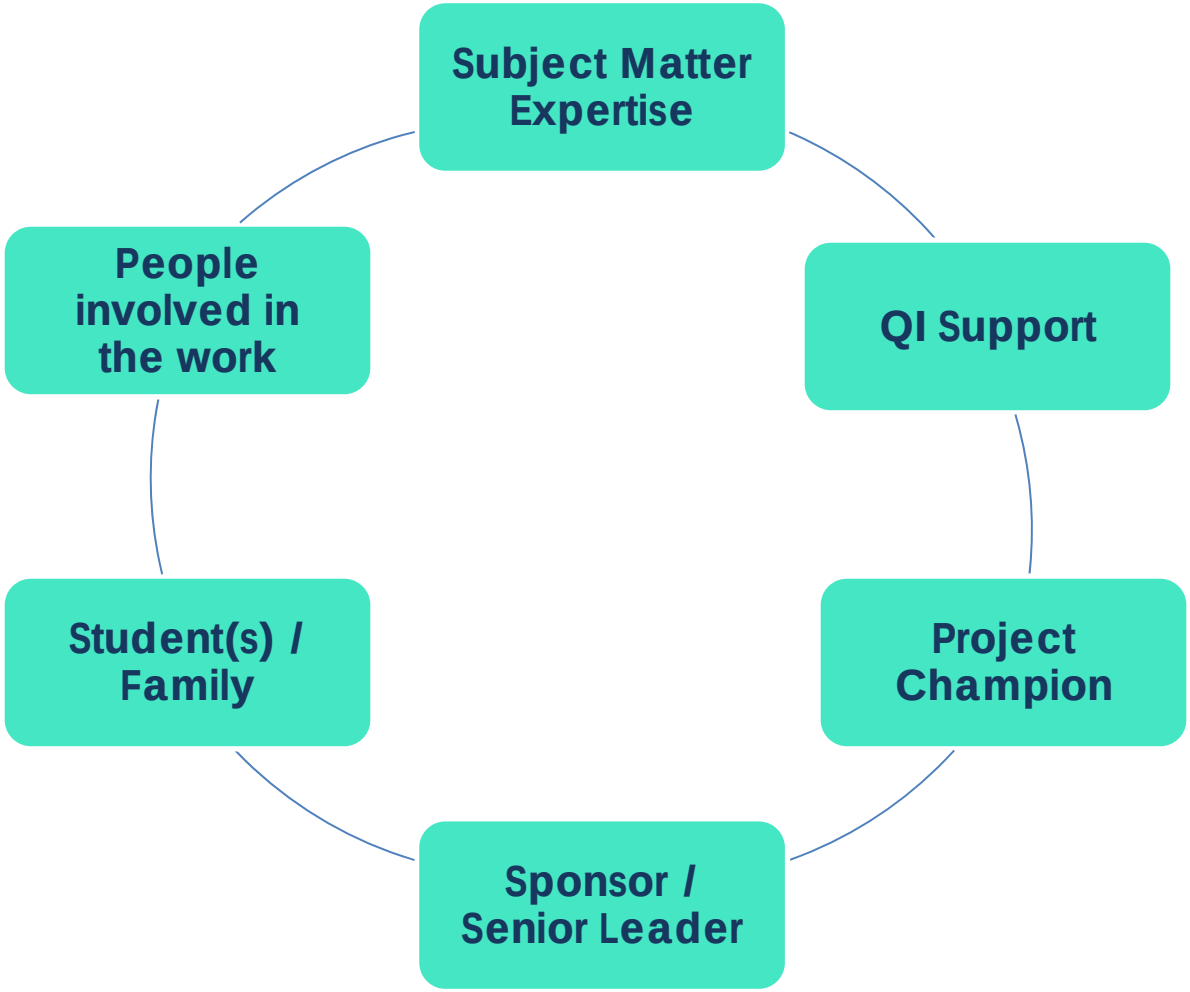
OPPORTUNITY:

80% of students report visiting a health professional at least once in the past year

Step 1: Identify a Problem or Opportunity for Improvement

- What is the problem or opportunity for improvement?
- How do you know that it is a problem? What data/analysis supports this?
- Why is this issue important?

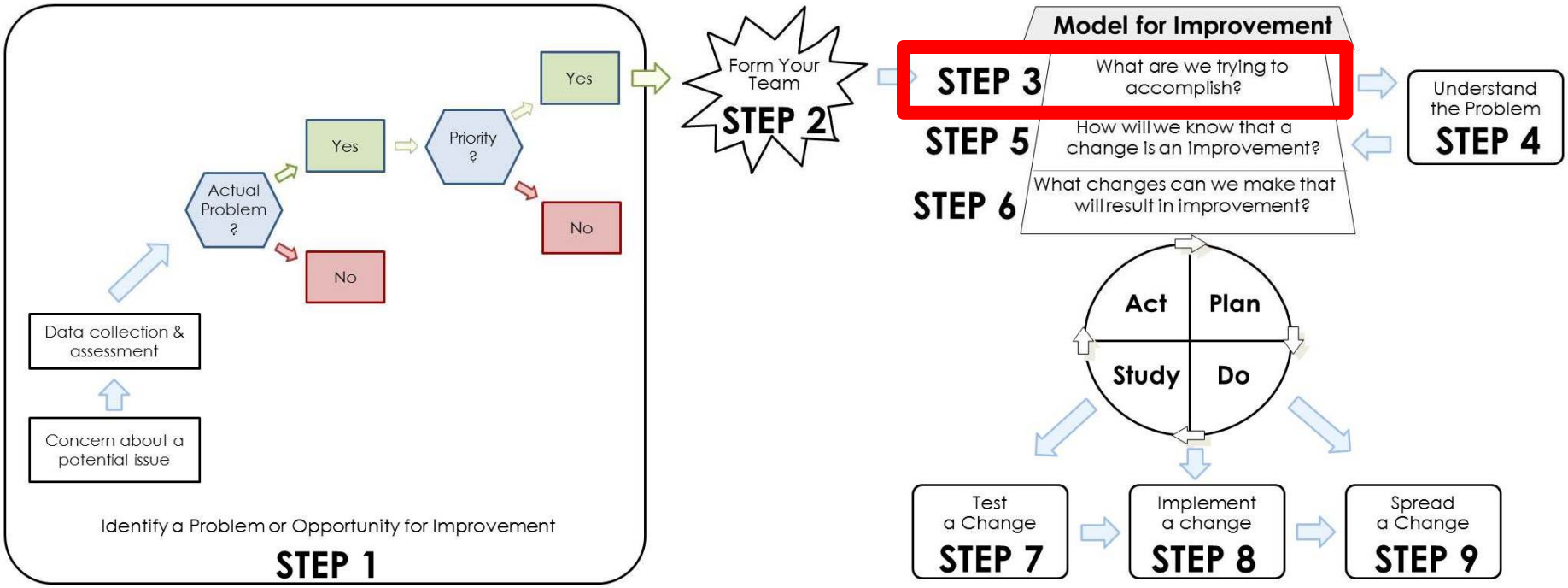
Step 2: Establish a Team



Step 2: Establish a Team

- Who is your project sponsor?
- Who is the project champion?
- List potential members of your improvement team

Step 3: Set an Aim



Question 1:
What Are We Trying to Accomplish?

The most critical part of the quality improvement process is establishing the aim, or purpose of your quality improvement initiative

"Some is not a number; soon is not a time."

– Don Berwick

How an Aim might look….

Setting the "Aim Statement" What is your Aim? "What are we trying to accomplish?"

The essential components of a solid Aim Statement:

- **What will improvement will happen?**
- **For whom (or what system)?**
- **How good?**
- **By when?**

We will increase the proportion of all SHC medical visits in which a PHQ-2 is administered from 15% to 80% by May 2018.

What to Avoid In Aim Statement

End world hunger

Improve depression care

Aim Statements

Not Good

Improve depression care

Good

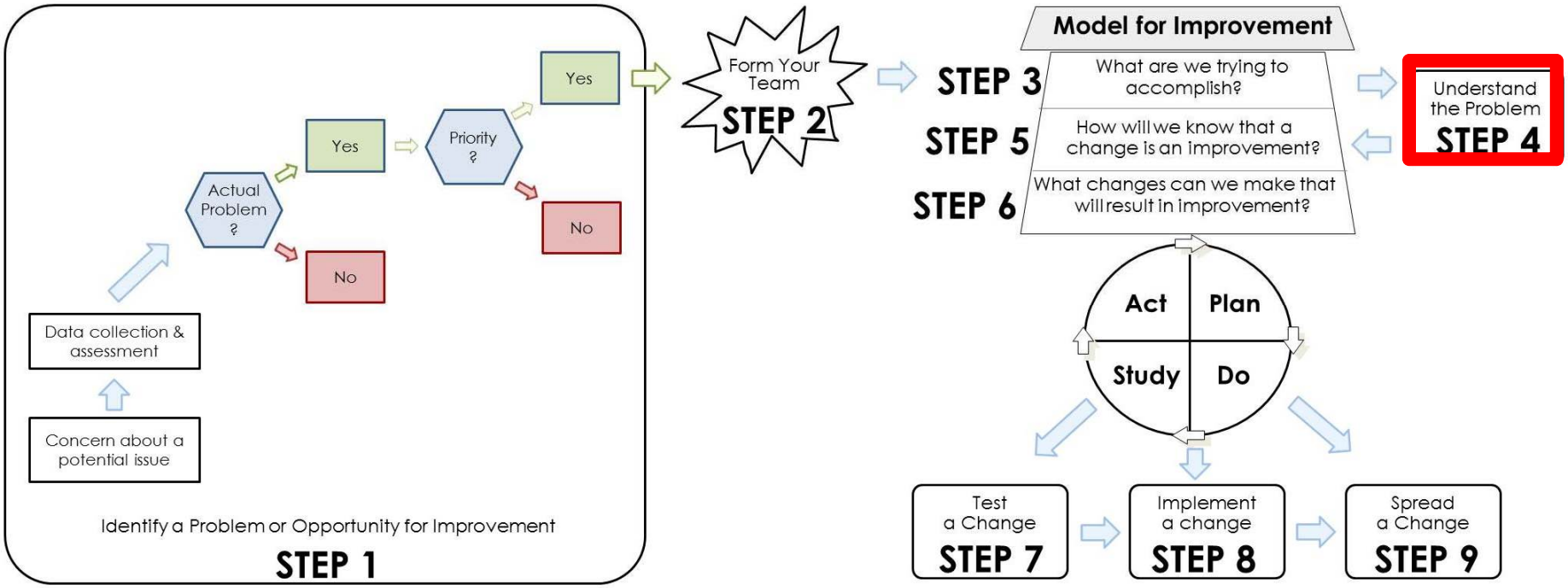
By May 2018, increase from 20% to 40% of students diagnosed with depression who score =<10 on the PHQ-9 by 12 weeks of onset of new depressive episode

Step 3: Set an Aim

Write Your Aim Statement

- The essential components of a solid Aim Statement:
  - Population
  - Unit of Measure
  - Goal
  - Time Expectation

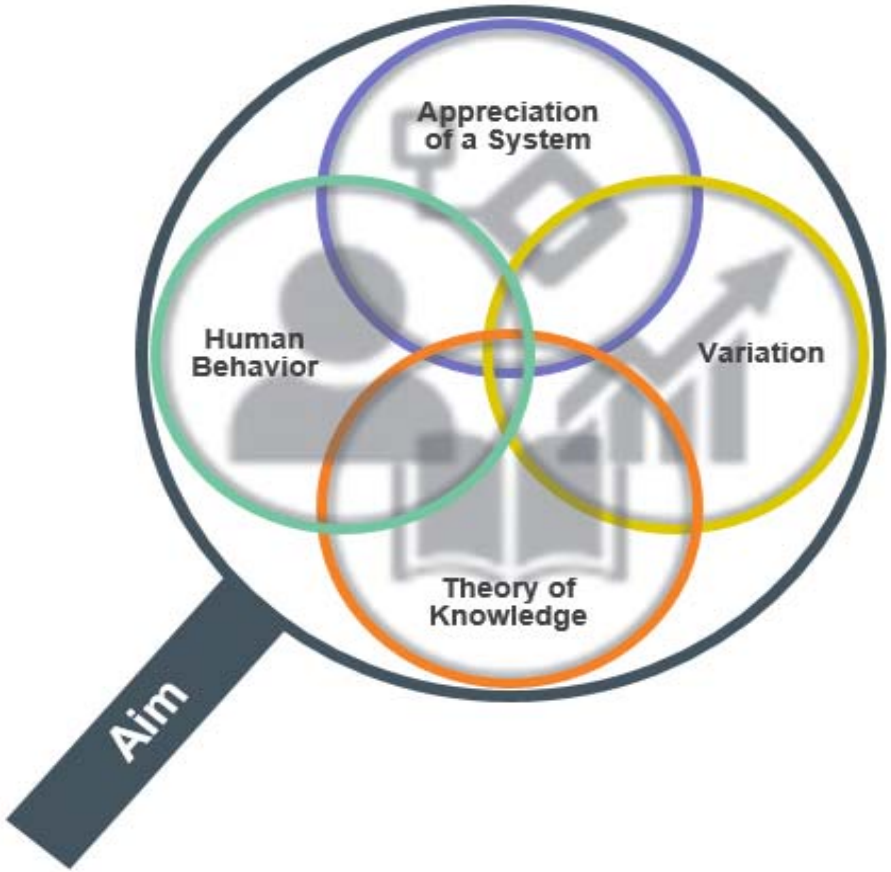
Step 4: Understand the Problem



Systems

"Every system is perfectly designed to achieve exactly the results it gets"

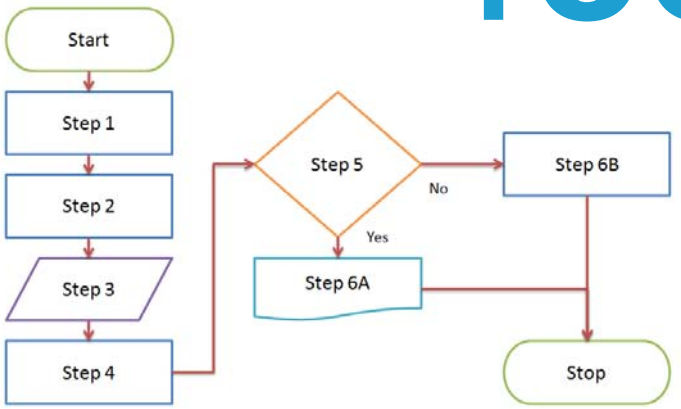
Deming's Profound Knowledge



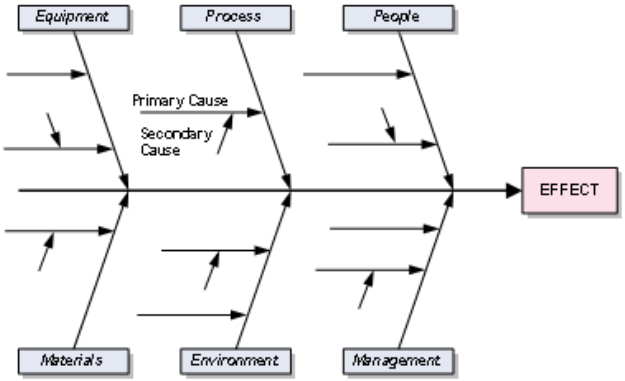
Understanding the Current State

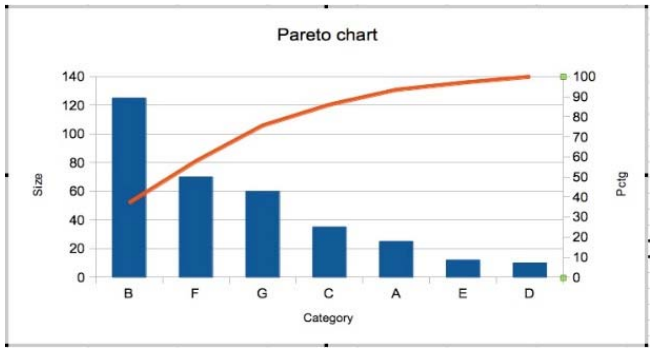
- What are we doing now?
- How do we do it? What are the major steps in the process?
- Who is involved or affected?
- Where does the problem occur?
- When does the problem occur?
- What happens when the problem occurs?
- Why does the problem occur?

Tools

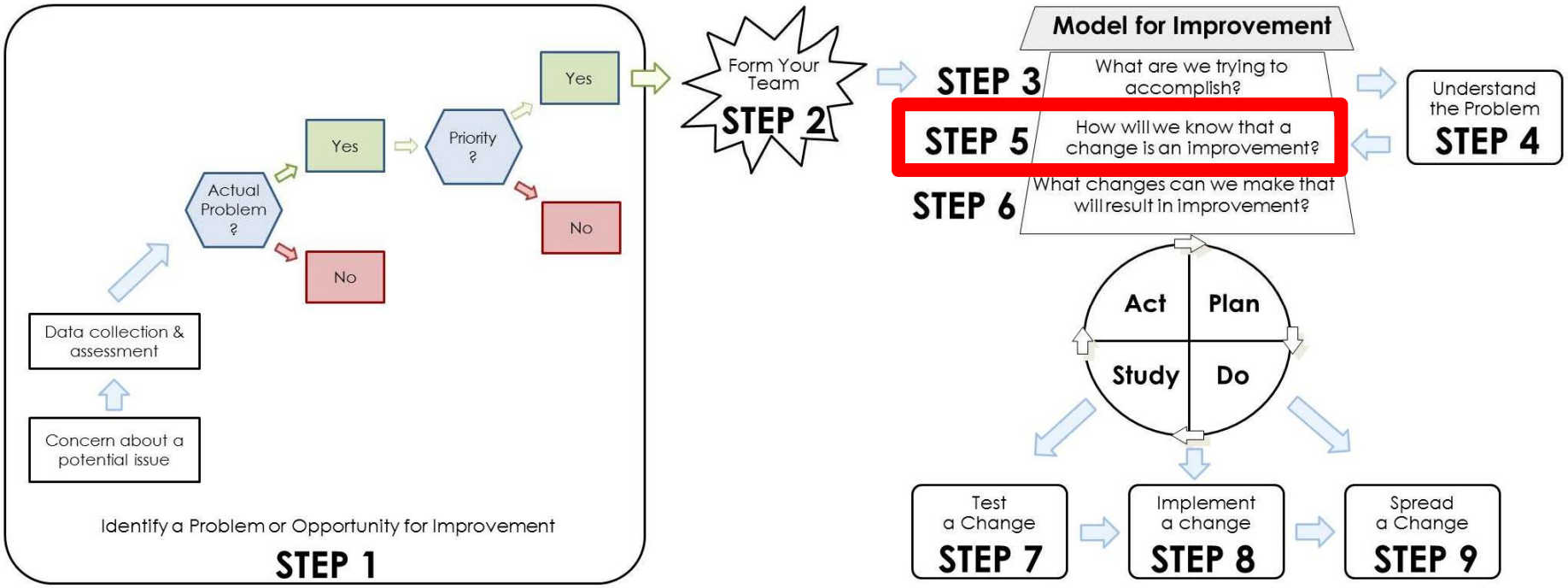


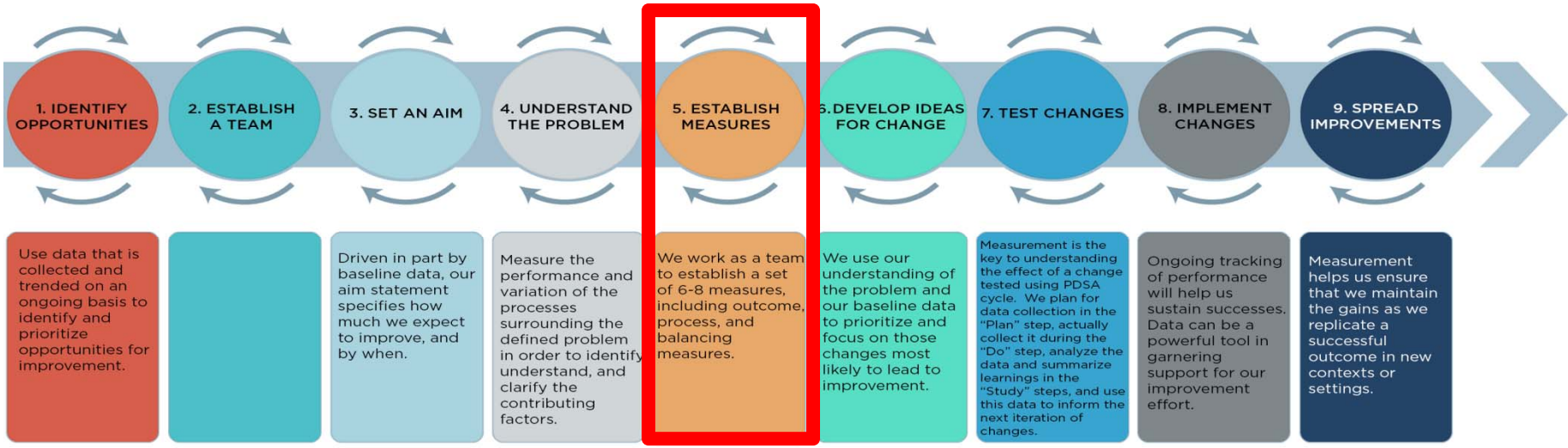
Observe/ diagram the process (direct observation, flow diagram)





Step 5: Establish Measures



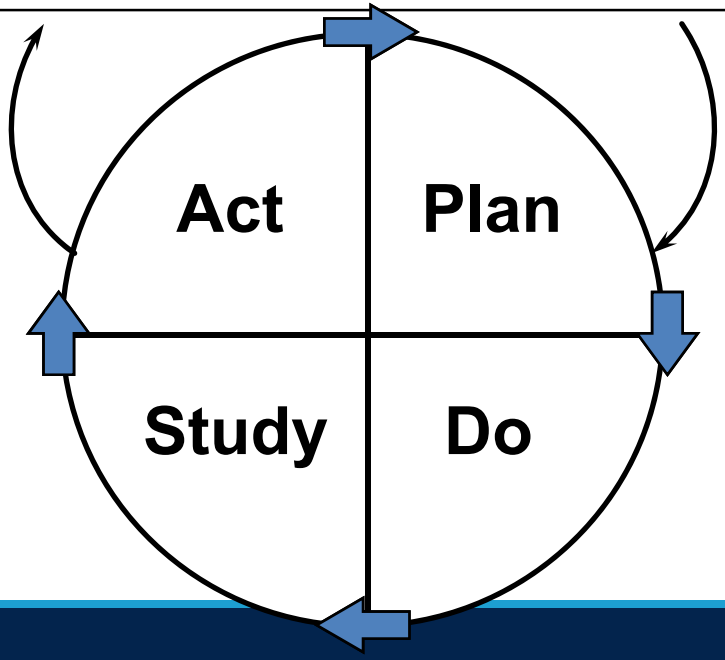

1. IDENTIFY OPPORTUNITIES
2. ESTABLISH A TEAM
3. SET AN AIM
4. UNDERSTAND THE PROBLEM
5. ESTABLISH MEASURES
6. DEVELOP IDEAS FOR CHANGE
7. TEST CHANGES
8. IMPLEMENT CHANGES
9. SPREAD IMPROVEMENTS
Use data that is collected and trended on an ongoing basis to identify and prioritize opportunities for improvement.
Driven in part by baseline data, our aim statement specifies how much we expect to improve, and by when.
Measure the performance and variation of the processes surrounding the defined problem in order to identify, understand, and clarify the contributing factors.
We work as a team to establish a set of 6-8 measures, including outcome, process, and balancing measures.
We use our understanding of the problem and our baseline data to prioritize and focus on those changes most likely to lead to improvement.
Measurement is the key to understanding the effect of a change tested using PDSA cycle. We plan for data collection in the "Plan" step, actually collect it during the "Do" step, analyze the data and summarize learnings in the "Study" steps, and use this data to inform the next iteration of changes.
Ongoing tracking of performance will help us sustain successes. Data can be a powerful tool in garnering support for our improvement effort.
Measurement helps us ensure that we maintain the gains as we replicate a successful outcome in new contexts or settings.

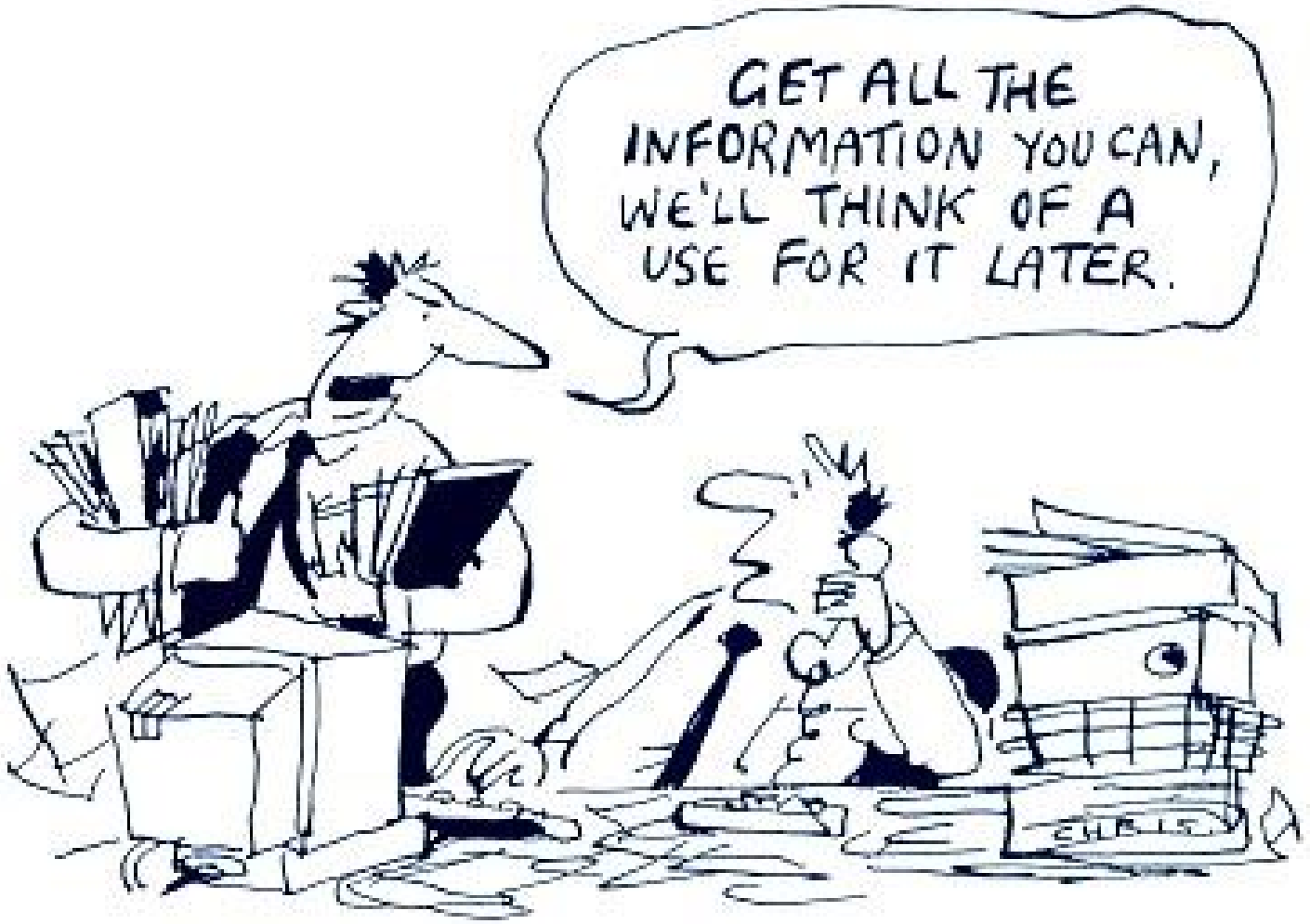
Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?




GET ALL THE INFORMATION YOU CAN, WE'LL THINK OF A USE FOR IT LATER.

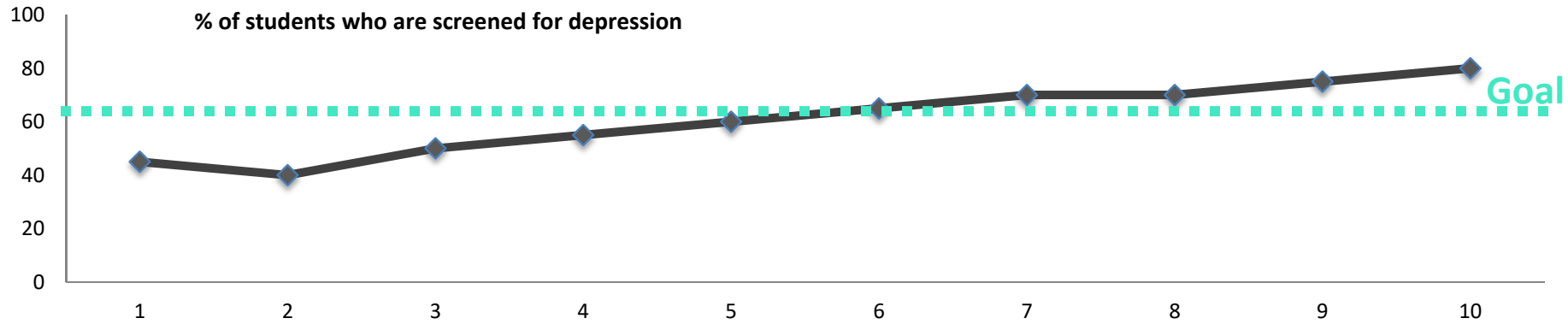
Characteristic	Judgement	Research	Improvement
Aim	Achievement of target	New knowledge	Improvement of service
Testing strategy	No tests	One large, blind test	Sequential, observable tests
Sample size	Obtain 100% of available, relevant data	'Just in case' data	'Just enough' data small, sequential samples
Hypothesis	No hypothesis	Fixed hypothesis	Hypothesis flexible; changes as learning takes place
Variation	Adjust measures to reduce variation	Design to eliminate unwanted variation	Accept consistent variation
Determining if change is an improvement	No change focus	Statistical tests (t-test, F-test, chi-square, p-values)	Run chart or statistical process control (SPC) charts

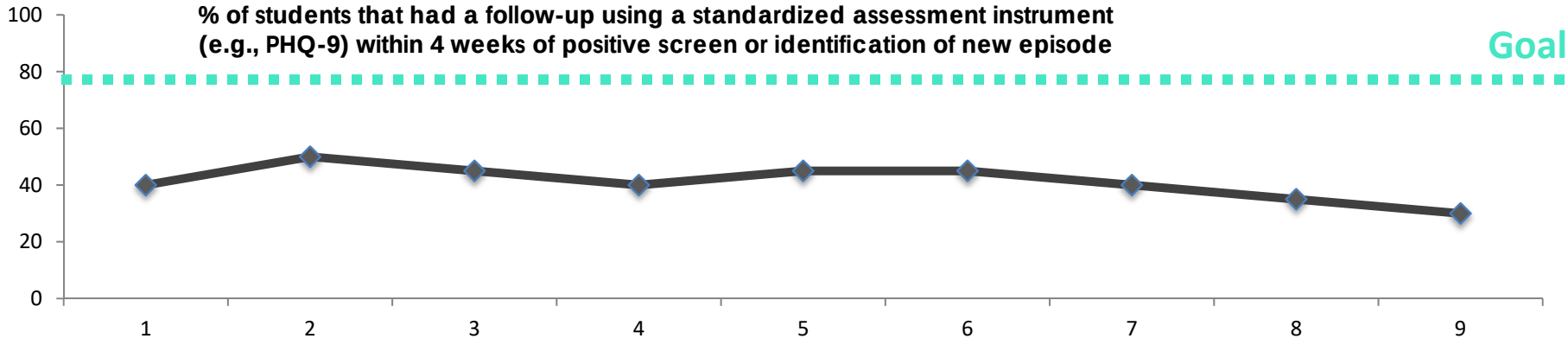
Adapted from: "The Three Faces of Performance Management: Improvement, Accountability and Research." Solberg, Leif I., Mosser, Gordon and McDonald, Susan Journal on Quality Improvement. March 1997, Vol23, No. 3.

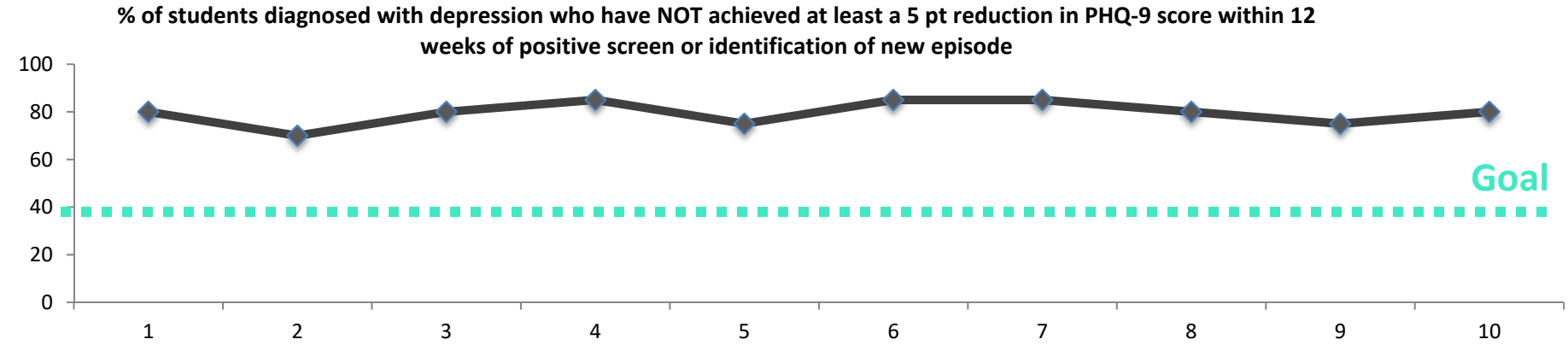
Depression Measures

- **Process** Measures
  - Primary Care **Screening**
  - Treatment **Initiation** by 4 weeks
  - Initial repeated **Follow-up** assessment by 4 weeks
  - **Self-Management** Documentation by 8 weeks
- **Outcome** Measures
  - Early **Treatment Response** by 8 weeks
  - **Partial Remission** by 12 weeks
  - **Functional Improvement** by 12 weeks

Family of Measures



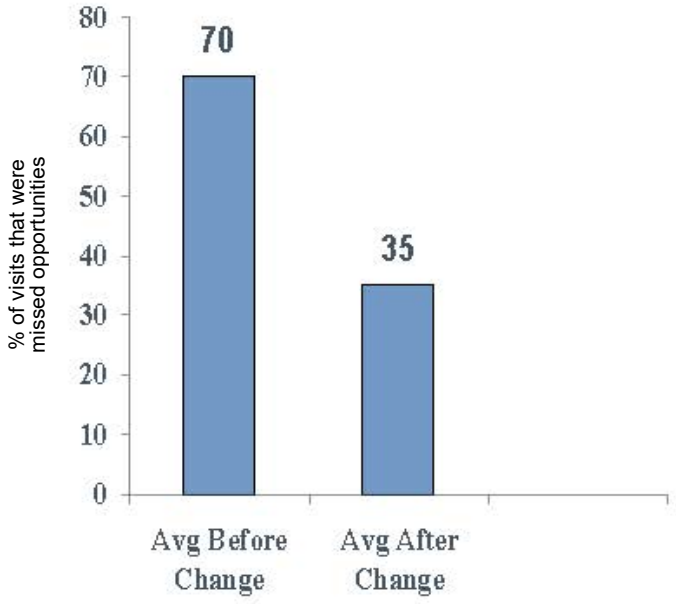


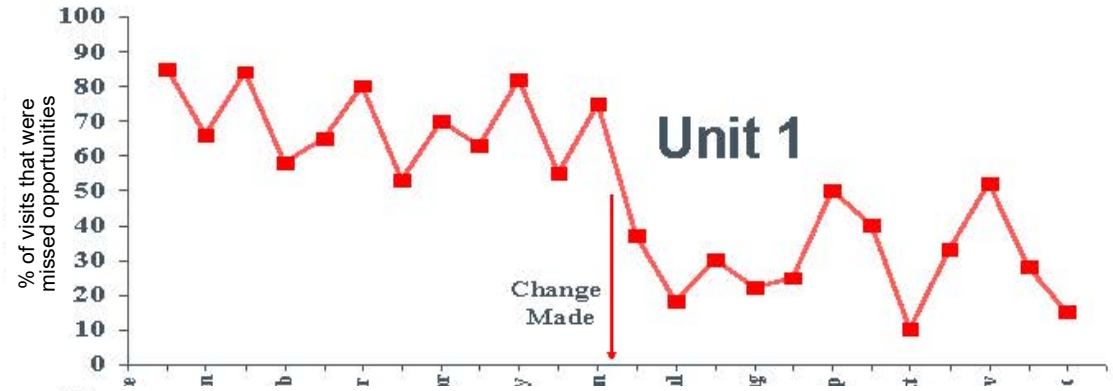


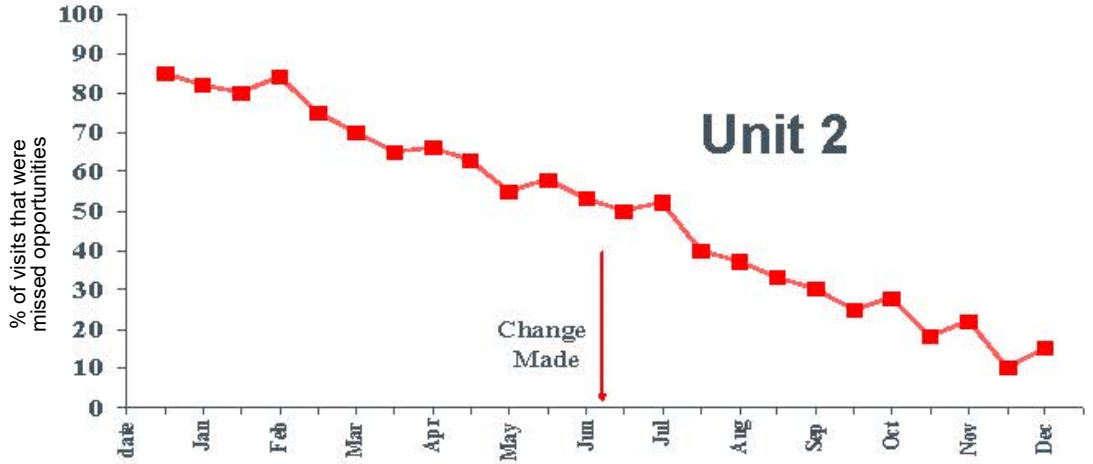
Analyzing and Understanding Your Data

Missed Opportunities for Depression Screening

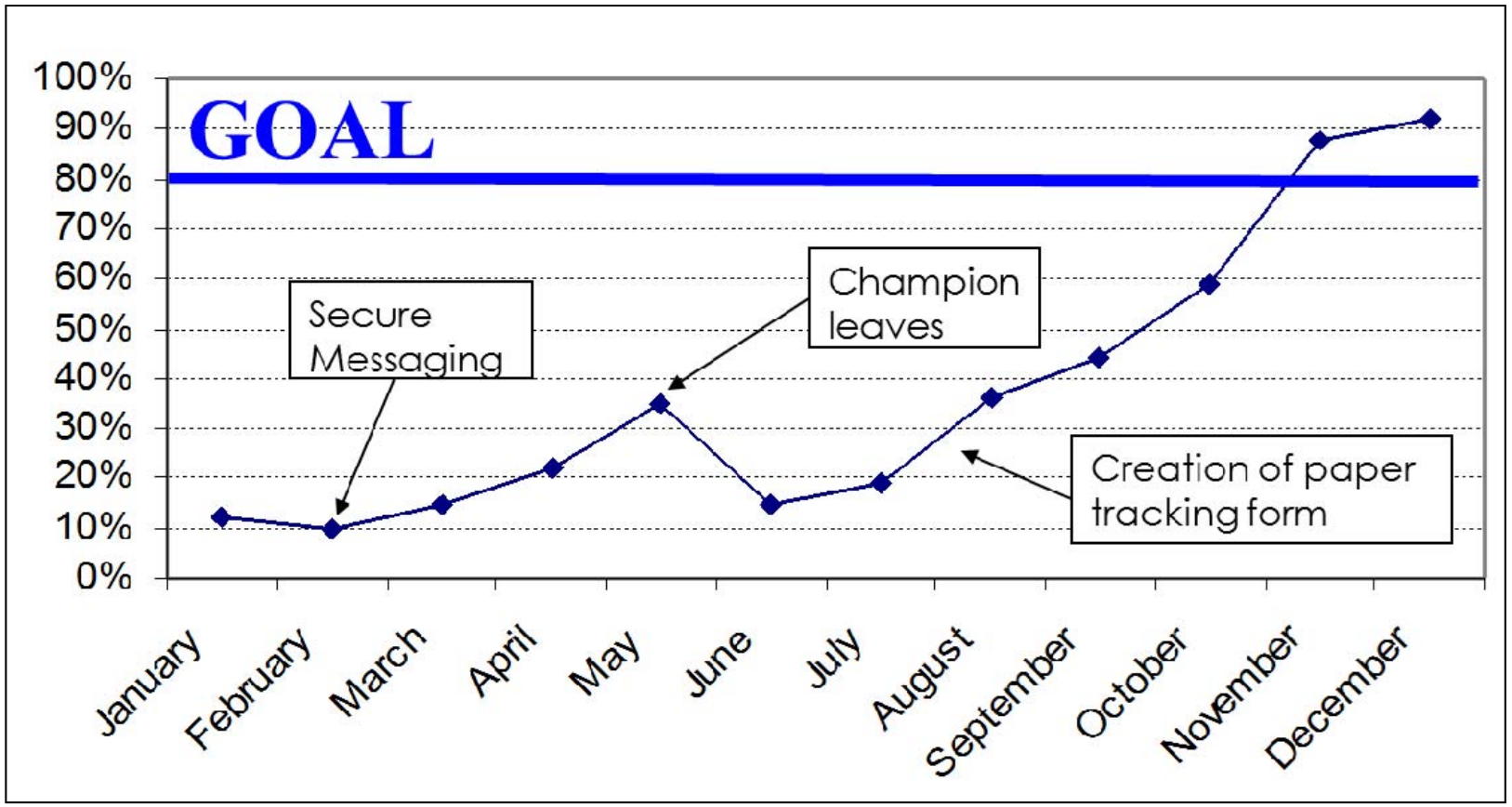
Results for Units 1, 2 and 3







Minimum Standard: Annotated Run Chart



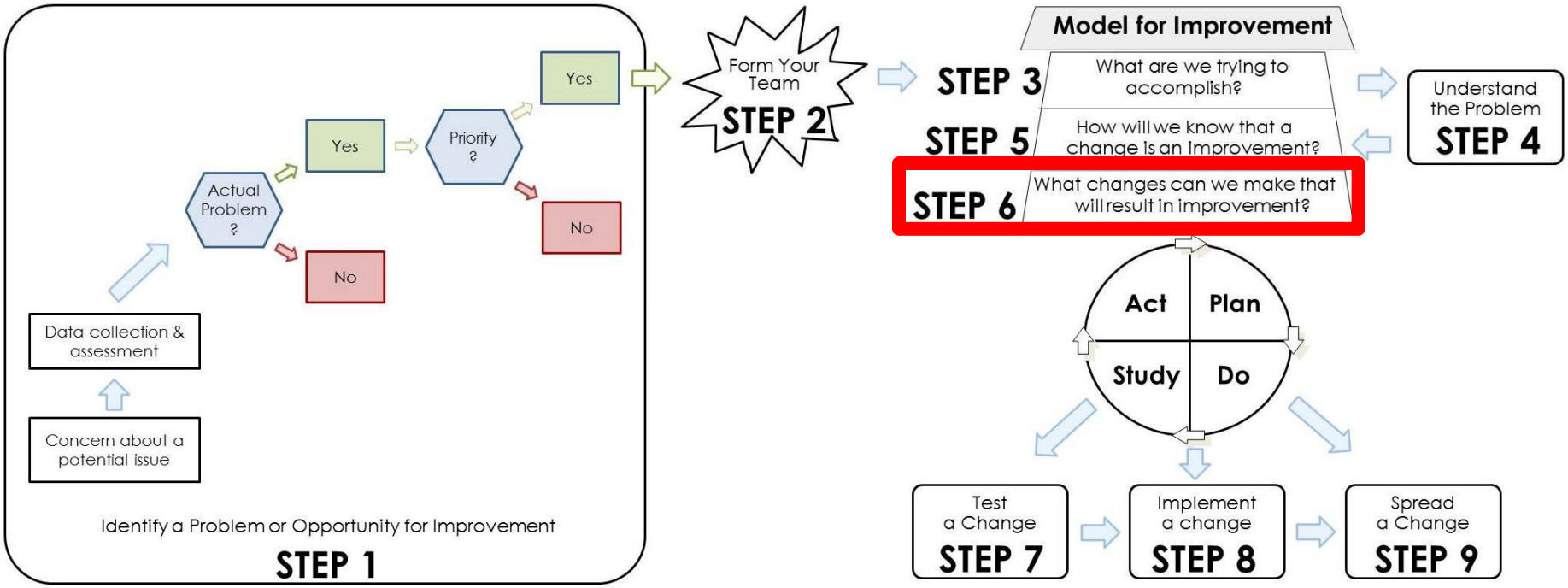
Tips for Effective Measurement

1. Plot data over time
2. Seek usefulness, not perfection
3. Track a family of measures
4. Use sampling
5. Integrate measurement into the daily routine
6. Use qualitative and quantitative data

Step 5: Establish Measures

What is your "family of measures"? Include process, outcome, and balancing measures.

Step 6: Develop Ideas for Change



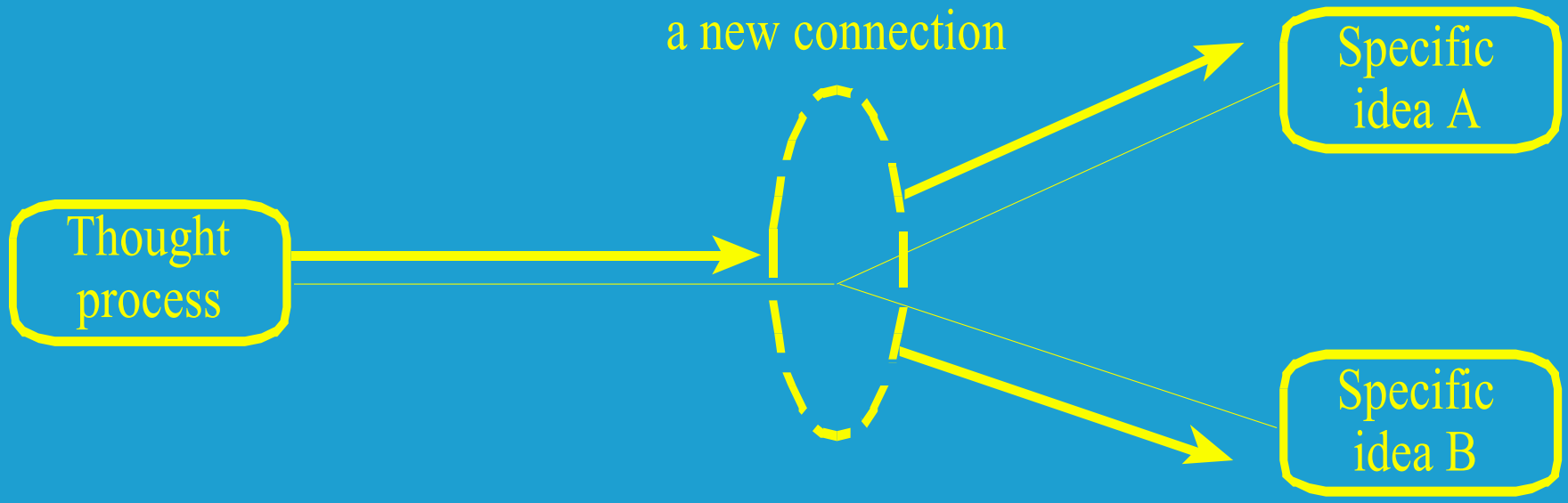
Approaches for Developing Fundamental Changes

1. Logical thinking about the current system
2. Benchmarking and learning from others
3. Using technology
4. Creative thinking
5. Using change concepts

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd Edition) Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP
San Francisco, California, USA: Jossey-Bass Publishers; 2009

Change Concept

An opportunity to create
a new connection



Select Change Concept Examples (there are 72 total)

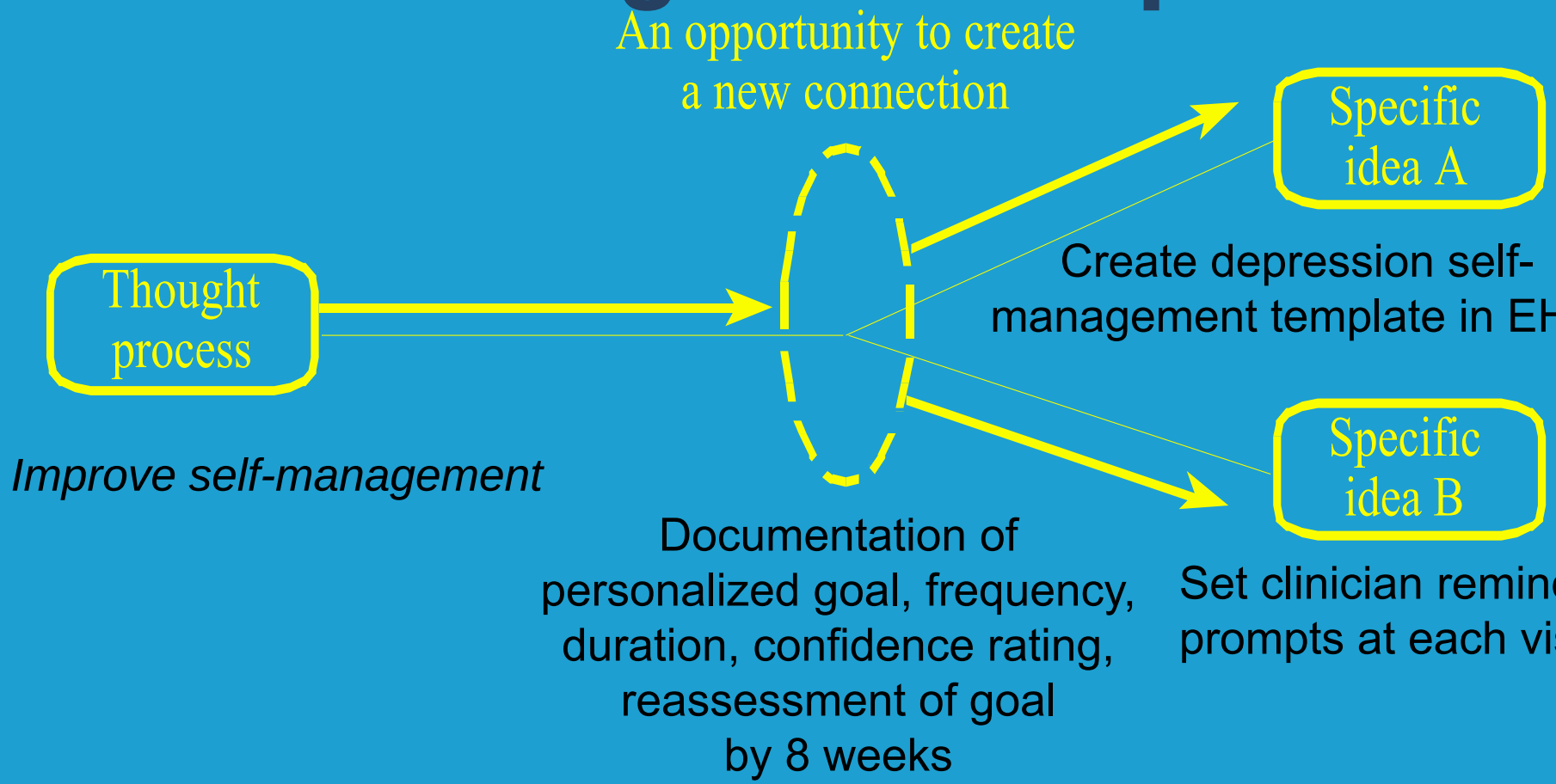
- Eliminate multiple entry
- Reduce classifications
- Remove intermediaries
- Schedule into multiple processes
- Find and remove bottlenecks
- Do task in parallel
- Focus on core process and purpose
- Develop alliances and cooperative relationships
- Use reminders
- Change the order of process steps
- Manage uncertainty, not tasks

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd Edition) Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP
San Francisco, California, USA: Jossey-Bass Publishers; 2009

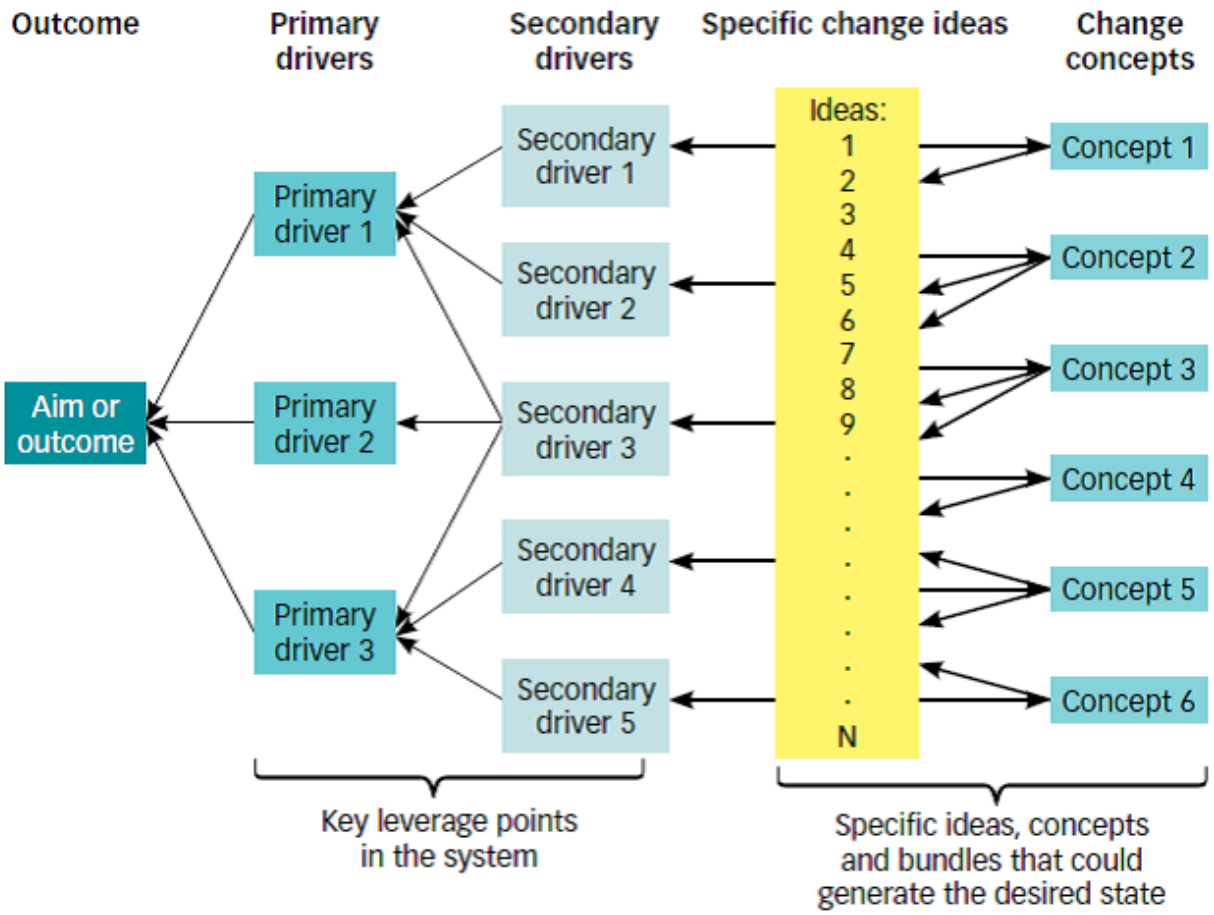
Examples of NCDP Change Concepts

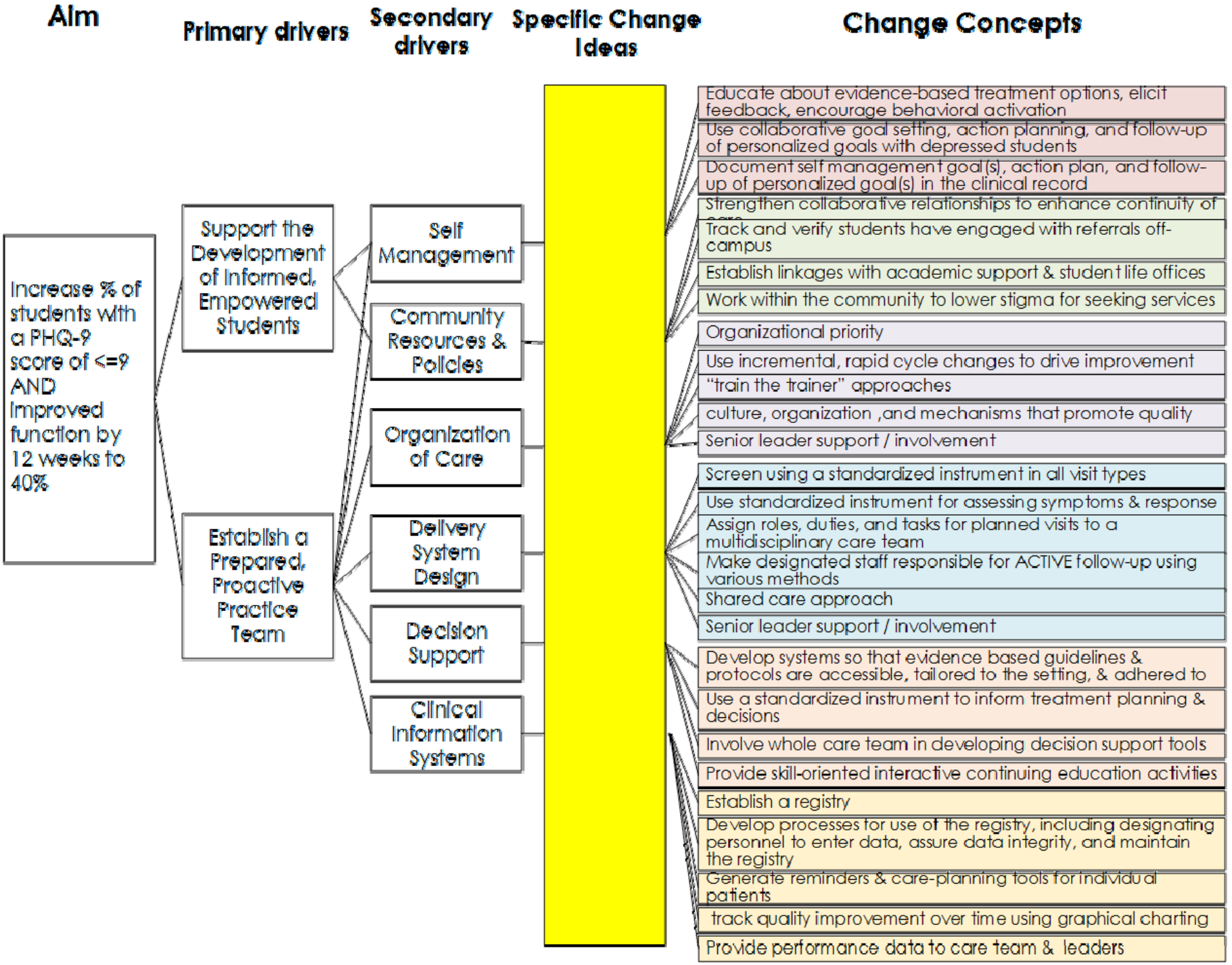
- Screen students for depression using a standardized instrument during visits for other purposes
- Use a validated standardized instrument for assessing symptoms and response to treatment
- Use a registry to proactively review care and plan visits
- Use collaborative goal setting, action planning, and follow-up of personalized goals with depressed students
- Document self management goal(s), action plan, and follow-up of personalized goal(s) in the clinical record

Change Concept



Conceptual view of a driver diagram / FIGURE 2



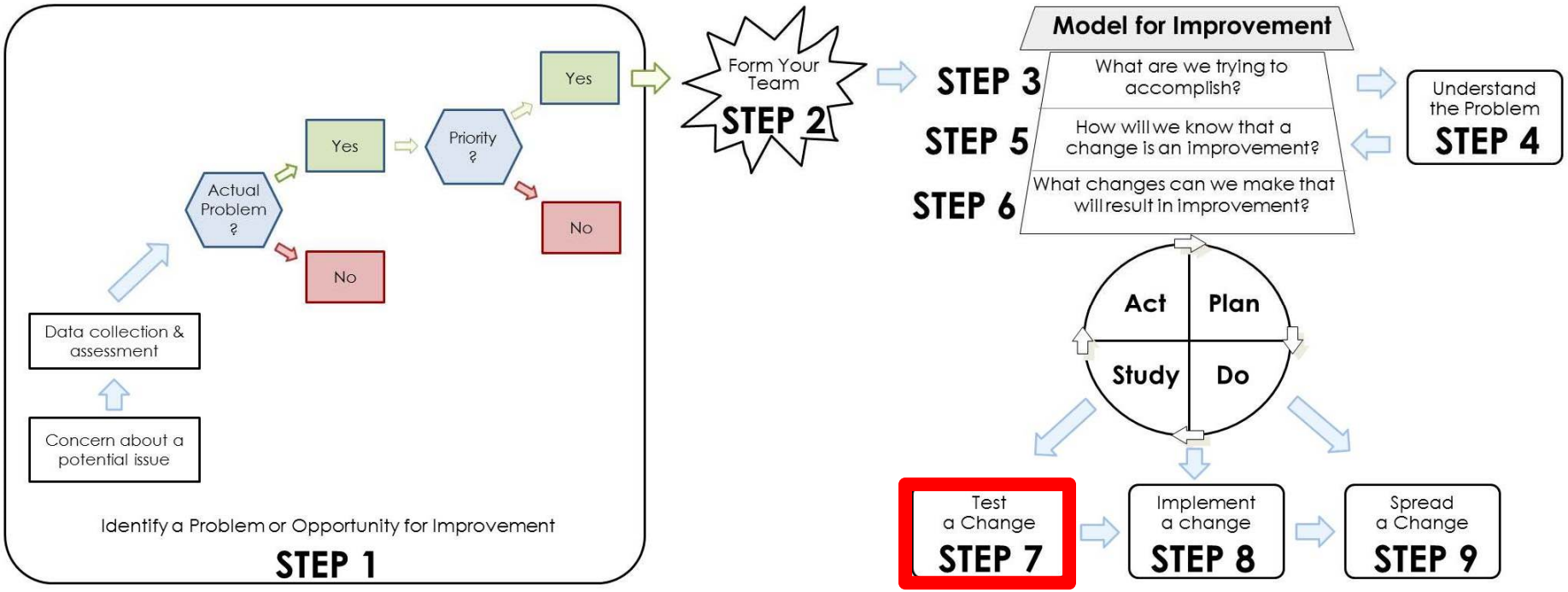

Aim
Primary drivers
Secondary drivers
Specific Change Ideas
Change Concepts
Increase % of students with a PHQ-9 score of <=9 AND Improved function by 12 weeks to 40%
Support the Development of Informed, Empowered Students
Establish a Prepared, Proactive Practice Team
Self Management
Community Resources & Policies
Organization of Care
Delivery System Design
Decision Support
Clinical Information Systems
Educate about evidence-based treatment options, elicit feedback, encourage behavioral activation
Use collaborative goal setting, action planning, and follow-up of personalized goals with depressed students
Document self management goal(s), action plan, and follow-up of personalized goal(s) in the clinical record
Strengthen collaborative relationships to enhance continuity of
Track and verify students have engaged with referrals off-campus
Establish linkages with academic support & student life offices
Work within the community to lower stigma for seeking services
Organizational priority
Use incremental, rapid cycle changes to drive improvement
"train the trainer" approaches
culture, organization ,and mechanisms that promote quality
Senior leader support / involvement
Screen using a standardized instrument in all visit types
Use standardized instrument for assessing symptoms & response
Assign roles, duties, and tasks for planned visits to a multidisciplinary care team
Make designated staff responsible for ACTIVE follow-up using various methods
Shared care approach
Senior leader support / involvement
Develop systems so that evidence based guidelines & protocols are accessible, tailored to the setting, & adhered to
Use a standardized instrument to inform treatment planning & decisions
Involve whole care team in developing decision support tools
Provide skill-oriented interactive continuing education activities
Establish a registry
Develop processes for use of the registry, including designating personnel to enter data, assure data integrity, and maintain the registry
Generate reminders & care-planning tools for individual patients
track quality improvement over time using graphical charting
Provide performance data to care team & leaders

Model for Improvement: Question Three

What change(s) can we make that will result in improvement?

Brainstorm ideas for change or the strategies will you use to develop ideas for change.

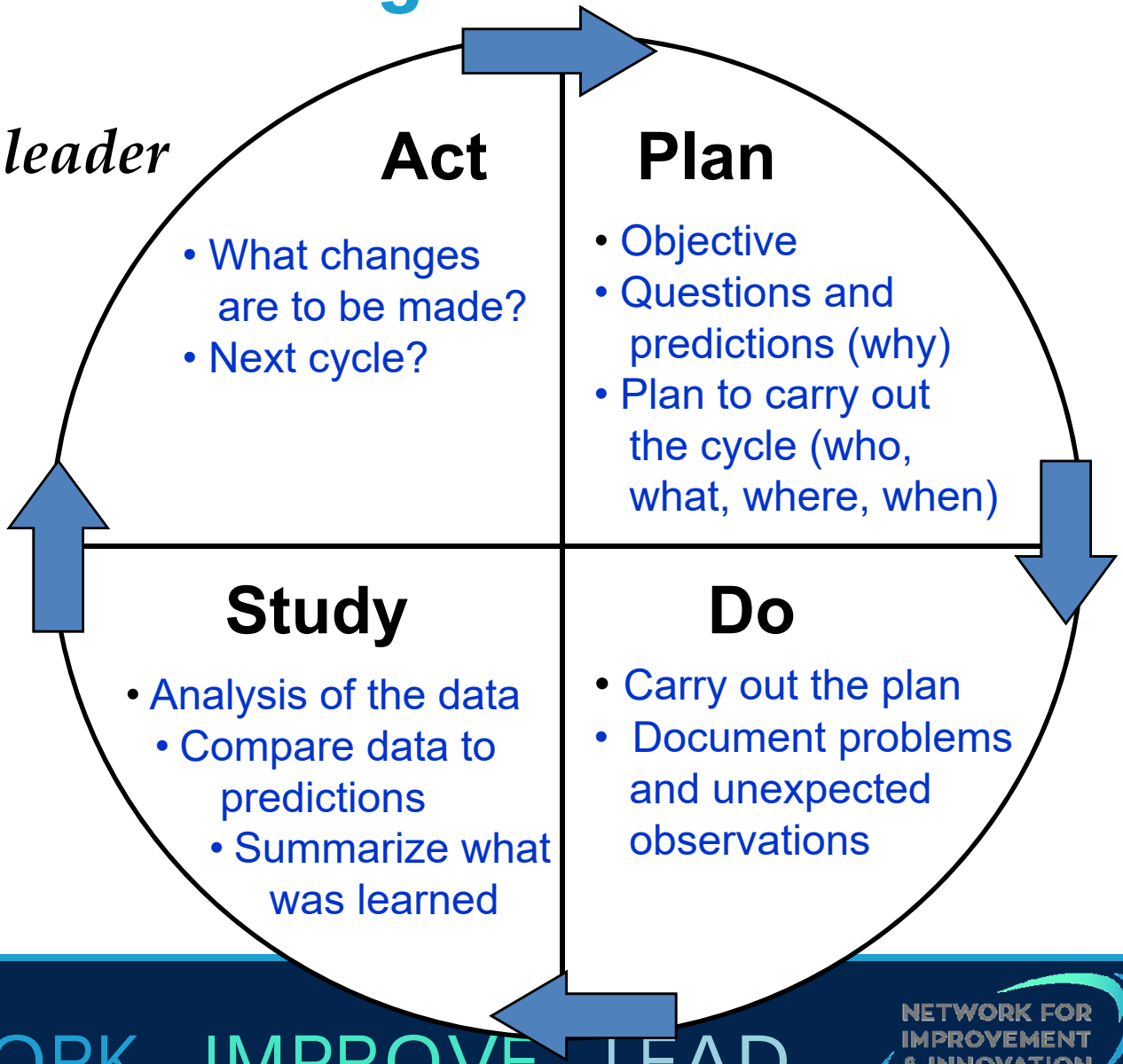
Step 7: Test Changes



Effective System Change is INCREMENTAL

Led by a senior leader

Review results promptly



PDSA Worksheet for Testing Change

COMPLETE FOR EACH PDSA PDSA CYCLE

Date: Cycle #:

Objective for this PDSA Cycle:

Is this cycle used to develop (or modify), test, implement, or spread a change?

What question(s) do we want to answer on this PDSA cycle (*what do we want to learn from this PDSA cycle)*?

Plan:

List the tasks needed to set up this test of change: Who, What, When, Where

Predict what will happen when the test is carried out (for questions above based on plan):

Plan for collection of data: What measures will be used to determine if prediction succeeds

Do: *Describe what actually happened when you ran the test*

Study: *Describe the measured results and how they compared to the predictions*

Act:

Describe what modifications to the plan will be made for the next cycle from what you learned

Available at: https://collegehealthqi.nyu.edu/resource-library/pdsa-worksheet/

PDSA Cycle

- **Objective for this PDSA Cycle:**
  Test whether visual prompts will serve as an effective reminder for providers to complete the PHQ-9 survey, in PNC; therefore, decreasing the number of missed opportunities to engage students in mental health treatment

- **Is this cycle used to develop, test, or implement a change?**
  Develop

- **What question(s) do we want to answer on this PDSA cycle?**
  Will a visual prompt increase the likelihood that the provider will complete the PHQ-9 survey, in PNC, during the session with the patient?

PDSA Cycle
Plan

Plan to answer questions: Who, What, When, Where

- PDSA #2 will run on 7/5/2016 through 7/15/2016. The MA/RN (Ann, Jorge, Emily) will place a post-it note on the computer keyboard, located in the examination room, for the providers they're assigned to each day given the providers are part of Primary Care Team 2. The post-it will be placed only if there is a positive PHQ-2, to serve as a reminder for the provider to complete the PHQ-9 survey in PNC.
- Providers will be instructed to do care as usual regardless of whether there is a prompt (since not all MAs are involved).

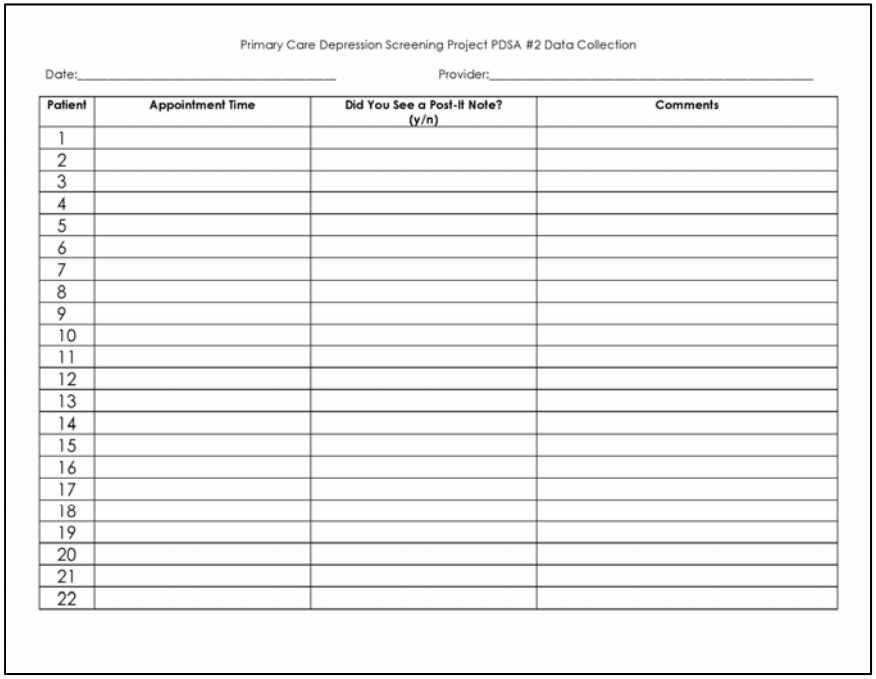
Plan for collection of data: Who, What, When, Where

- The MA/RN will write the provider name and appointment time on the post-it note.
- Once the provider arrives, if they see a post it note, they will fill out a separate simple questionnaire

Predictions (for questions above based on plan):

- MAs will appropriately place prompts 90% of the time.
- When prompts were placed, PHQ-9 survey will be completed in PNC 75% of the time compared with 40% of the time when there is no prompt.

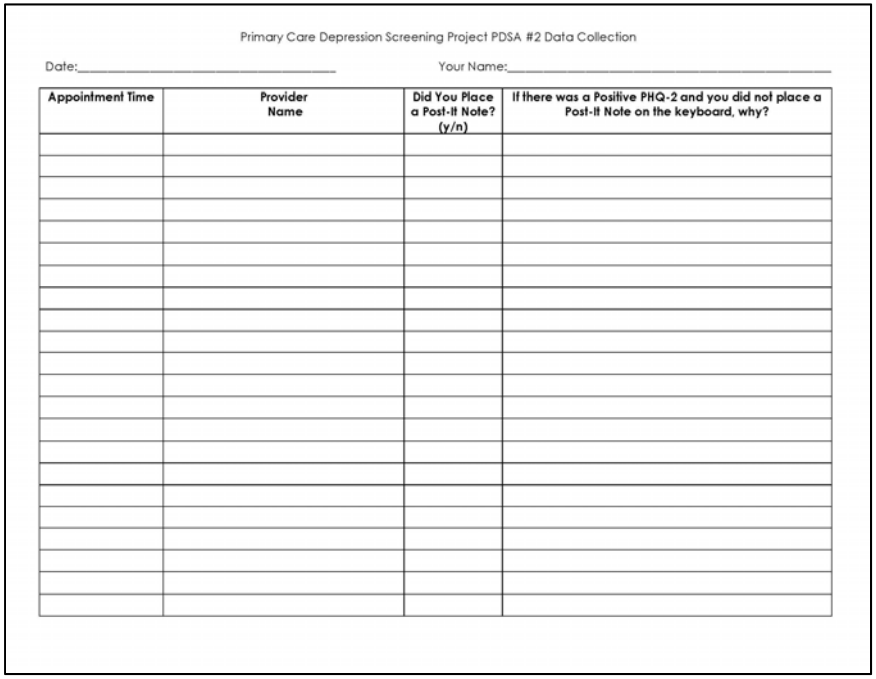
PDSA Cycle
Do



Primary Care Depression Screening Project PDSA #2 Data Collection

Date:_____ Provider:_____

Patient	Appointment Time	Did You See a Post-It Note? (y/n)	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			



Primary Care Depression Screening Project PDSA #2 Data Collection

Date:_____ Your Name:_____

Appointment Time	Provider Name	Did You Place a Post-It Note? (y/n)	If there was a Positive PHQ-2 and you did not place a Post-It Note on the keyboard, why?

PDSA Cycle
Study

	Prediction	Action
MAs appropriately place prompts	90%	95%
With prompts: PHQ-9 administered	75%	45%
Without prompts: PHQ-9 administered	40%	42%

PDSA
Study

- Visual prompts did not have much impact on whether or not the PHQ-9 survey was completed and entered in PNC
- The team identified the following barriers as key reasons the PHQ-9 is not completed:
  - Ample time to meet with the patient to complete the survey
  - Cumbersome process and would sometimes forget to enter the score (esp if negative)
  - Student already "engaged" in CAPS

PDSA Cycle
Act

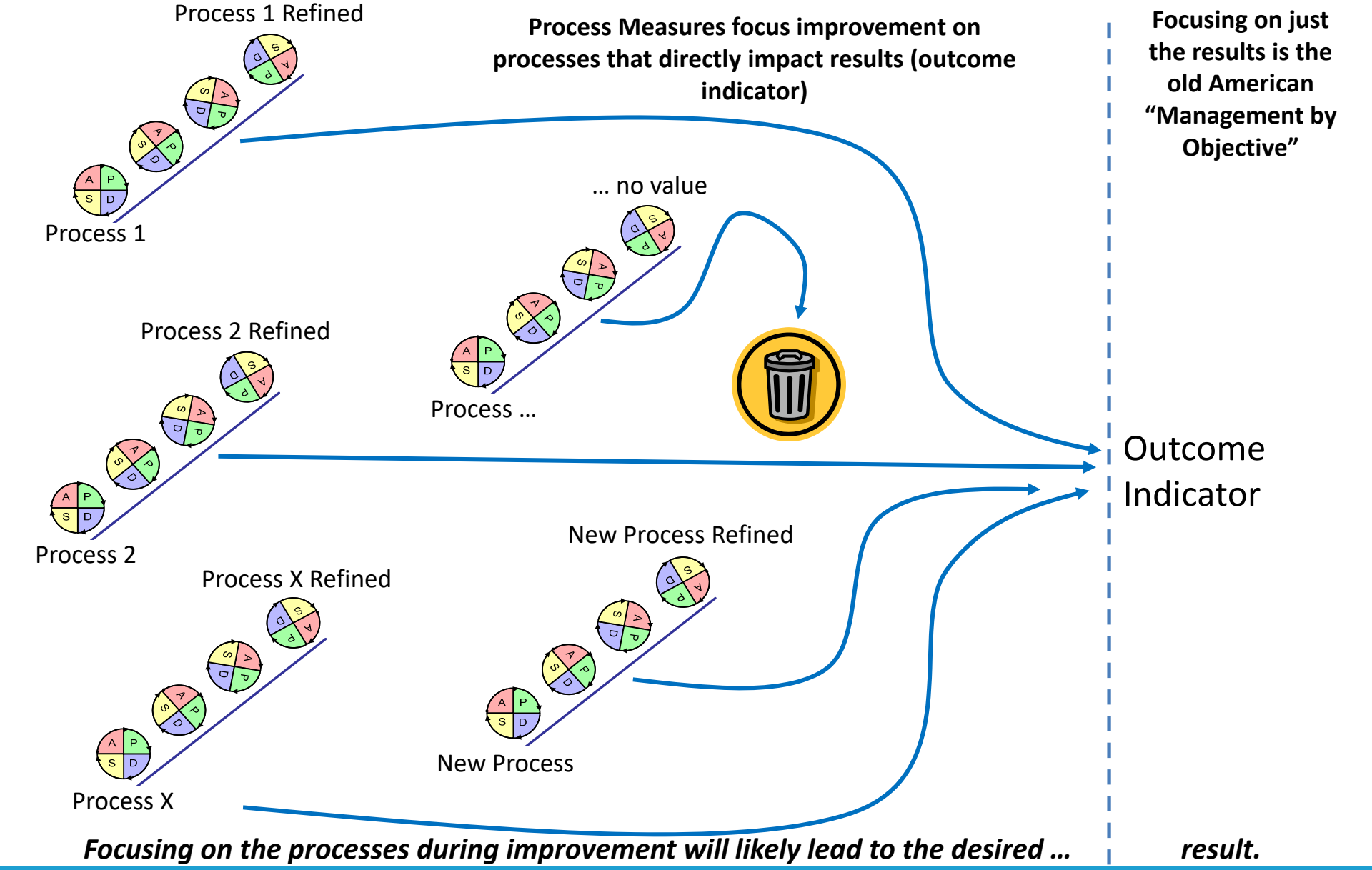
The team discussed:

- Allow the patient to complete the PHQ-2 survey during check-in using a tablet or kiosk. If the patients score on the PHQ-2 is positive, the patient will be prompted, on the system, to complete the PHQ-9 survey.
- Following the completion of the PHQ-9 survey, the patients score will be tallied and the information will be populated into a system visible to the provider. The provider will then have enough time to address all the patients' needs and make the necessary referrals to Mental Health Services if the need exists.

Key features of PDSA cycle method

- Iterative cycles
- Prediction-based test of change
- Small-scale testing
- Use of data over time
- Documentation

Michael Taylor et al. Systematic Review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Qual Saf. September 2013*


Process 1 Refined
Process Measures focus improvement on processes that directly impact results (outcome indicator)
Focusing on just the results is the old American "Management by Objective"
Process 1
… no value
Process …
Process 2 Refined
Process 2
Outcome Indicator
New Process Refined
Process X Refined
New Process
Process X
Focusing on the processes during improvement will likely lead to the desired …
result.

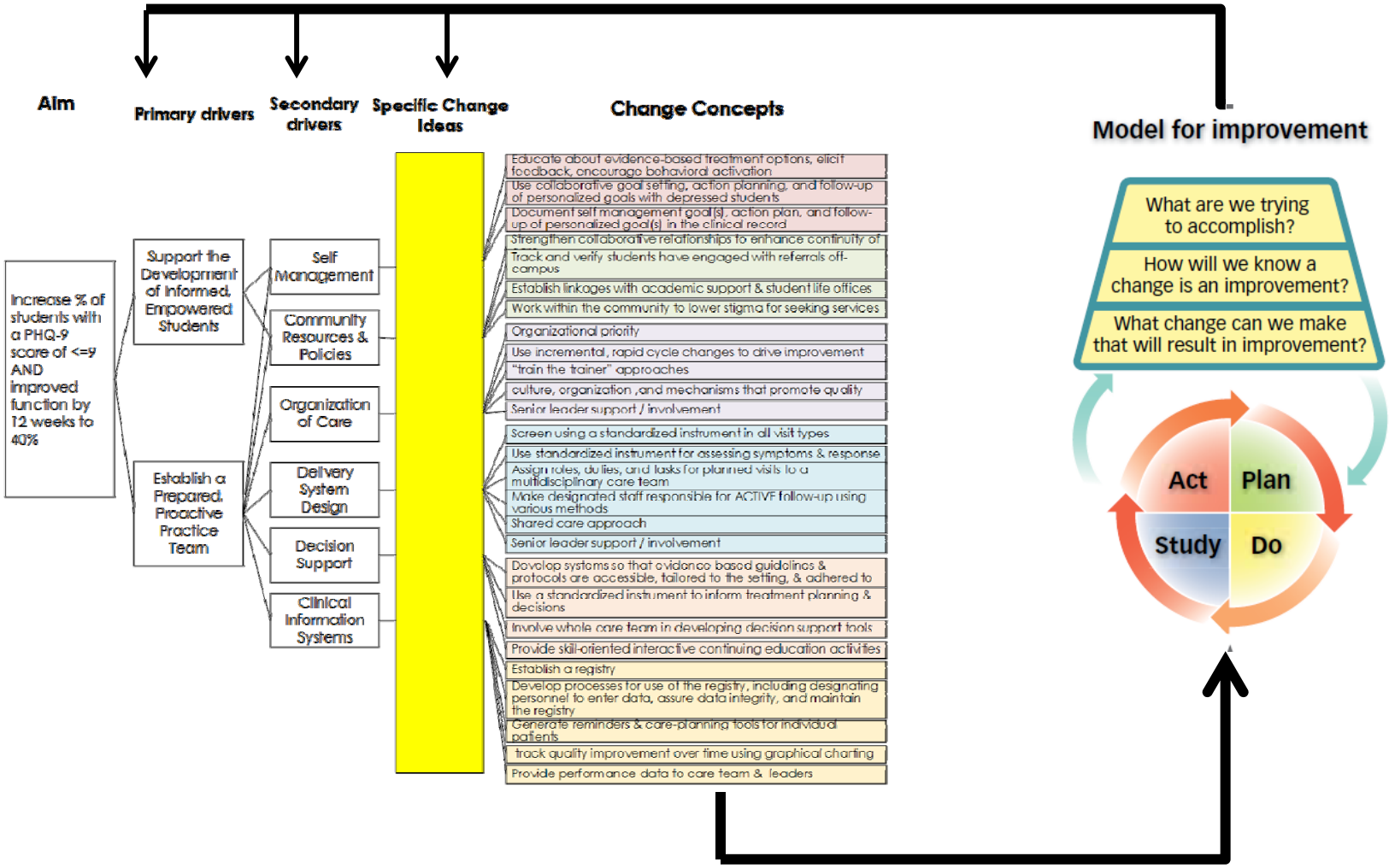
Do → Study

- Reasons for failed tests
  1. Change not executed well
  2. Support processes inadequate
  3. Hypothesis/hunch wrong:
     - ❑Change executed but did not result in local improvement
     - ❑Local improvement did not impact access or efficiency
- Collect data during the Do Phase of the Cycle to help differentiate these situations.

Cycle for Learning and Improvement

"Negative results on the fish…Let's try rubbing two sticks together."

Driver diagram informs testing, testing refines theory

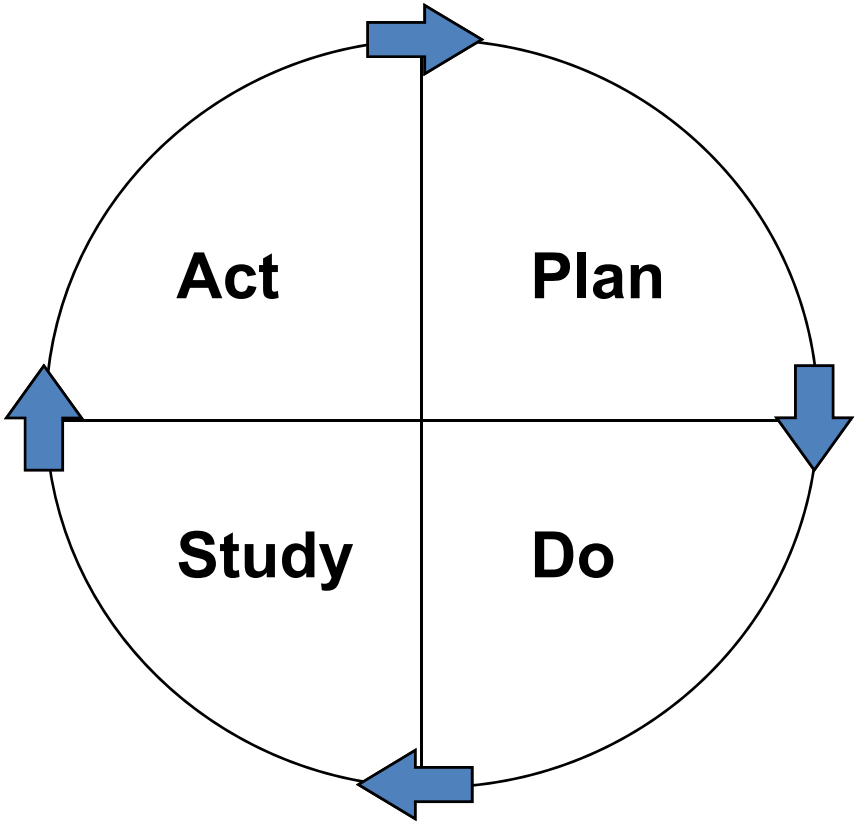


Successful Cycles to Test Changes (under the radar approach)

- Plan multiple cycles for a test of a change
- Think a couple of cycles ahead
- Scale down size of test (# of patients, location)
- Test with volunteers
- Do not try to get buy-in, consensus, etc.
- Be innovative to make test feasible
- Collect useful data during each test
- Test over a wide range of conditions

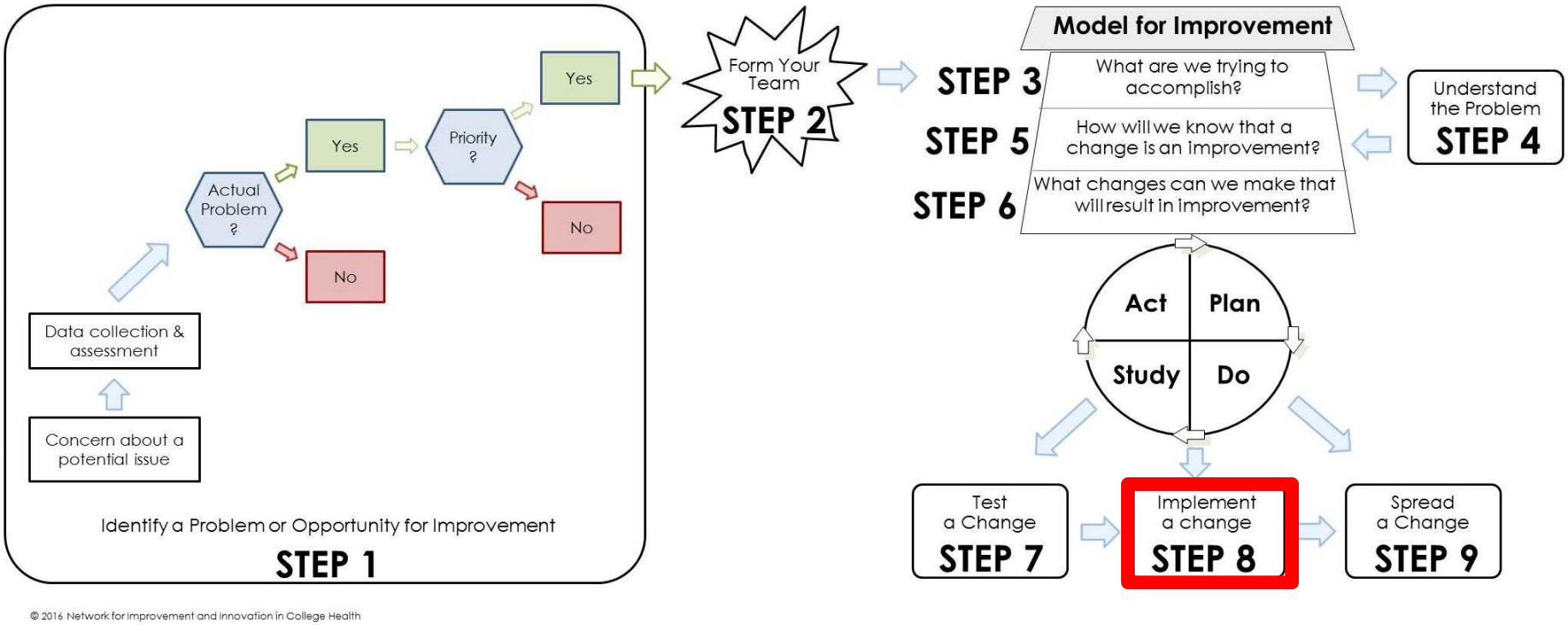
Accelerating Learning and Improvement

What cycle can we complete by next Tuesday?



Willing to compromise on scope, size, rigor, and sophistication, but the cycle must be completed by next Tuesday.

Step 8: Implement Changes



Step 8: Implement Changes

- The aim of this narrow scope of implementation is to:

  make sure the infrastructure is in place to make the change long-lasting and successful.

- Includes issues such as:
  - Training
  - Documentation
  - Standardization
  - Adequate resources
  - Social considerations

Testing and Implementing a Change Idea

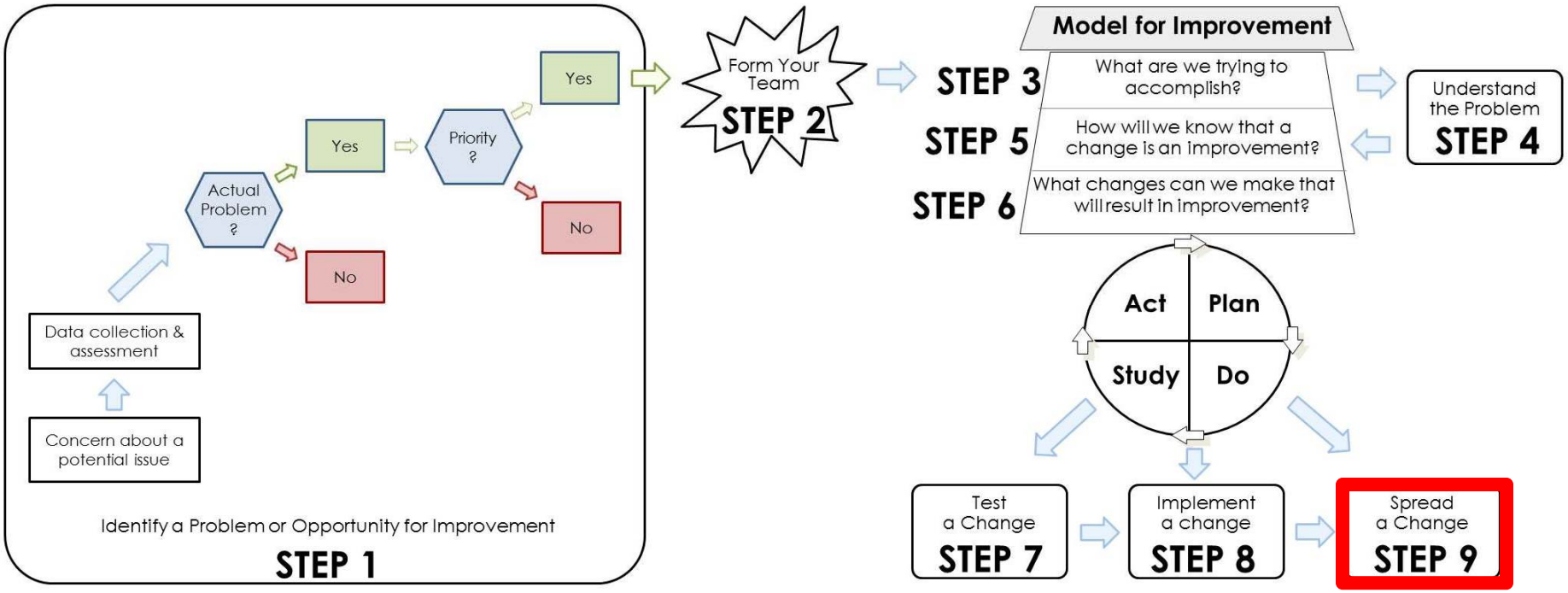
BELIEF	COST OF FAILURE	Current **commitment** within organisation		
		No commitment	Some commitment	**Strong** commitment
Low degree of belief that change idea will lead to improvement	Cost of failure large	Very small scale test	Very small scale test	Very small scale test
	Cost of failure **small**	Very small scale test	Very small scale test	Small scale test
High degree of belief that change idea will lead to improvement	Cost of failure large	Very small scale test	Small scale test	Large scale test
	Cost of failure **small**	Small scale test	Large scale test	Implement

Pilot Phase	Implementation Phase
 PEOPLE: **FEW** The number of people affected by a pilot test is relatively small. Thus, the resistance to the change is often relatively low.	 PEOPLE: **MANY** The number of people affected during implementation is relatively large. There may be stronger resistance to the change that improvement teams must overcome.
 SUPPORT NEEDED: **LOW** Testers do not yet intend changes to be permanent and therefore do not need processes to maintain changes beyond the test period.	 SUPPORT NEEDED: **HIGH** Testers expect the change to become part of the routine operations of the system; supporting processes to maintain the change — feedback and measurement systems, job descriptions, training, etc. — must be in place.
 TIME: **SHORTER** Cycles for testing changes can be rapid.	 TIME: **LONGER** Test cycles, which are larger in scale and more diverse in scope, generally require more time than in the pilot.
 TOLERANCE FOR FAILURE: **HIGH** It's OK (in fact, it's encouraged!) for testers to learn from mistakes. Between 25–50 percent of tests may not produce the desired results; these "failures" are important opportunities to learn.	 TOLERANCE FOR FAILURE: **LOW** Due to all of the above (i.e., the people, resources, and time involved) the tolerance for failure is relatively low during implementation. Testers should have a high degree of confidence that the changes they're implementing will result in improvement.

Implementation Strategies to Hold the Gains

- Make changes to job descriptions
- Use measurement and audits
- Pay attention to orientation and training
- Assign ownership
- Address the social aspects of change

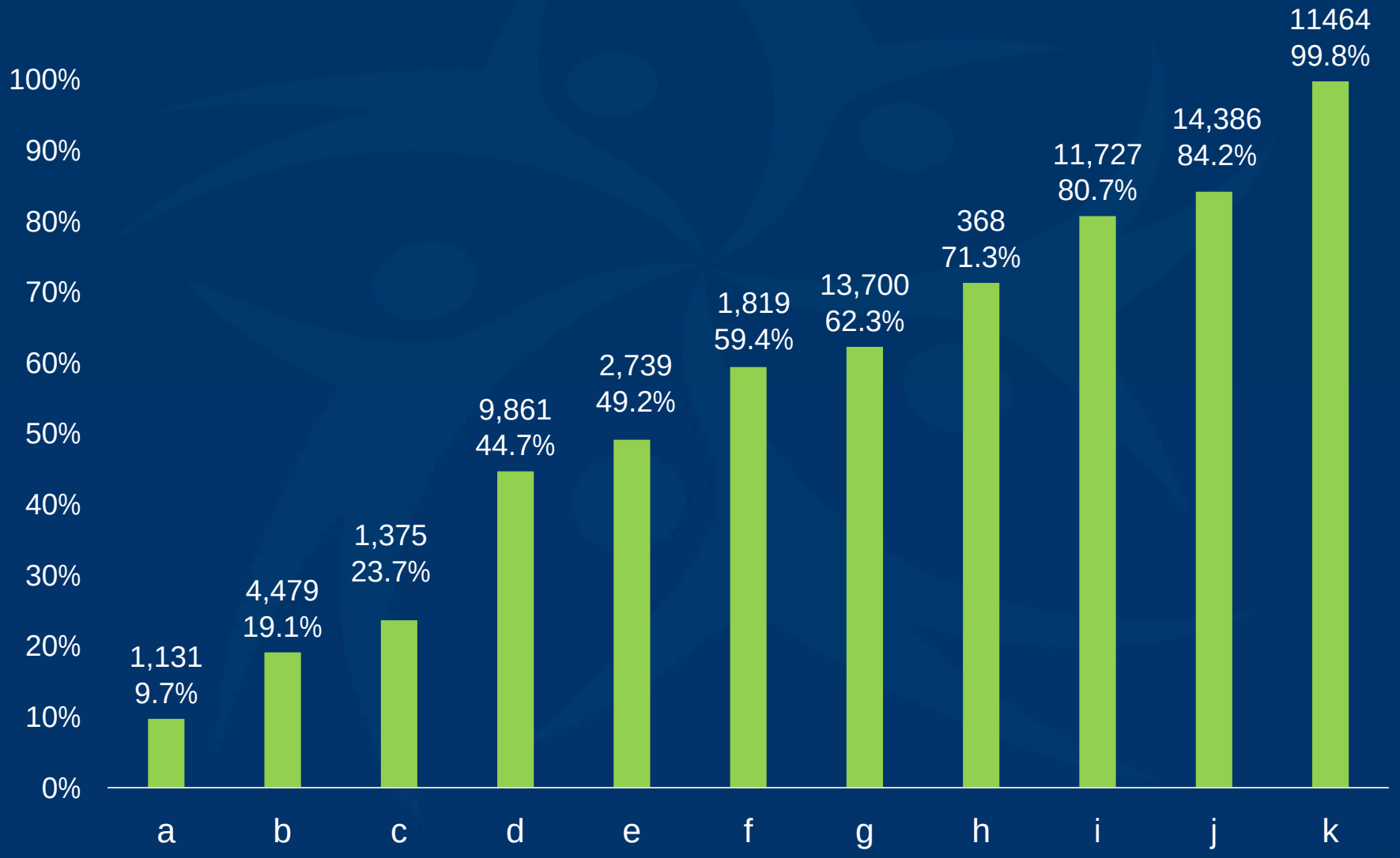
Step 9: Spread Improvements



Step 9: Spread Improvements

"The tipping point is that magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire."

73,009 unique students screened



Source: NCDP 2013-2015

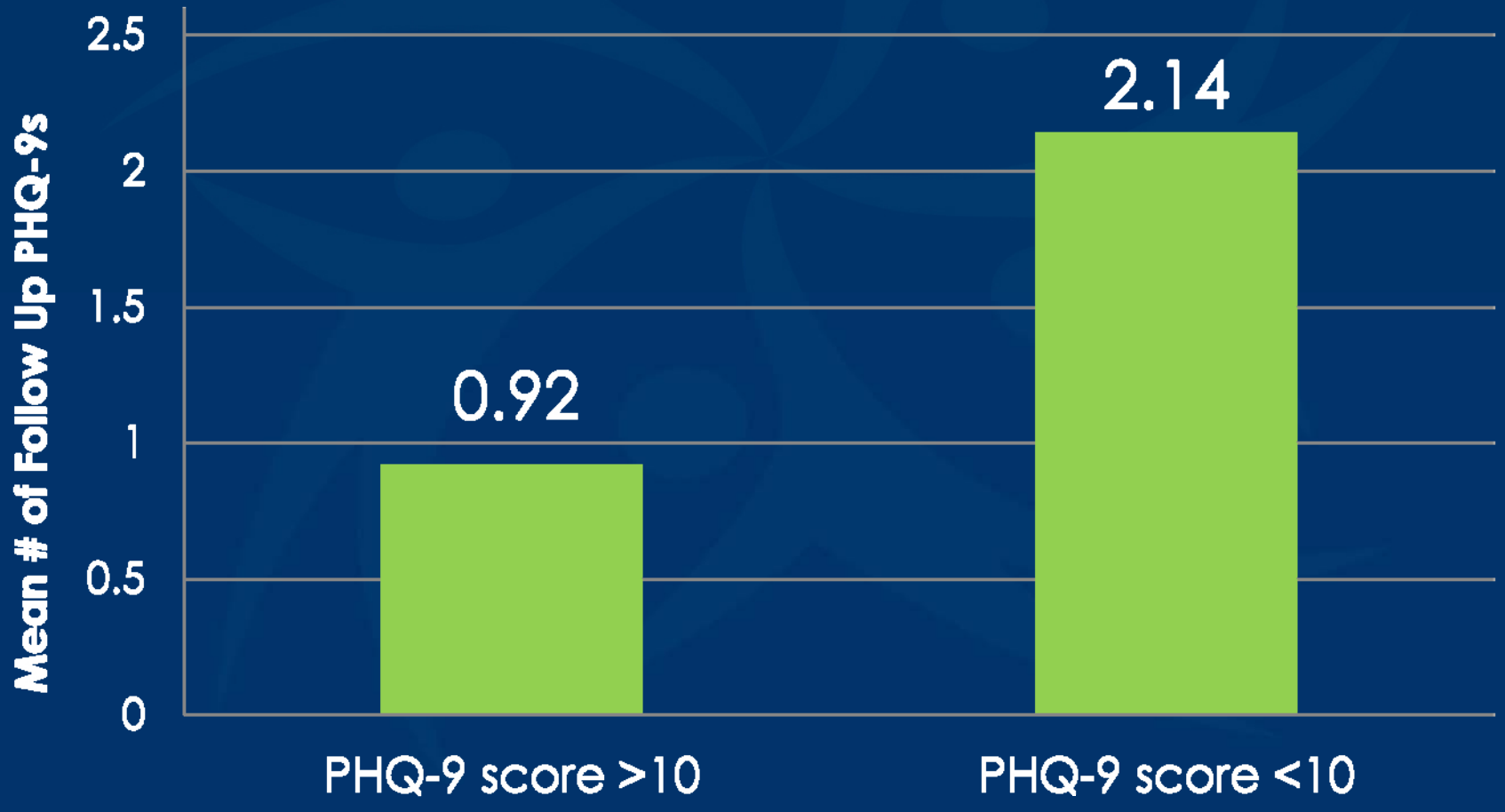
Treatment Outcomes based on Meeting Key Process Measures

	Met Benchmark	Did not Meet Benchmark
PHQ-9 Follow up re-assessment by 4 weeks	(n=9)	(n=11)
% of registry students with PHQ-9 <10 @ 12 weeks	53.6%*	35.9%
% of registry students with functional improvement (PHQ Functional score <=1) @ 12 weeks	60.8%*	46.7%

*p < 0.05

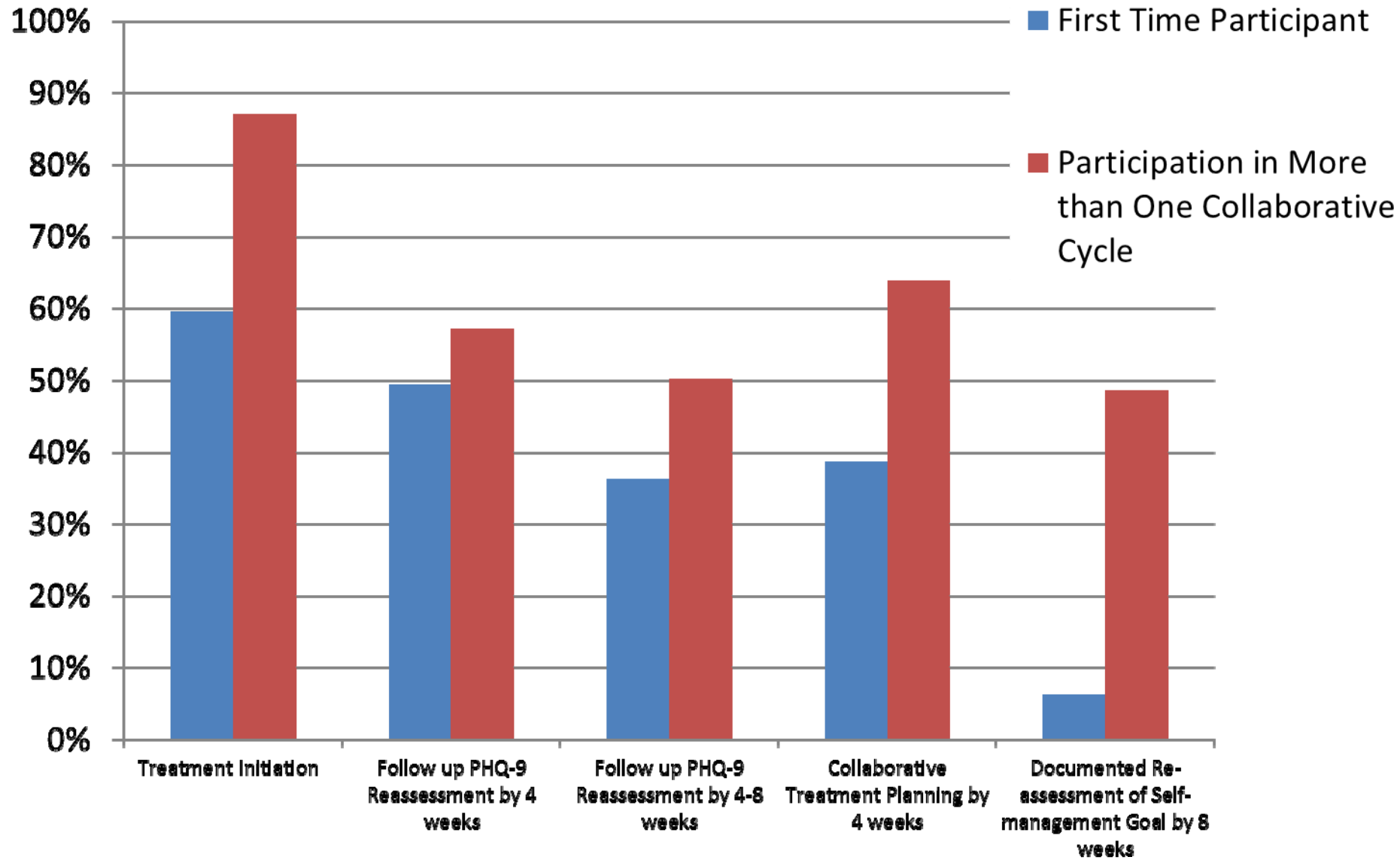
Source: NCDP 2008-2009

Follow Up PHQ-9s and Remission (n=441)



Source: NCDP 2013-2015

Performance on Process Measures by Length of Partner Participation



Source: NCDP-CAN 2010-2011

Achievement of PHQ-9 score of <=9 by 12 weeks (n=441)

	Met Process Measure	Did NOT Meet Process Measure
NCDP registry patients having at least one follow up PHQ-9 reassessment by 4 weeks of positive identification	48.8%	17.7%
NCDP registry patients with patient-centered (collaborative) treatment planning by 4 weeks	31.8%	23.3%
NCDP registry patients in which at least one personalized self management goals was set and reviewed by 8 weeks	32.4%	27.7%

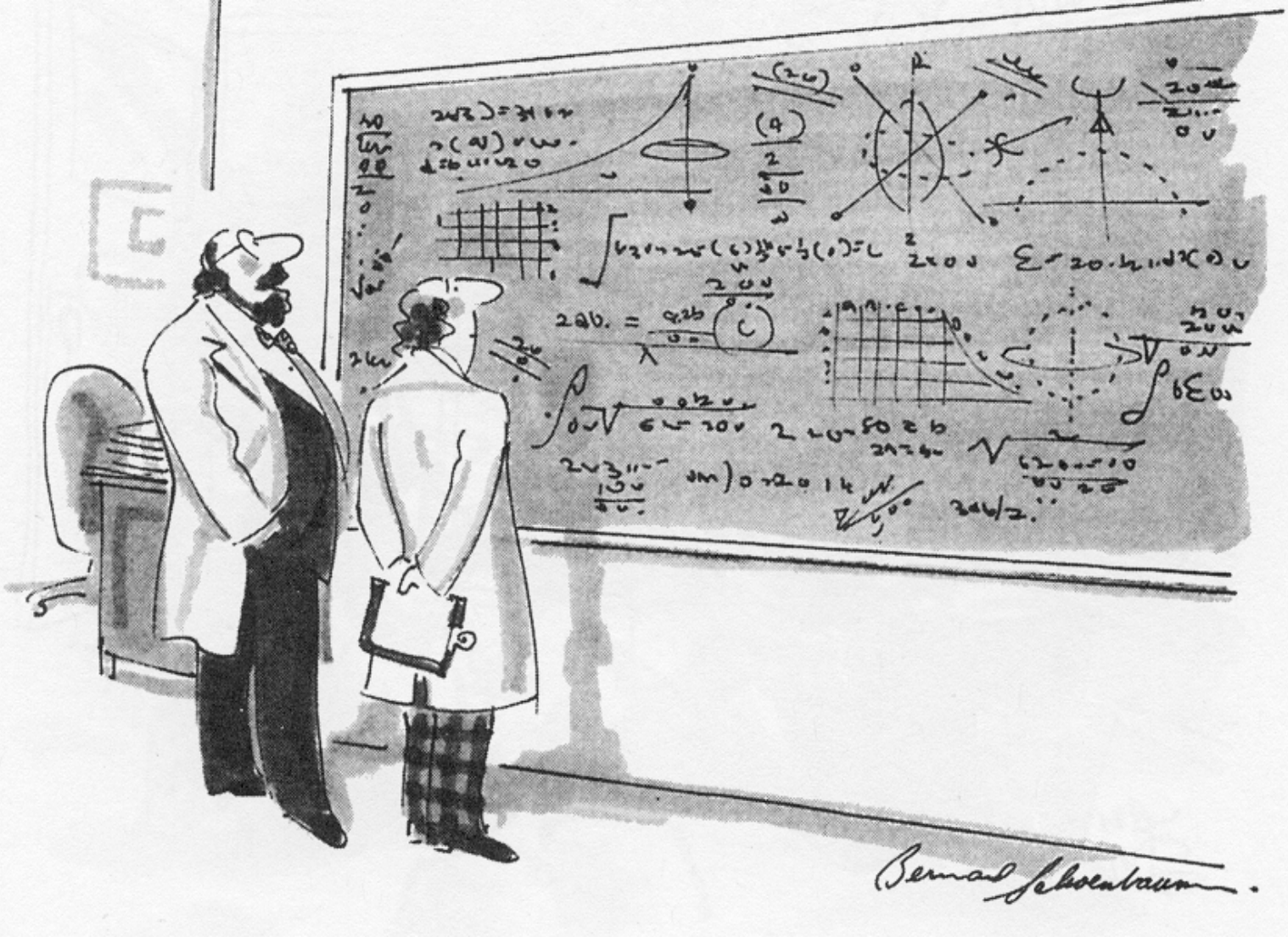
Source: NCDP 2013-2015

Process Drives outcome

	Initial PHQ-9 Score	Final PHQ-9 Score (ITT)	Difference
All process measures (n=228)	**17.25**	**9.92**	**-7.31**
Medication (n=554)	17.07	10.70	-6.37
Individual Counseling (n=1020)	17.08	12.13	-4.95
Group Counseling (n=81)	16.75	13.50	-3.23
Self Management (n=474)	16.52	12.12	-4.40

*Among patients in registry for > 87 days

Source: NCDP 2013-2015



“Oh, if only it were so simple.”

Join the Movement

toward **better care** and **better health** at **increased value**
for students on college campuses nationwide

CollegeHealthQI.nyu.edu

LEARN. NETWORK. IMPROVE. LEAD.

NETWORK FOR IMPROVEMENT & INNOVATION IN COLLEGE HEALTH