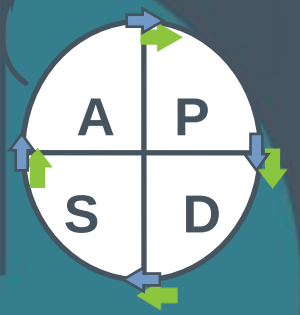
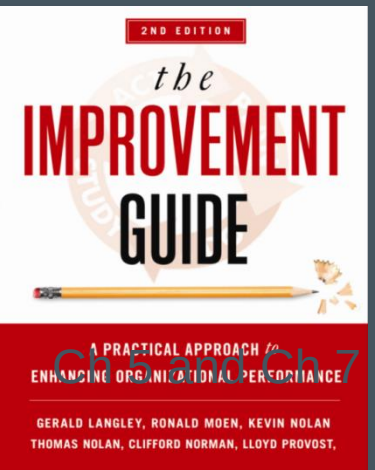
Institute for Healthcare Improvement

11. Teaching the Model for Improvement Part 2 and 3: Changes and PDSA

Model for Improvement





Ch 5 and Ch 7

Teaching the Model For Improvement – Objectives

By the end of the two sessions on teaching the Model for Improvement, you should know how to:

- Explain the Model for Improvement
- Evaluate and critique team aim statements
- Evaluate and critique a team's measurement strategy
- Coach teams in their use of the PDSA Cycle
  - Emphasis at LS 1:
    - Help teams design small scale PDSA cycles for initial tests of change
    - Help teams design a series of PDSA cycles to test, adapt, and then implement a change idea
  - Emphasis at LS 2:
    - Speed up the rate of testing

We Are Getting Them Ready for OTM Two

Organization:_____ **Key Contact for Team:**_____

1. Using the Project Planning Forms, list and schedule a series of PDSA Cycles for each change that you will focus on over the next four months. Use one page for each component of the change package, identifying who will be involved and a time frame for each cycle or series of cycles. Be prepared to share this information (for at least one component) at the reporting session at 2:15.

2. Develop the detailed plan for your first PDSA cycle that will be completed by "Next Tuesday" (fill out the Plan on the PDSA Cycle Form). Compete the Do, Study, and Act by next Tuesday to share with the rest of the collaborative on the Extranet.

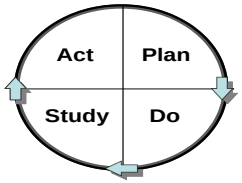
3. Bringing the Message Home: Decide who on your team will schedule the first meeting of your Collaborative Team. If possible, call your organization while at the Learning Session to schedule the meeting.

How will you share the plans you have made here at the Learning Sessions with other members of your collaborative team back at your home organization? Prepare an agenda for this meeting. What questions do you think the other members of your team might have? How can you prepare to address these questions?

Who on your team will schedule the first meeting with your Senior Leader following the Learning Session? If possible, call and schedule this meeting before leaving Boston. Prepare an agenda for the meeting and assign responsibilities for sharing your collaborative plans among those who attended the Learning Session.

SP
Pages
47,48,49

4. Plan your presentation for today. Decide who will report for your team and review the information that your spokesperson will share.



MODEL FOR IMPROVEMENT ***DATE*** _____

Objective for this PDSA Cycle:

SP Page 50,51

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

What question(s) do we want to answer on this PDSA cycle?

Plan:

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

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

Predictions (for questions above based on plan):

Do:

Carry out the change or test; Collect data and begin analysis.

Study:

Complete analysis of data;

Compare the data to your predictions and summarize the learning

Act:

Are we ready to make a change? Plan for the next cycle

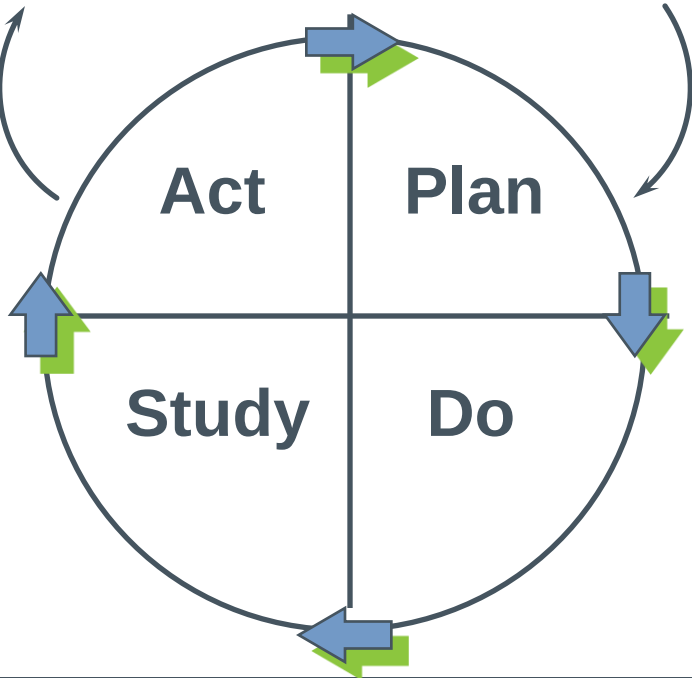
Model for Improvement

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?

Improvement yet?



What Changes Can We Make That Will Result in Improvement?

- We give them this!
- The Change Package contains the key elements of high performing systems
  - Not starting from scratch!

MENTAL HEALTHCARE IN RESOURCE-POOR SETTINGS: TACKLING DEPRESSION

DRIVER DIAGRAM

AIM

Improve clinical outcomes for patients with depression to intensive control

PRIMARY DRIVERS	SECONDARY DRIVERS	SPECIFIC CHANGES TO TEST
Access to primary mental health care	Local capability building with a task shifting approach	Train local physicians, nurses, CHW
	Early detection/diagnosis	Active case finding/health fairs
	Linkage of patients to the clinic	Free, timely primary care
Clinical assessment and Follow-up	Clinic control visits	Implement an appointment system for follow-up
	Support groups	Adapt validated scales for clinical outcomes assessment
		Provide group sessions
Change packages	Guidelines/algorithms	Adapt clinical guidelines/algorithms to local context
	Evidence supported-treatment	Adapt evidence-based pharmacologic and cognitive-behavioral therapy interventions
Supply chain	Medications available	Adapt push/pull systems

Outcome measures

- By July 31st, 2013:
  % of patients with depression under reasonable control

Balancing measures

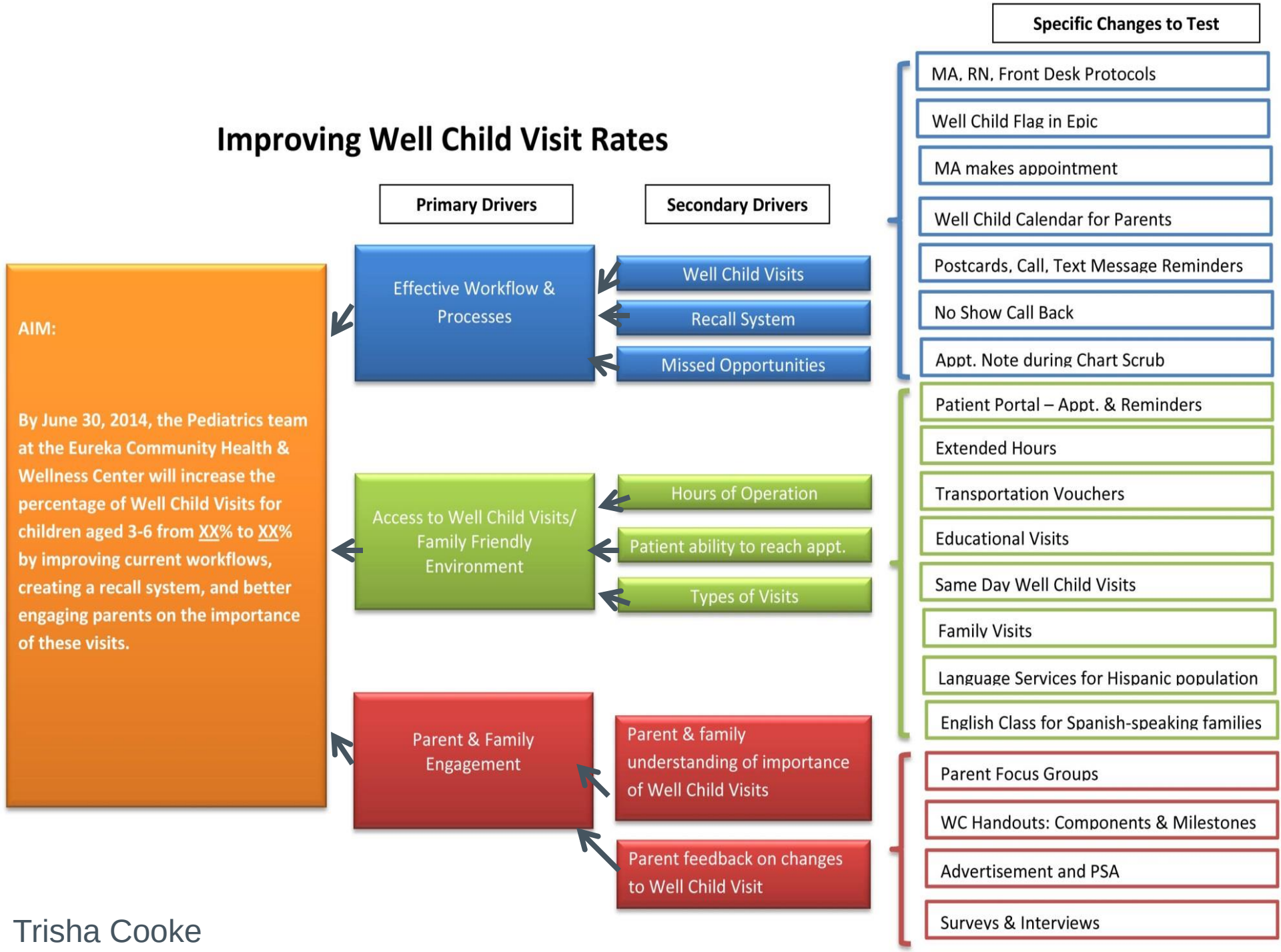
- Level of patient satisfaction (M)

Process measures

- . Total number of patients diagnosed with depression in the clinic
- .Average PHQ9 score per month
- .Percent of patients with depression attending follow up visits

Dr. Jafet Arrieta

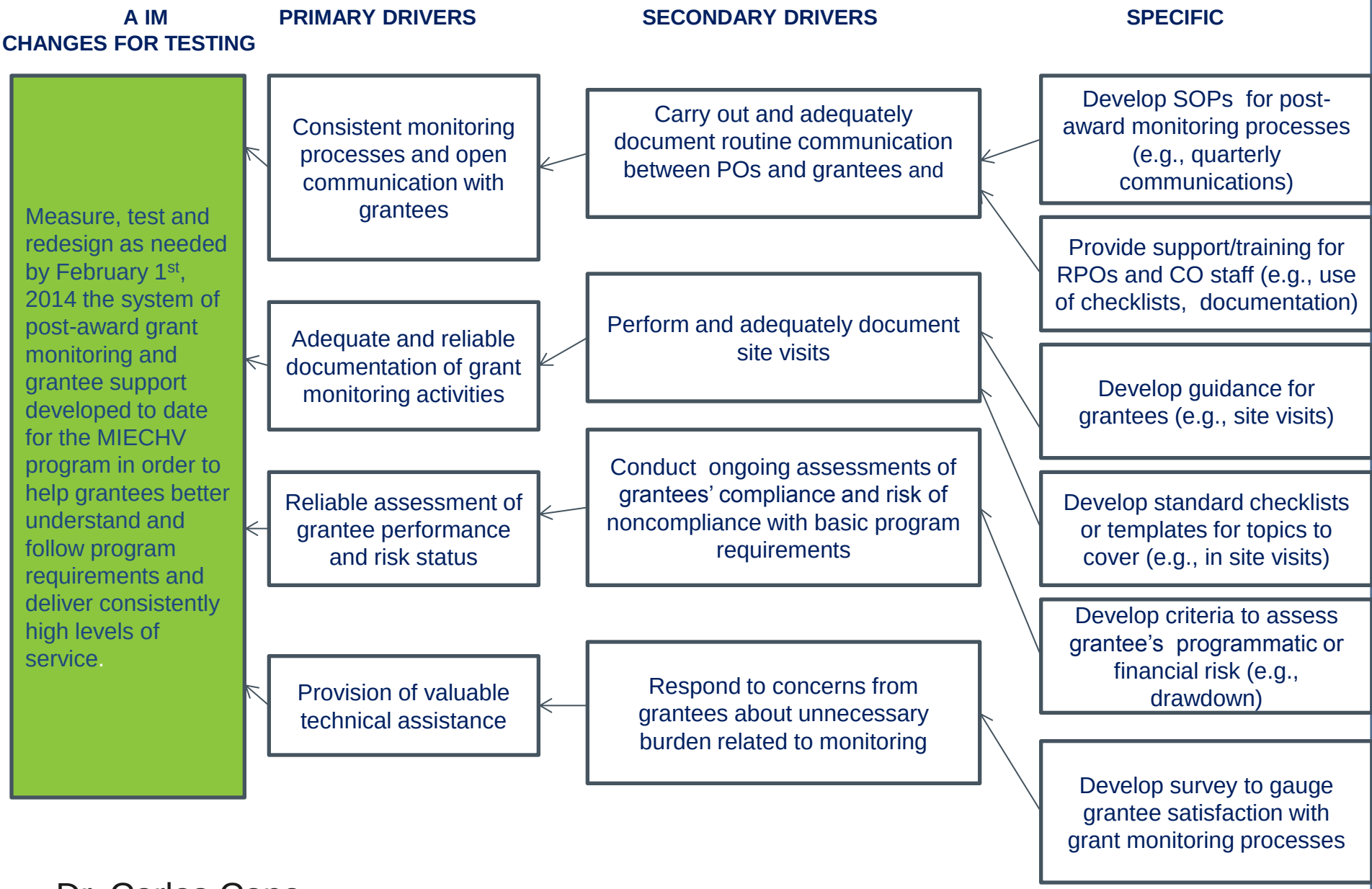
Improving Well Child Visit Rates



Trisha Cooke

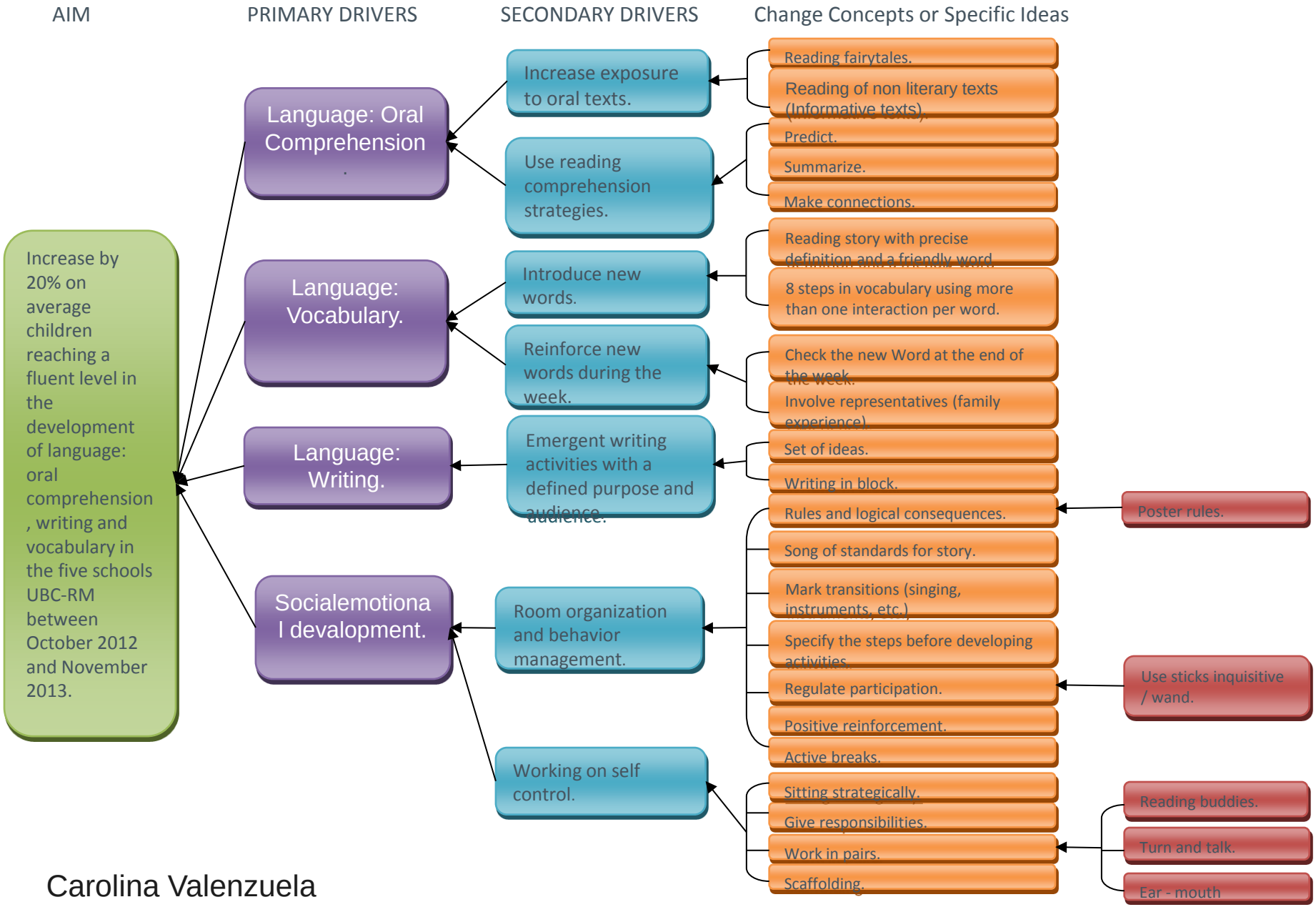
Revised 10/1/13

Driver Diagram
Demonstrating Effective Home Visiting
Grant Monitoring and Grantee Support



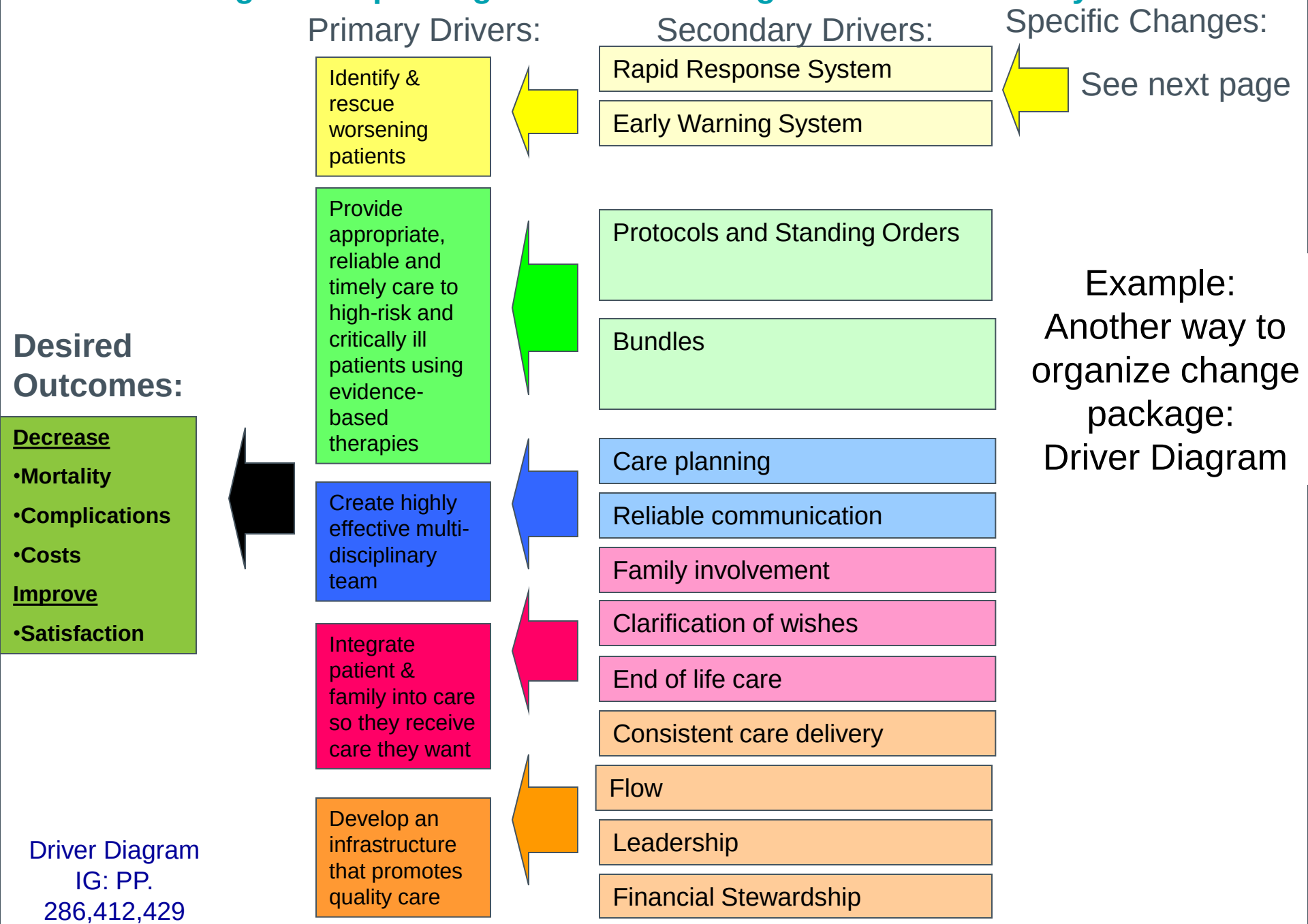
Dr. Carlos Cano

Improve Early Childhood Literacy



Carolina Valenzuela

Driver Diagram: Improving Outcomes for High-Risk and Critically Ill Patients



Example: Another way to organize change package: Driver Diagram

Driver Diagram
IG: PP.
286,412,429

Primary Driver	*Secondary Driver*	*Key Change Concepts*	*Specific change ideas*
P1. Identify & rescue worsening patients	**S1. Rapid response system**	Implement a Rapid Response Team	Standardize call criteria
			Define response team members (including a sponsor)
			Establish protocols/guidelines
			Educate units about when and how to call
			Create process to gather data about calls
			Use steering committee for development and on-going testing oversight
		Perfect triggering	Review call criteria effectiveness
			Test/Add an Early Warning System
			Review missed opportunities (e.g. unscheduled transfers to ICU)
			Work towards "goal" call rate
		Perfect responding	Develop discipline-specific criteria for team members
			Review team performance in three spheres: care provided, response time, and caller satisfaction
			Develop tool box to be brought to activations (examples: i-stat, IV tubing, lab tubes, BP cuff, documentation form)
			Do case review
			Track response time
		erfect evaluation	Review overall process to evaluate need to improve
			Develop data tool for tracking
	S2. Early warning systems	Use objective measures to assess disease severity	Test a measurement tool such as MEWS
			Use an overall bed-board to assess layout of unit
		Create a process for use of scoring tools	Create rules for when to call RN, MD, and activate system
		Improve identification of severe sepsis	Apply the Evaluation for Severe Sepsis Screening Tool in clinical areas such as the ED, wards, and ICU
			Have nurses and Rapid Response Team complete severe sepsis screening
P2. Provide appropriate, reliable and timely care to high-risk &	**S3. Protocols and Standing Order Sets**	Develop weaning protocol	Pre-extubation worksheet

Can one learn more by diagnosing the current process or system, or by changing something?

"Teams often spend too much time thinking about all of the possible options, ramifications, and implementation issues before proceeding with a test of a change.

- Improvement efforts are frequently stuck in the diagnostic journey (analysis paralysis).
- The *alternative* is to very quickly run a test.
- Experience has shown this latter approach leads to accelerated learning and improvement."

What Changes Can We Make That Will Result in Improvement?

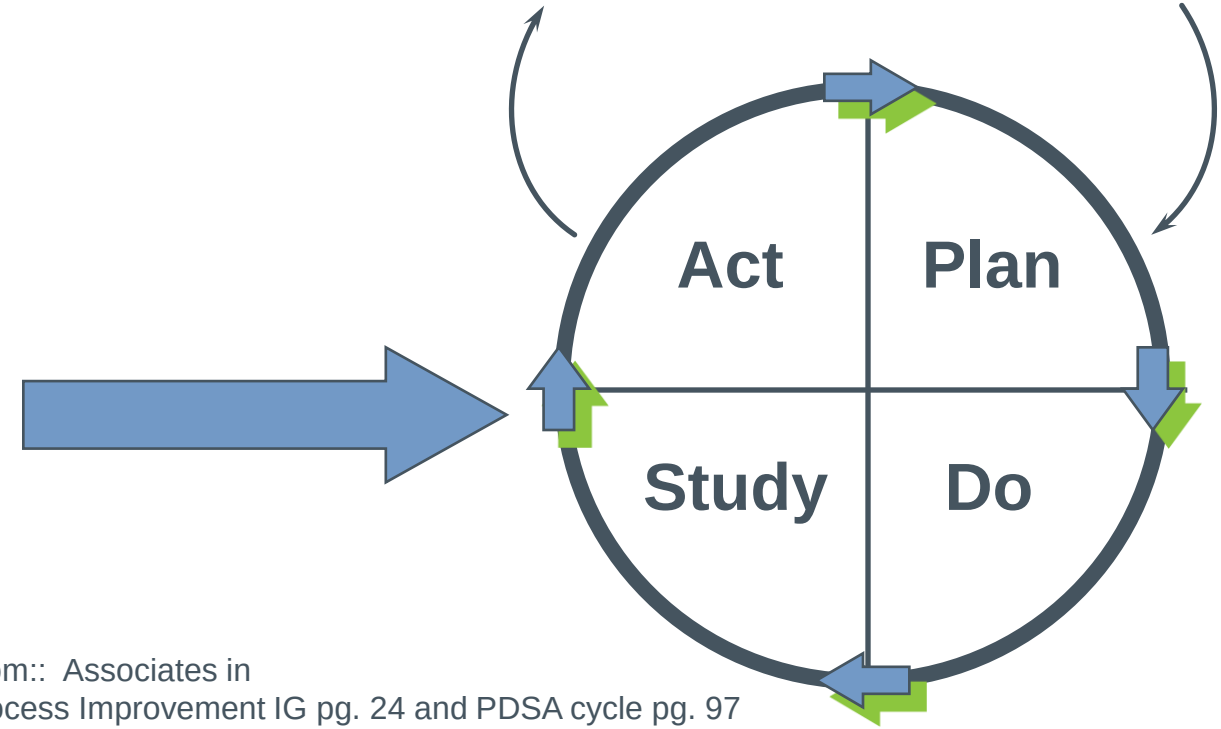
- We give them this!
- The Change Package contains the key elements of high performing systems
  - Not starting from scratch!
- Use the Change Package to identify the changes needed in your system to achieve your aim
  - Touch it a lot! Faculty reference it.
  - Use change pkg. to structure team report each month.
  - In LS- teams evaluate how much of change package they are working in..identify where work next

Model for Improvement

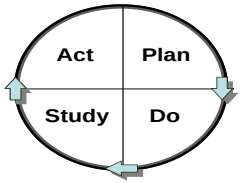
What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?



From:: Associates in Process Improvement IG pg. 24 and PDSA cycle pg. 97



MODEL FOR IMPROVEMENT ***DATE*** _____

Objective for this PDSA Cycle:

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

What question(s) do we want to answer on this PDSA cycle?

Plan:

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

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

Predictions (for questions above based on plan):

Do:

Carry out the change or test; Collect data and begin analysis.

Study:

Complete analysis of data;

Compare the data to your predictions and summarize the learning

Act:

Are we ready to make a change? Plan for the next cycle

Project: Reducing SSI	Cycle #: A1	Date: 28 Oct 2005

Objective: *Objective(s) for this PDSA Cycle:* Test new procedure for administering prophylactic antibiotics: Pre-op nurse will hang pre-op antibiotic; Circulator will start infusion after "checking in" patient.

PLAN

Questions	Predictions
1. Will pre-op nurse remember to hang antibiotic without turning it on	1. Yes, but circulators will resent the new process because they don't think it's 'their job."
2. Will antibiotic be started within 60-minute window prior to incision?	2. Antibiotic will be started with 60 minutes of incision
3. Will circulator remember to start infusion and document antibiotic?	3. Yes, but Anesthesiologist may interfere with new process.

What data will be collected during this time? (Forms to be used): Staff feedback will be collected by the OR Manager and/or Supervisor. Chart will be reviewed immediately to find timing and documentation of antibiotic and to determine whether it was started within 60 minutes of incision.

What: Educate rationale and new process, obtain staff feedback

When: October 28

Where: One to three patients prior to joint replacement surgery

DO the Action Plan

What went wrong? What happened that was not part of the plan?

We planned to test the new procedure in three cases; however, two patients had vancomycin so we were unable to test the change. We did test the new procedure in one patient prior to TKR.

STUDY

Complete analysis of data. Summarize what was learned include results of predictions.

1. The pre-op nurse remembered to hang the antibiotic and the circulator voiced no complaints.

2. Ancef was started at 1143 and incision time was 1227 so antibiotic was initiated within the 60-minute window.

3. The circulator remembered to start and document the infusion and the anesthesiologist did not interfere..

4.

ACT

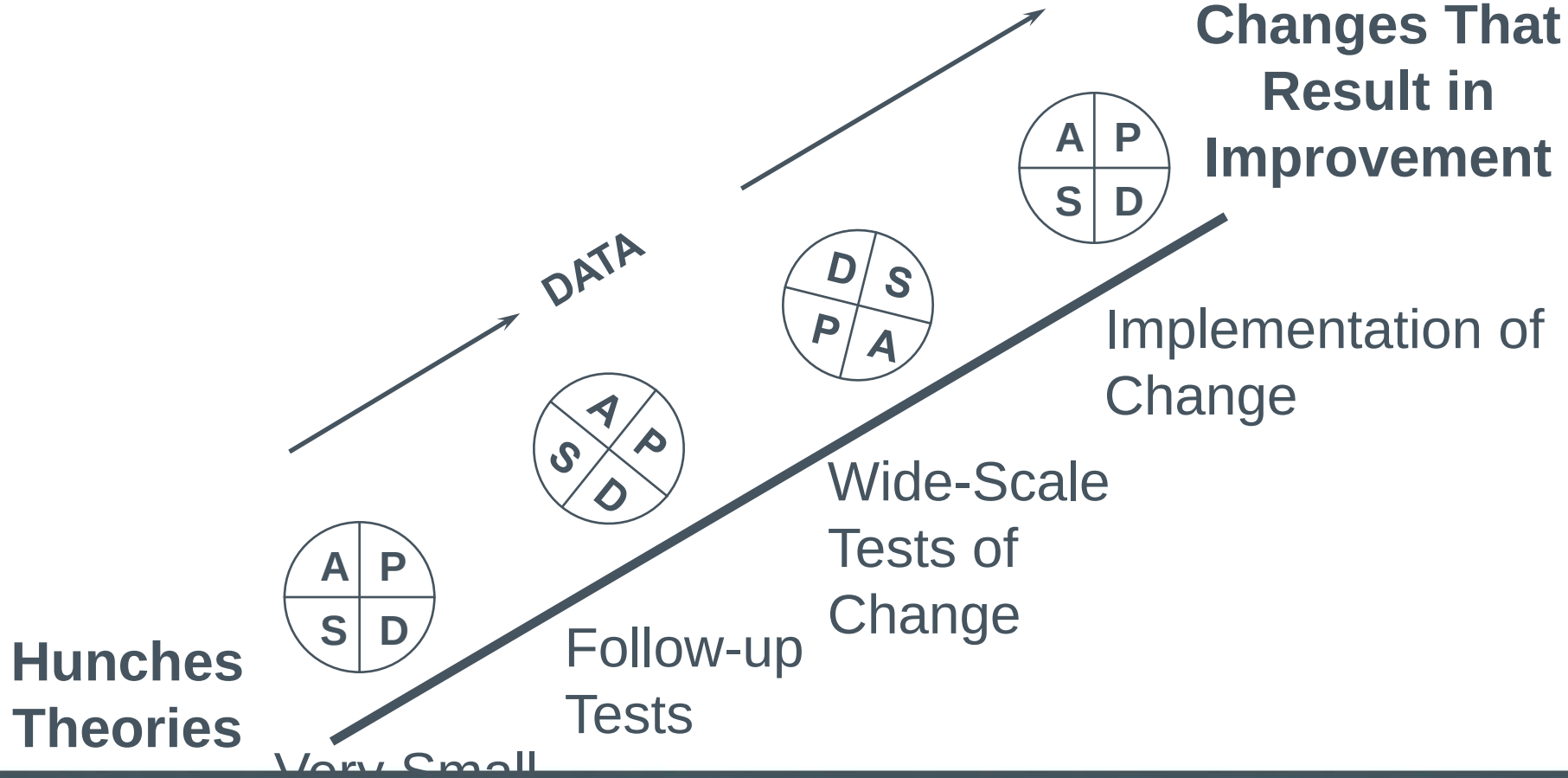
What decisions were made from what was learned?

Based on the initial test, the new procedure is working well.

What will be the next cycle?

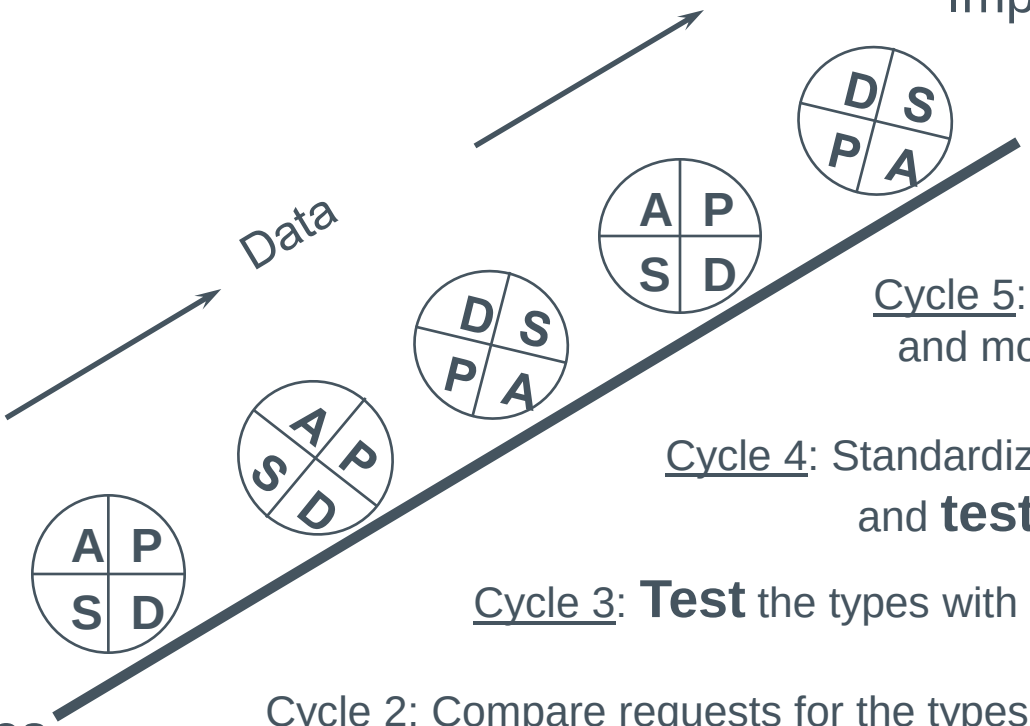
We plan to test again tomorrow on two TJR patients of a different orthopedic surgeon

Repeated Use of the PDSA Cycle



Series of PDSA Cycles to Improve Access

Insert examples of ramps pertinent To your own collaborative topic



Cycle 5: Implement standards and monitor their use

Cycle 4: Standardize appointment types and **test** their use

Cycle 3: **Test** the types with 1-3 MDs' patients

Cycle 2: Compare requests for the types for one week

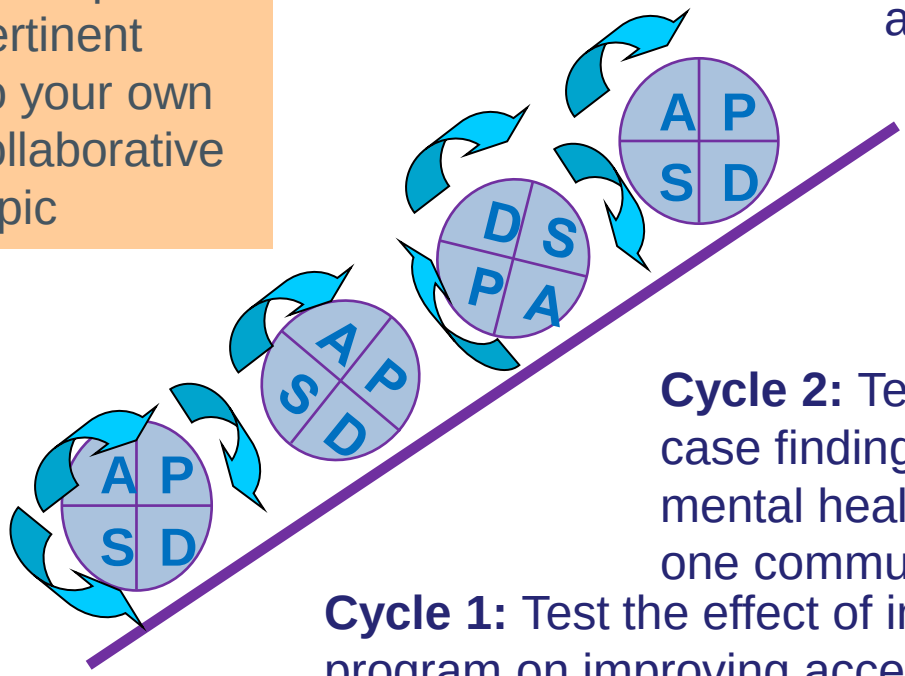
Cycle 1: Define a small number of appointment types and **test** with staff

Reduction of appointment types will increase

Ramp 4 Aim

Improve the access to mental healthcare and the screening and diagnosis of patients with depression

Insert examples of ramps pertinent To your own collaborative topic



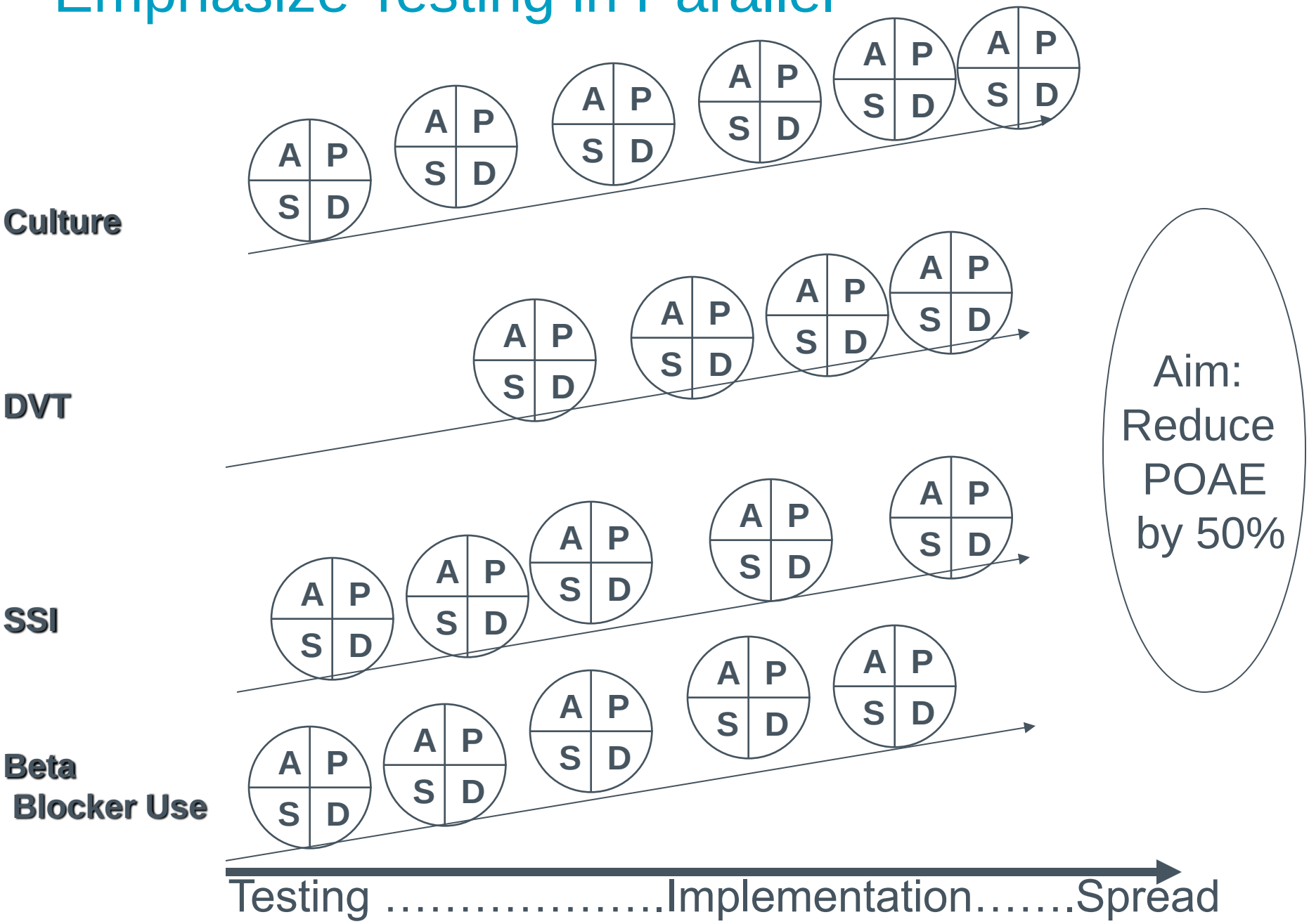
Cycle 4: Implement an active case finding program on improving access to mental health care and diagnosis of depression in all of the communities every six months

Cycle 3: Test the effect of implementing an active case finding program on improving access to mental health care and diagnosis of depression in three communities

Cycle 2: Test the effect of implementing an active case finding program on improving access to mental health care and diagnosis of depression in one community

Cycle 1: Test the effect of implementing an active case finding program on improving access to mental health care and diagnosis of depression in 30 houses of one community

Emphasize Testing in Parallel



‘STOP AKI’- Driver Diagram

AIM

Aim:

- **Reduce 30 day mortality in acute kidney injury patients by 30% from 2010/13 baseline (26.1%) over a period of 10 months**
- **Reduce LOS for acute kidney injury by 30% from 2010/13 baseline (18.0%) over a period of 10 months**

PRIMARY DRIVERS

1) Identification of AKI

2) Effective Intervention & Monitoring

3) Process that ensures effective handover

4) Staff and patient engagement

SECONDARY DRIVERS

1. **Effectively identifying patients at risk**
2. **AKI alert tool (automated clinical chemistry)**
3. AKI definitions and guidance: On all in-patient U&E
4. Increase staff understanding of AKI and its evaluation
5. Communication of appropriate patients to nephrology on-call
6. Accurate coding of AKI

1. **AKI Bundle**
2. Appropriate and timely nephrology referral
3. Timely investigations: 24h UE, u/o, MEWS, dipstick, USS
4. Senior review protocol

1. **Medication chart alert**
2. **Patient empowerment leaflet**
3. Presentation and tracking UE results
4. AKI care guideline > intra-note pathway
5. Feedback from incident reporting

1. **Analysis of patient journey**
2. **Clinical lead and key stakeholder nominated staff**
3. **QIM training**
4. Project ‘marketing’ and profile, campaign, patient story
5. Learning boards in A&E, AMAU, SAU
6. Mobile webpage/ smart phone reference
7. Intranet guidance linked to clinical chemistry alert

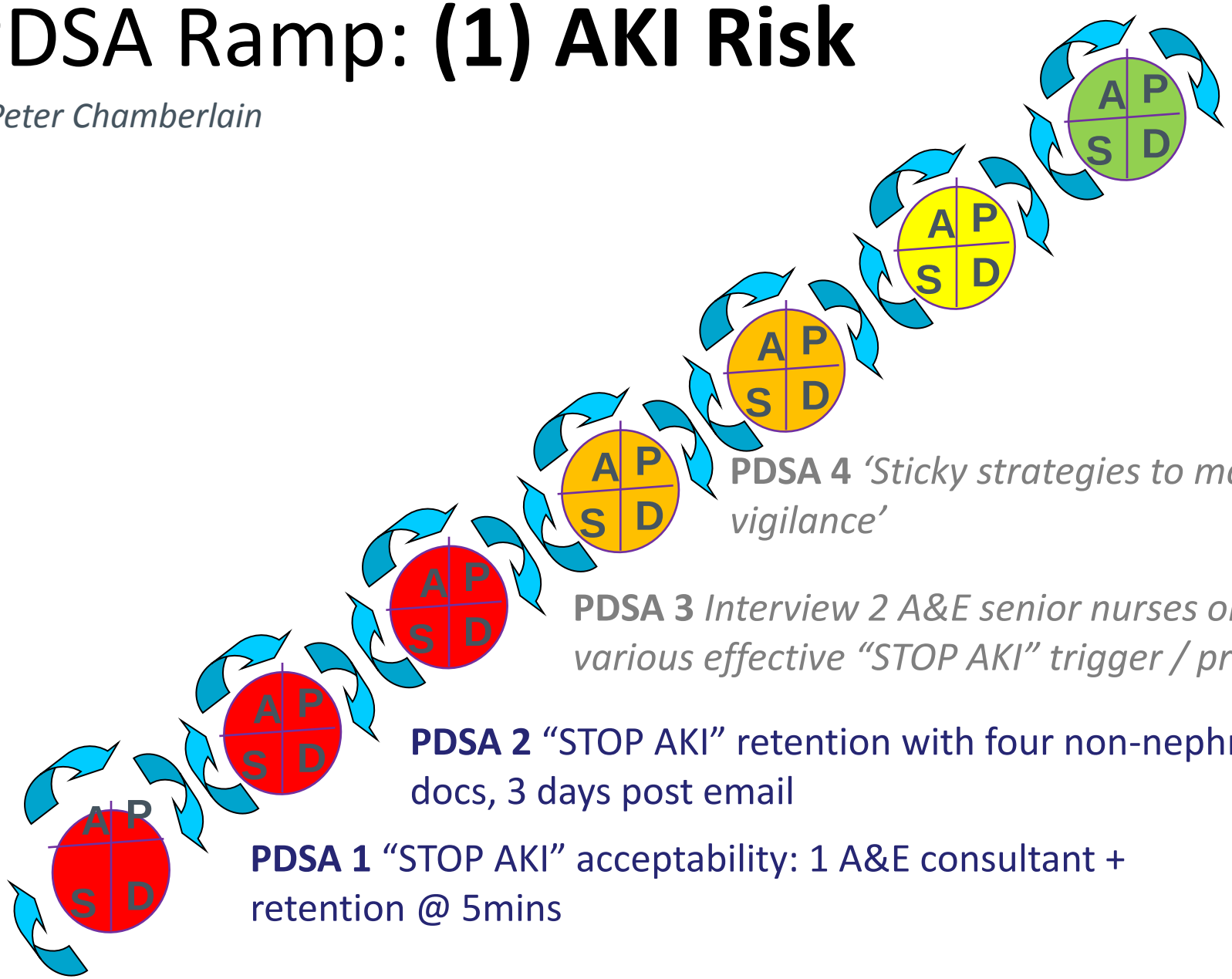
Bold = early priorities

V04 /11.10.2013

Dr Peter Chamberlain,

PDSA Ramp: **(1) AKI Risk**

Dr Peter Chamberlain



PDSA 4 *'Sticky strategies to maintain vigilance'*

PDSA 3 *Interview 2 A&E senior nurses on various effective "STOP AKI" trigger / prompts*

PDSA 2 "STOP AKI" retention with four non-nephrology docs, 3 days post email

PDSA 1 "STOP AKI" acceptability: 1 A&E consultant + retention @ 5mins

Data Collection	Development	Testing	Implementation	Sustain	Spread

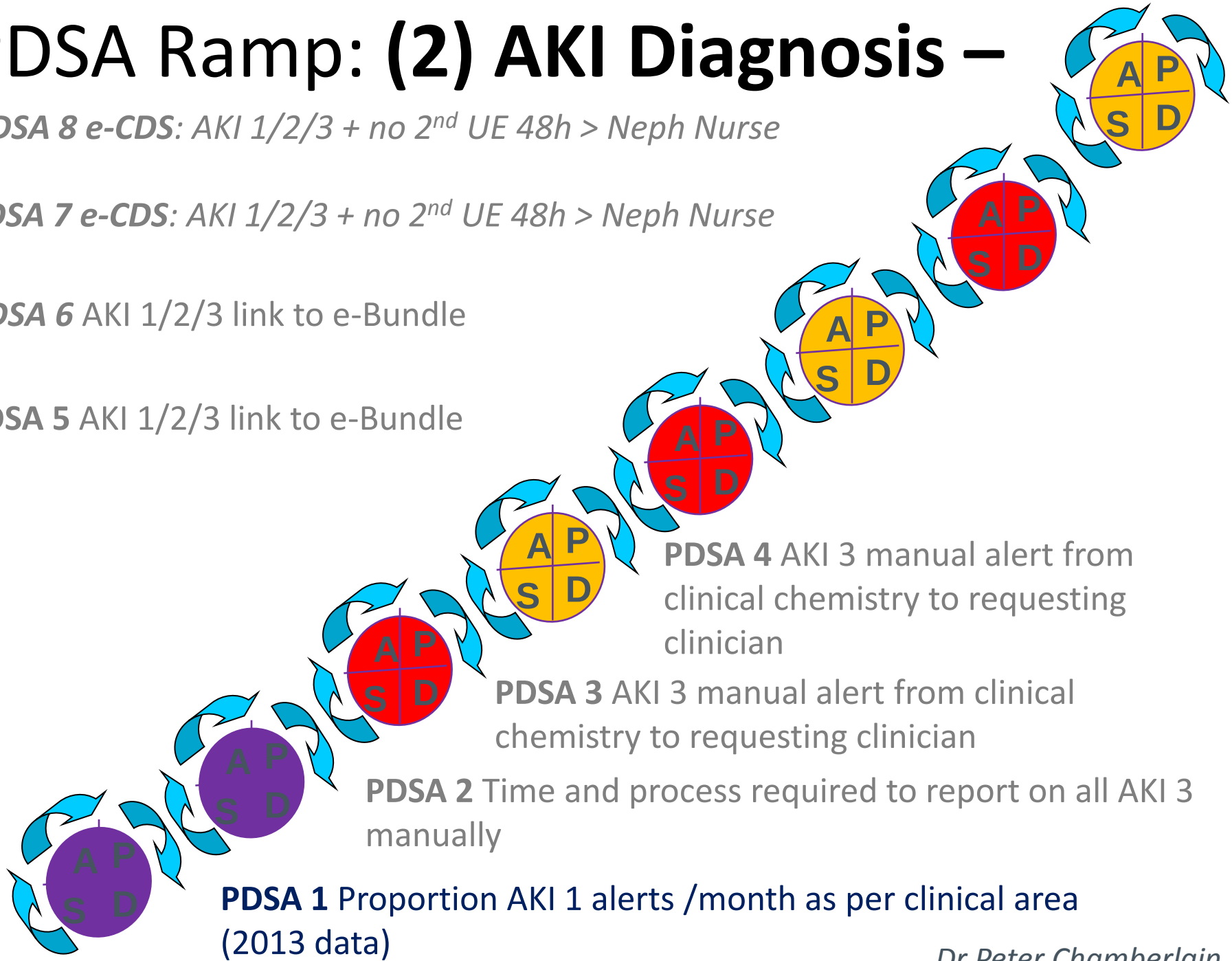
PDSA Ramp: **(2) AKI Diagnosis –**

***PDSA 8 e-CDS**: AKI 1/2/3 + no 2nd UE 48h > Neph Nurse*

***PDSA 7 e-CDS**: AKI 1/2/3 + no 2nd UE 48h > Neph Nurse*

PDSA 6 AKI 1/2/3 link to e-Bundle

PDSA 5 AKI 1/2/3 link to e-Bundle



PDSA 4 AKI 3 manual alert from clinical chemistry to requesting clinician

PDSA 3 AKI 3 manual alert from clinical chemistry to requesting clinician

PDSA 2 Time and process required to report on all AKI 3 manually

PDSA 1 Proportion AKI 1 alerts /month as per clinical area (2013 data)

Dr Peter Chamberlain,

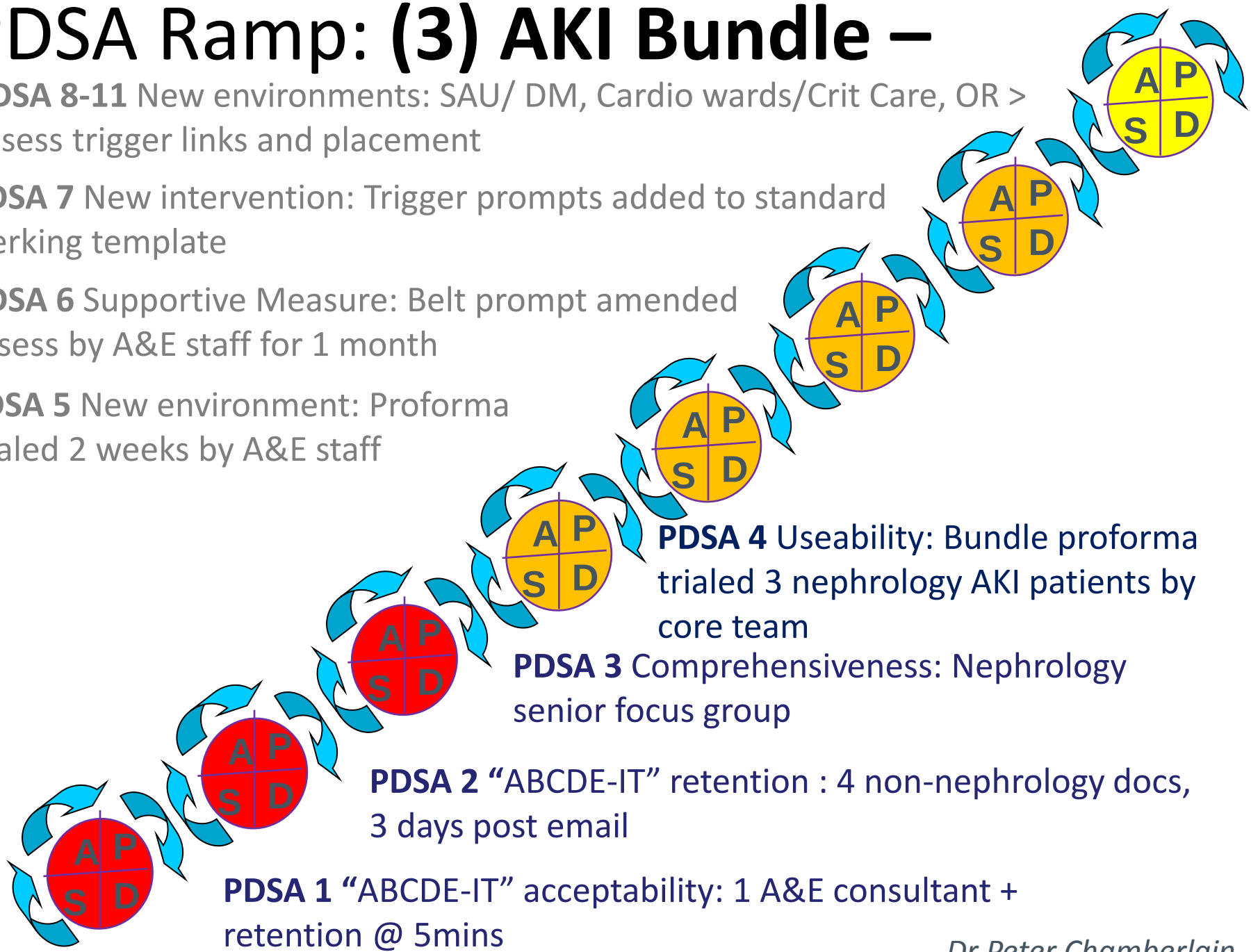
PDSA Ramp: **(3) AKI Bundle –**

PDSA 8-11 New environments: SAU/ DM, Cardio wards/Crit Care, OR > assess trigger links and placement

PDSA 7 New intervention: Trigger prompts added to standard clerking template

PDSA 6 Supportive Measure: Belt prompt amended assess by A&E staff for 1 month

PDSA 5 New environment: Proforma trialed 2 weeks by A&E staff



PDSA 4 Useability: Bundle proforma trialed 3 nephrology AKI patients by core team

PDSA 3 Comprehensiveness: Nephrology senior focus group

PDSA 2 "ABCDE-IT" retention : 4 non-nephrology docs, 3 days post email

PDSA 1 "ABCDE-IT" acceptability: 1 A&E consultant + retention @ 5mins

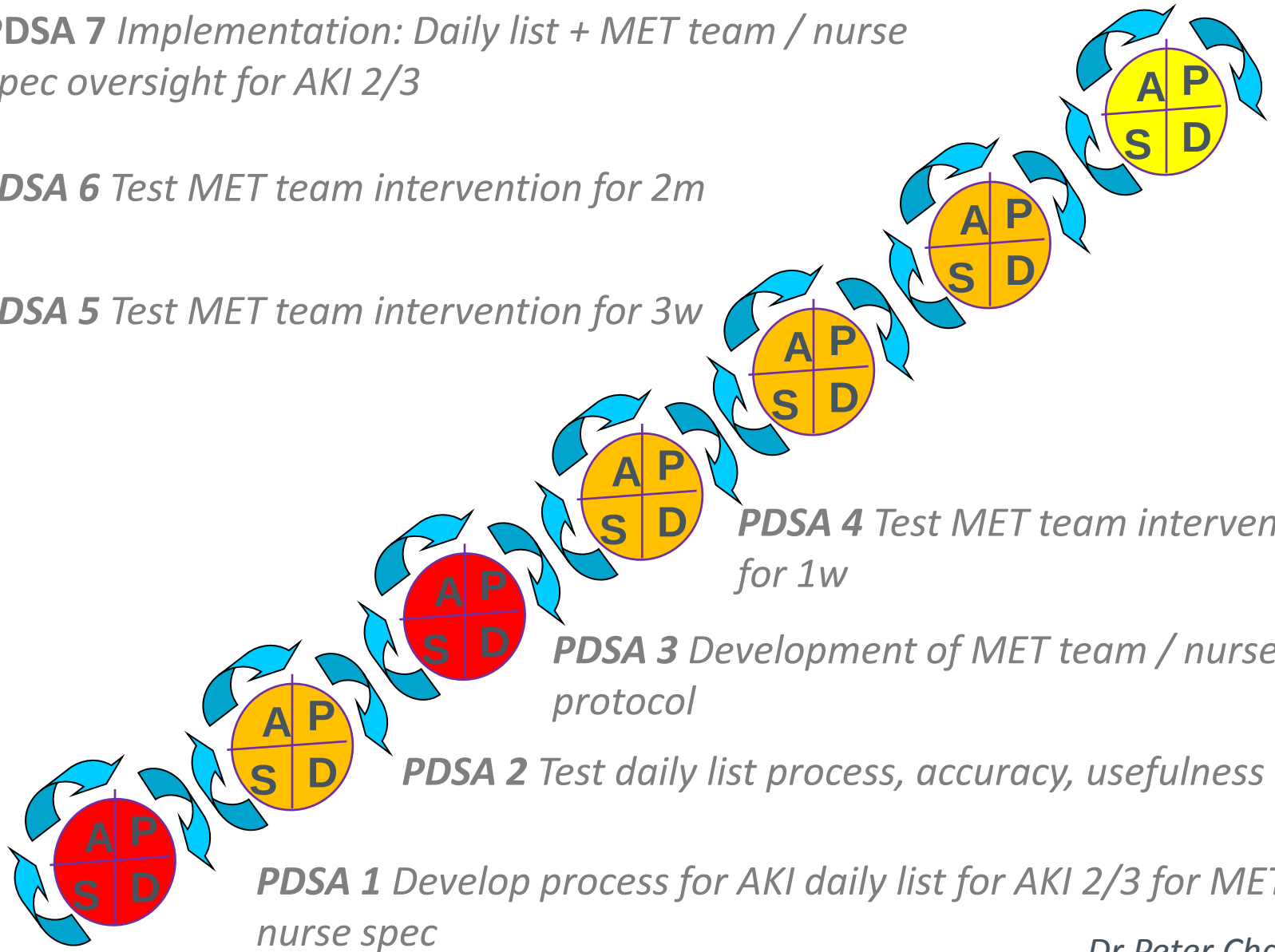
Dr Peter Chamberlain,

PDSA Ramp: **(4) Effective Monitoring**

PDSA 7 *Implementation: Daily list + MET team / nurse spec oversight for AKI 2/3*

PDSA 6 *Test MET team intervention for 2m*

PDSA 5 *Test MET team intervention for 3w*



PDSA 4 *Test MET team interventions for 1w*

PDSA 3 *Development of MET team / nurse specialist protocol*

PDSA 2 *Test daily list process, accuracy, usefulness*

PDSA 1 *Develop process for AKI daily list for AKI 2/3 for MET/ nurse spec*

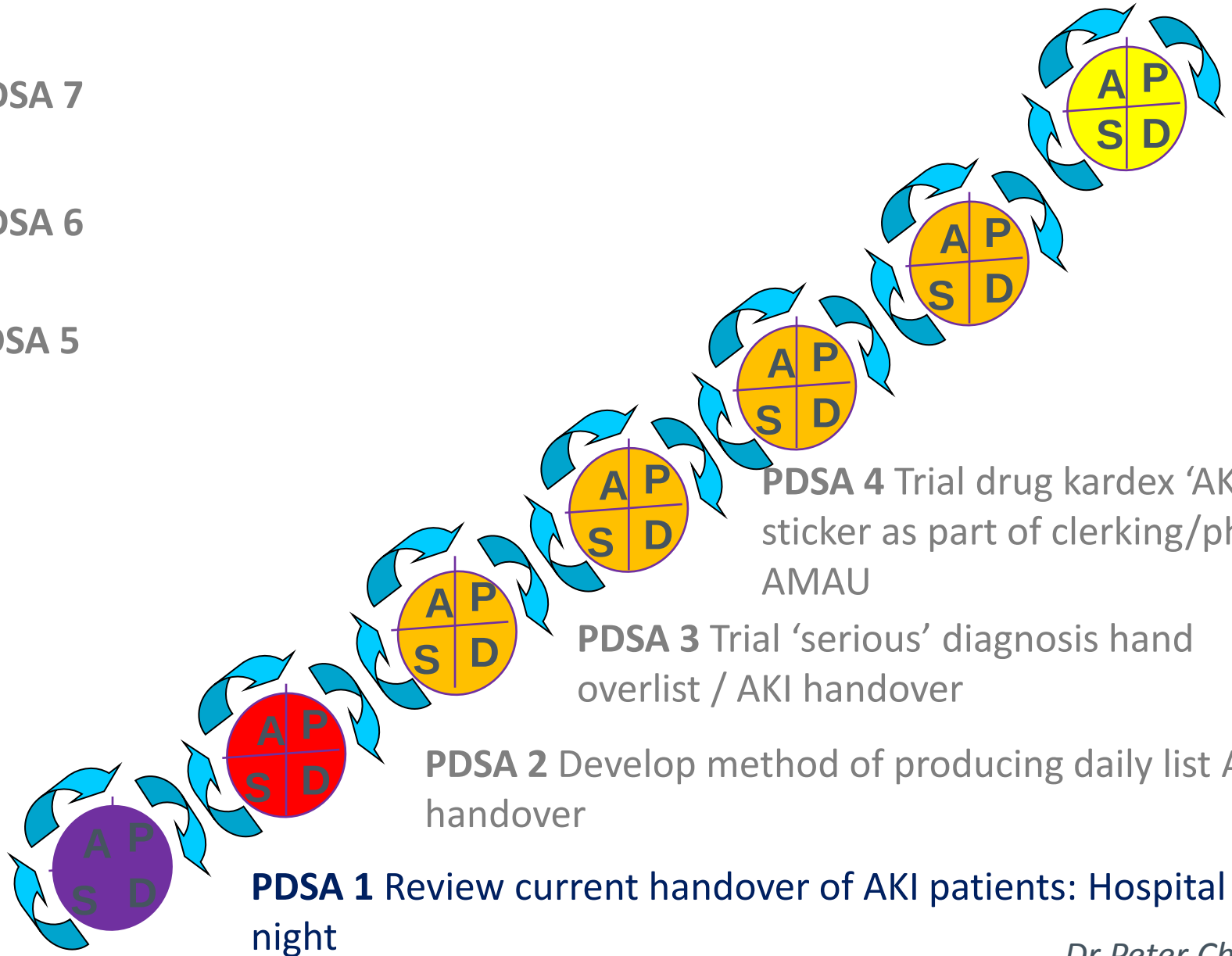
Dr Peter Chamberlain,

PDSA Ramp: **(5) Effective Handover**

PDSA 7

PDSA 6

PDSA 5



PDSA 4 Trial drug kardex 'AKI alert' sticker as part of clerking/pharmacy AMAU

PDSA 3 Trial 'serious' diagnosis hand overlist / AKI handover

PDSA 2 Develop method of producing daily list AKI for handover

PDSA 1 Review current handover of AKI patients: Hospital at night

Dr Peter Chamberlain,

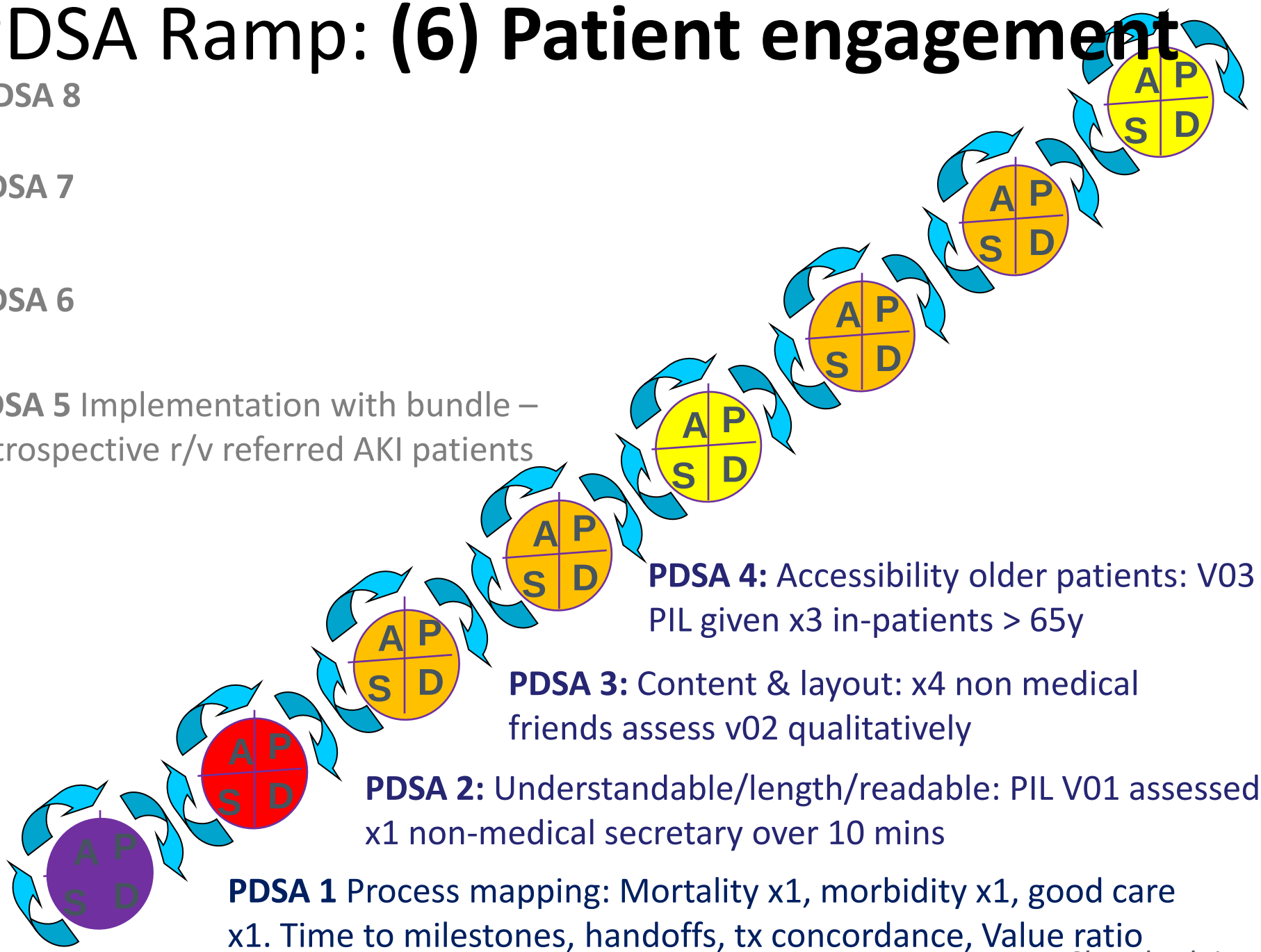
PDSA Ramp: **(6) Patient engagement**

PDSA 8

PDSA 7

PDSA 6

PDSA 5 Implementation with bundle – retrospective r/v referred AKI patients



PDSA 4: Accessibility older patients: V03 PIL given x3 in-patients > 65y

PDSA 3: Content & layout: x4 non medical friends assess v02 qualitatively

PDSA 2: Understandable/length/readable: PIL V01 assessed x1 non-medical secretary over 10 mins

PDSA 1 Process mapping: Mortality x1, morbidity x1, good care x1. Time to milestones, handoffs, tx concordance, Value ratio

Dr Peter Chamberlain,

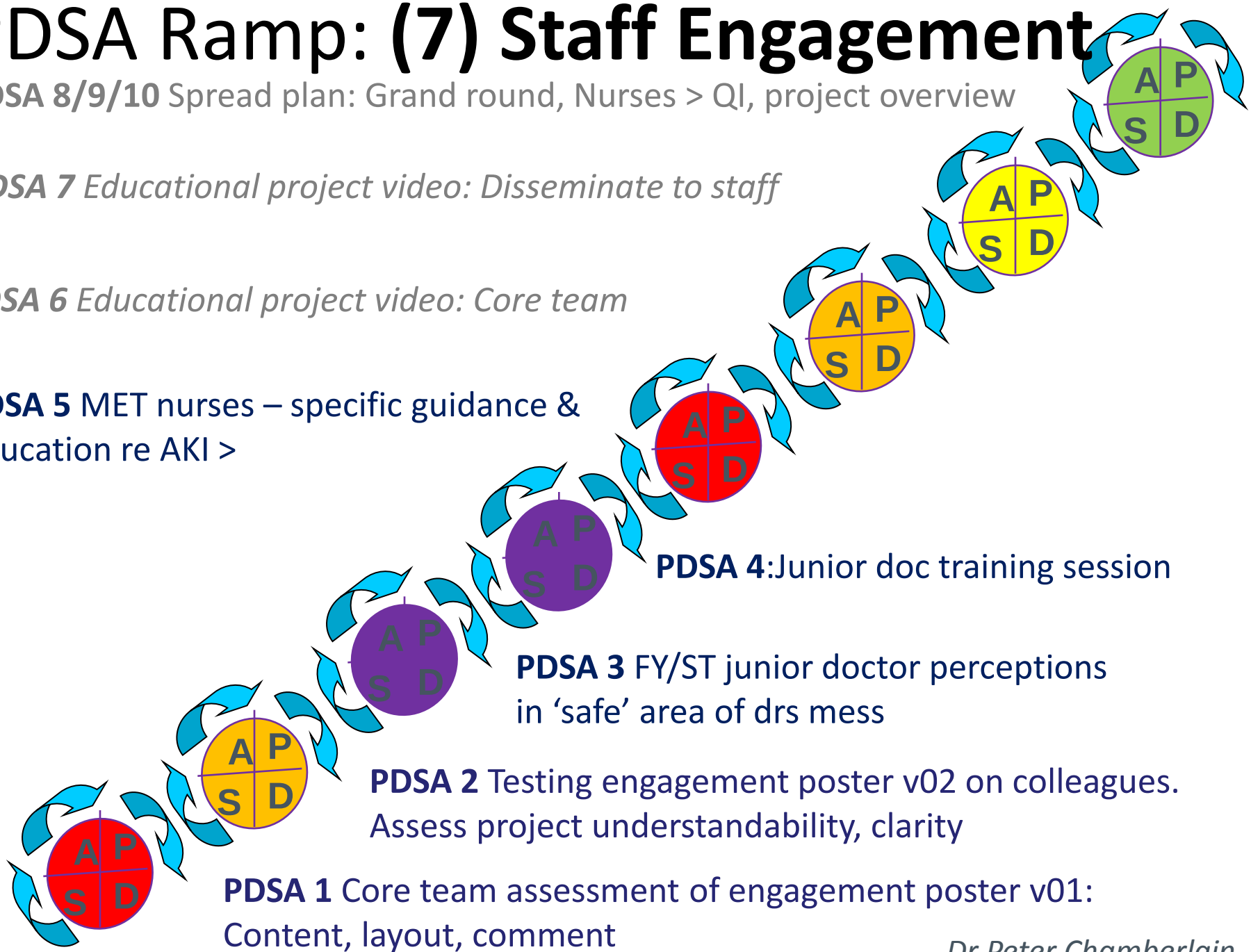
PDSA Ramp: **(7) Staff Engagement**

PDSA 8/9/10 Spread plan: Grand round, Nurses > QI, project overview

PDSA 7 *Educational project video: Disseminate to staff*

PDSA 6 *Educational project video: Core team*

PDSA 5 MET nurses – specific guidance & education re AKI >



PDSA 4:Junior doc training session

PDSA 3 FY/ST junior doctor perceptions in 'safe' area of drs mess

PDSA 2 Testing engagement poster v02 on colleagues. Assess project understandability, clarity

PDSA 1 Core team assessment of engagement poster v01: Content, layout, comment

Dr Peter Chamberlain,

Cycles for *Testing*

New concept for many teams:

- Increase belief that the change will result in improvement
- Document how much improvement can be expected from the change
- Learn how to adapt the change to conditions in the local environment
- Evaluate costs and side-effects of the change
- Minimize resistance upon implementation

Techniques to Accelerate Testing

- Plan multiple cycles for a test of a change
- Think a couple of cycles ahead
- **Scale down size of test (# of patients, location)**

Deciding on the Scale of the Test

		Current Commitment Within Organization		
		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*

Improvement Guide Pg. 146

Exercise: Scope of PDSA Cycles

- ***Scope of the next PDSA cycle?***
- ***--Very small scale test? –Small scale test? --Large scale test? --Implement?***

- Case 1: The staff is still resistant to begin using the new patient contract for pain management, but you have high confidence that it will work. Even if it did not work out, there would be no negative impact on the clinic. What should be the scope of the next PDSA cycle?

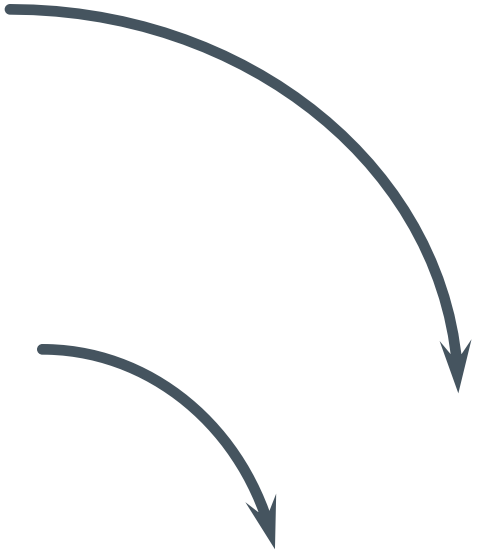
- Case 2: The new on-line decision support guidelines have been reviewed by all of the clinicians and approved. Your team has run tests on the system and it has worked well. If for some reason the system failed, a paper back-up is ready for use. What should be the scope of the next PDSA cycle?

Testing on a Small Scale

- Have others that have some knowledge about the change review and comment on its feasibility
- Test with members of the team that developed the change before introducing it to others
- Incorporate redundancy in the test by making the change side-by-side with the existing process or product
- Develop a plan to simulate the change in some way
- Conduct the test in one facility or office in the organization, or with one customer

Decrease the Time Frame for a PDSA Test Cycle

- Years
- Quarters
- Months
- Weeks
- Days
- Hours
- Minutes



Drop down next "two levels" to plan Test Cycle!

Techniques to Accelerate Testing

- 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
- Be innovative to make test feasible
- **Do not try to get buy-in, consensus, etc.**
- **Collect useful data during each test**

Measurement and Data Collection **During PDSA Cycles**

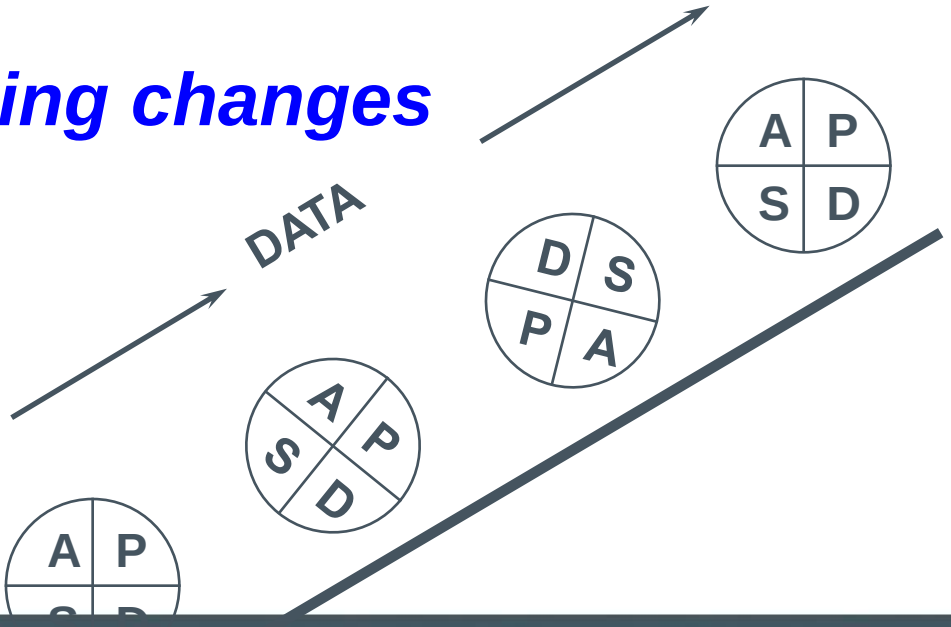
- Collect *useful* data, *not perfect* data - the purpose of the data is learning, not evaluation
- Use qualitative data (feedback) rather than wait for quantitative
- Record what went wrong during the data collection
- Use a pencil and paper until the information system is ready
- Use sampling as part of the plan to collect the data

Reporting PDSA Cycles in a BTS Collaborative

This Collaborative is focused on:

- ***Cycles for testing/adapting changes***
- ***Cycles for implementing changes***

OK to use PDSA cycles for investigations, reviews, measurement, benchmarking, etc. but only *report* cycles for testing, adapting, and implementation of changes

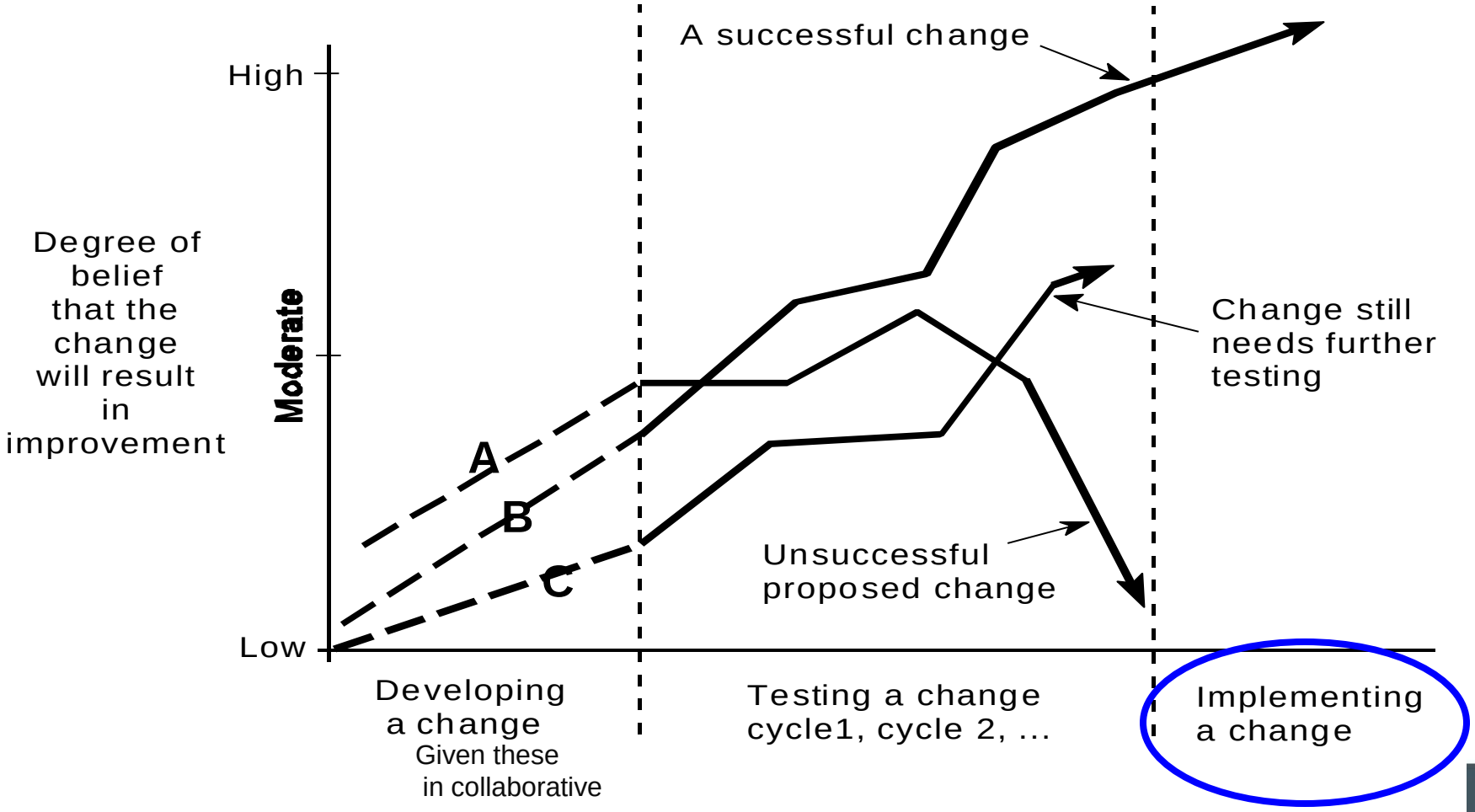


Moving to Implementation: IG Ch.8

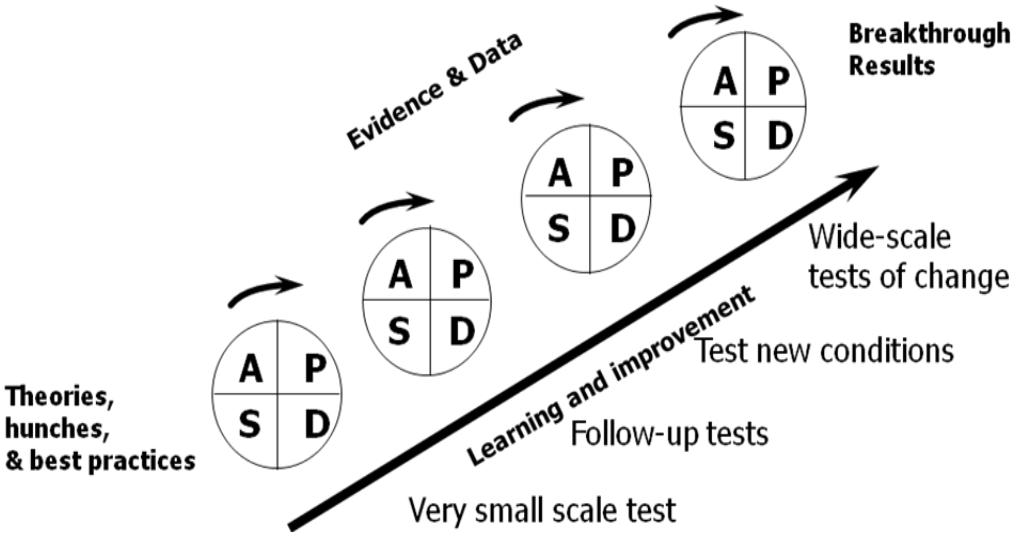
Terminology: Testing/Implementation/Spread

- Collecting data or developing a change: don't have an idea (theory) to test yet. We are learning about the system, looking for ideas to test.
- Testing: Trying and adapting existing knowledge on small scale. Learning what works in your system.
- Implementing: Making this change a part of the day-to-day operation of the system in your pilot population
- Spreading: adapting change to areas or populations other than your pilot populations

Moving from Testing to Implementing a Change



Teach Collaborative Teams When to Move from Testing to Implementation



Gold Standard met?

- **The team has a high degree of belief that the change will result in improvement, and**
- **The cost of failure is small (losses from a failed test are not significant), and**
- **The organization is ready to make the change.**

IG p. 145

Cycles for Implementation: They are Different…

- The change is permanent - need to develop all support processes to maintain change
- High expectation to see improvement (no failures)
- Increased scope will lead to increased resistance
- Generally takes more time than tests

Testing Vs. Implementation PDSA Cycles: Flow

Cycle 1: Recruit one volunteer for one shift, draft duties

Cycle 2: Recruit two volunteers for one week (day shift) revise duties as needed

Cycle 3: Recruit another volunteer, one day two shifts

Cycle 4: Two volunteers for one week of day and evening shift.

Cycle 5: Three volunteers for one day, all shifts.

Cycle 1: Create job descriptions or alter other job descriptions as needed

Cycle 2: Conduct market salary study

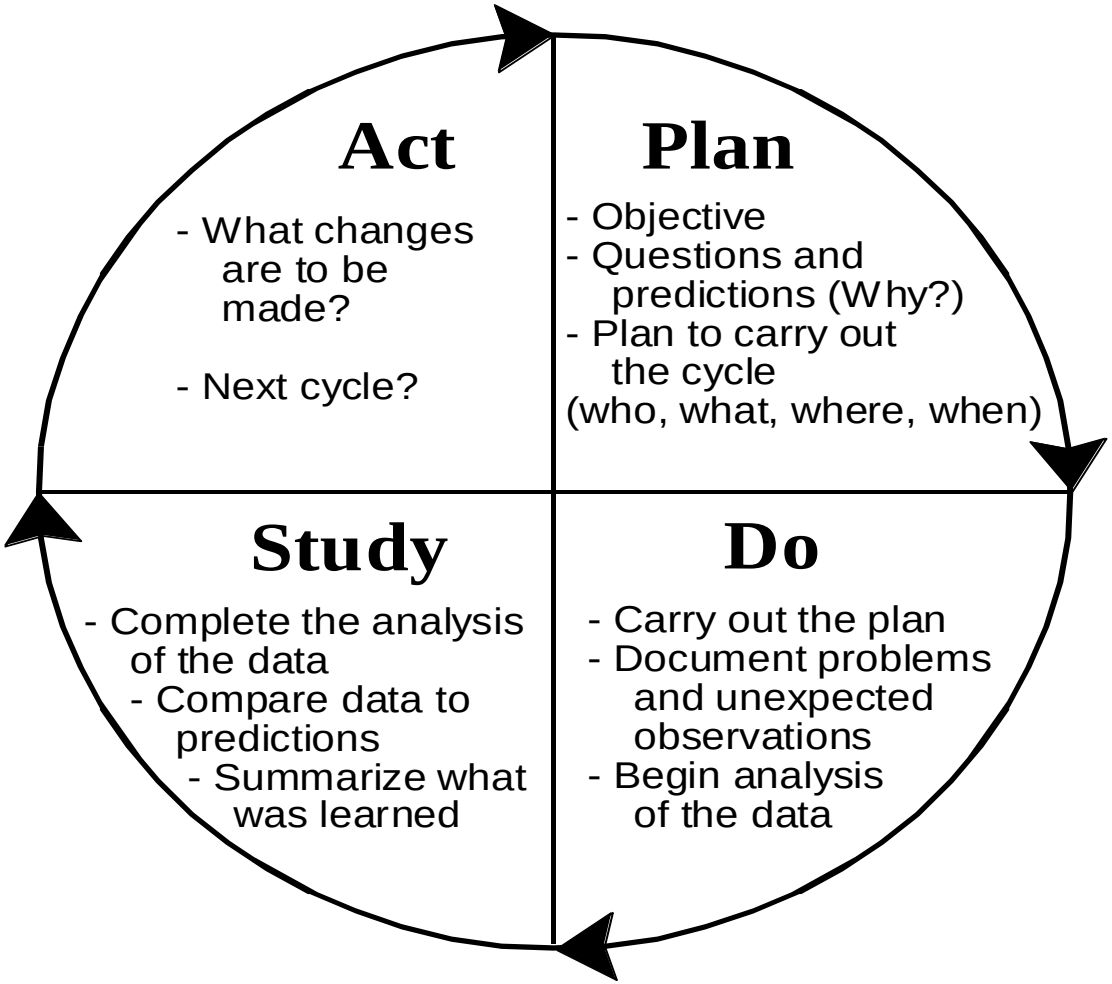
Cycle 3: Post and hire positions

Cycle 4: Training for current employees

Cycle 5: Orientation and training for new employees

Cycle 6: Formalize measures and required reports

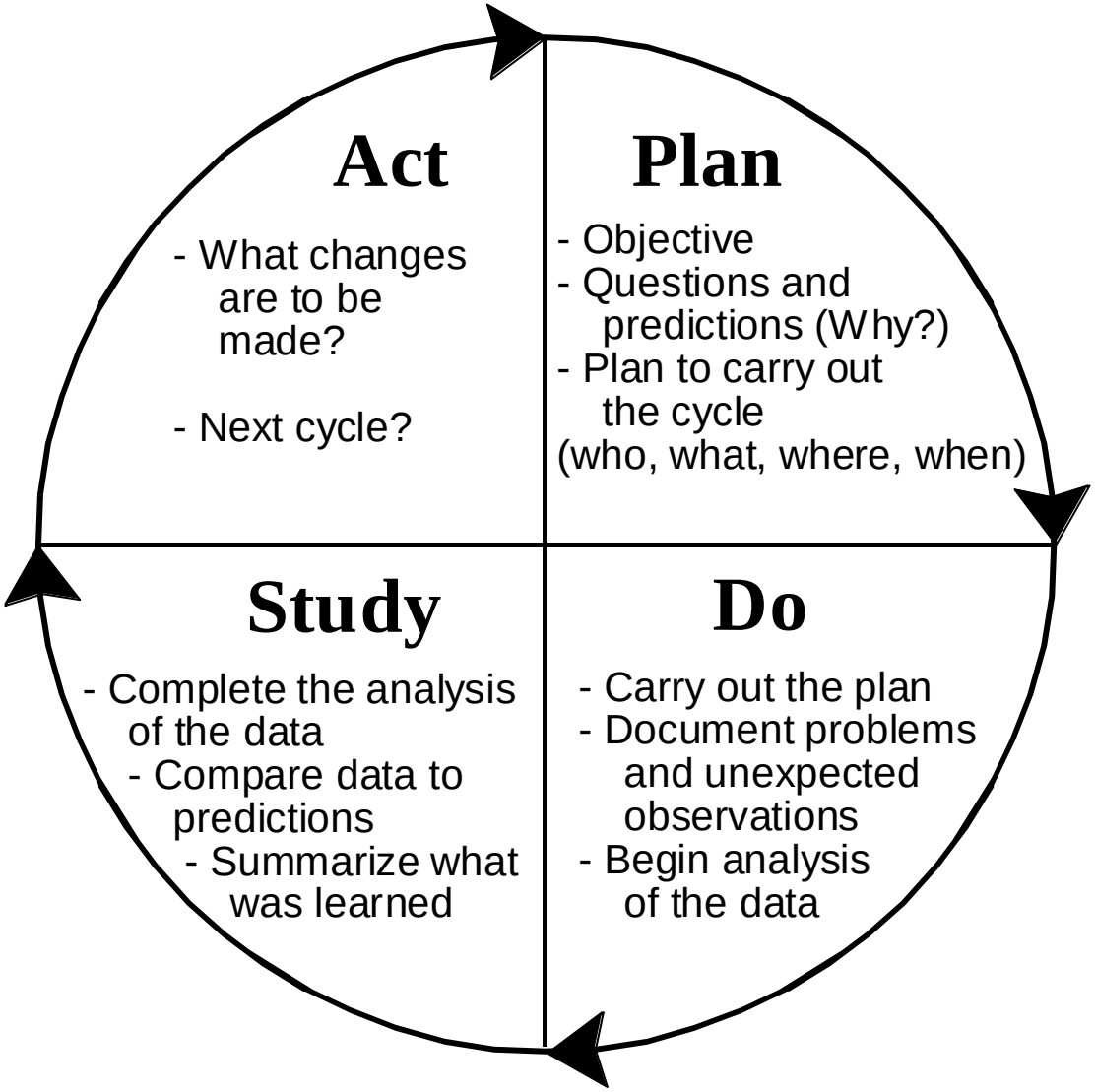
Summary: The PDSA Cycle for Learning and Improvement: Use it Well and Use it All!



Some Key Points Regarding Using PDSA

- Small scale ≠ small change
- Failure in a PDSA cycle ≠ project failure
- It is a learned skill, uncomfortable at first
- Some faculty may be uncomfortable and have learning curve
- It is not “trial and error”, it is “trial and learning”
- Must use all 4 parts to be a PDSA cycle

The PDSA Cycle for Learning and Improvement



Some Key Points Regarding Using PDSA

- It is a learned skill, uncomfortable at first
- Some faculty may be uncomfortable and have learning curve
- It is not “trial and error”, it is “trial and learning”
- Must use all 4 parts to be a PDSA cycle
- Modeling it’s use in your Collaborative is helpful
  - Examples in LS
  - Use it when you are testing a change
- Important to help participants see PDSA as a series of PDSAs
  - Concept design useful for collaborative

IA Pre-Reading For Tomorrow

- Read your assigned pages in the IG
- The next morning you will summarize your portion of the SoPK on flip chart so others can read key elements of your portion of the SoPK.
  - You will teach using this flip chart and any other resources you care to use (5 min teaching time)
- Come up with **at least one example** of how this portion of the SOPK can be applied to one of your Collaboratives to gain insights, ideas, focus for that project. Be prepared to share the example.

Assignment For Tomorrow

- Systems: **Improvement Guide Pages. 77-79 (Last name A-F)**
  - Please teach us:
    - What is a system?
    - What are some key system principles?
    - What does an understanding of systems have to do with improvement?
- Variation: **Improvement Guide Pages. 79-81 (G-L)**
  - Please teach us:
    - What are some key principles of variation?
    - How does understanding variation relate to improvement?
- Knowledge: **Improvement Guide Pages. 81-83 (M-R)**
  - Please teach us:
    - What are some key principles related to gaining knowledge?
    - How do we learn and gain knowledge in improvement efforts?
- Psychology: **Improvement Guide pages 83-85 (S-Z)**
  - Please teach us:
    - What is psychology?
    - What are important contributions in psychology?
    - What role do assumptions play in our interactions?
    - What issues of psychology do we find in our improvement work?

Reflection

- Please turn to your Planning Guide, Pg. 9
- Answer the questions there
- Prepare to share insights, issues, concerns, questions