



STUDENT IMPROVEMENT PRACTICUM HANDBOOK

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INTRODUCTION

Our faculty's experience and published studies of education in quality improvement and patient safety demonstrate the need to couple didactic teaching of basic principles with experiential learning in the context of engaging in an improvement project. The Level 1 courses of the IHI Open School are focused, providing learners new to these concepts a basic vocabulary and knowledge of some of the tools and constructs used. In order to promote both deeper understanding and to achieve the real-time reinforcement from having worked on a successful project that improves a real-world system, the IHI Open School will require an improvement practicum experience for all students who wish to achieve an Advanced Certificate of Completion. Such projects will, of course, need to be rooted in local context and have local supervision. The IHI Open School will promote these projects through local Chapters (and their Faculty Advisors) as much as possible.

General requirements for the student improvement practicum:

- Projects must aim to improve health care or health. [Personal or non-health improvement projects may be useful exercises, but will not qualify as a practicum.]
- Projects must be conducted with a team that will typically include individuals from a variety of professions. More than one (but no more than 4) IHI Open School students can get credit as leaders of a single practicum.
- Students are expected to identify a faculty and health care system sponsor. In some cases, this may be the same person. The faculty sponsor's primary role will be to guide the students in identifying a potential project and coaching the students on the use of improvement methodologies. The health system sponsor's role will be to orient the students to the health care setting and manage relationships within the health care setting.
- Project should not be expected to take more than 6-9 months, though could be much shorter.



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for health professions





STUDENT IMPROVEMENT PRACTICUM CHECKLIST

- Each team member should take the IHI Open School courses to earn their Basic Certificate of Completion **before** starting the project
- Identify a faculty sponsor
- Identify a health system sponsor (In some cases, this may be the same as the faculty sponsor)
- Identify a project with your faculty and health system sponsors
- At the start of your project, submit your final project charter to openschool@ihi.org
- At the conclusion of your project, submit the following to openschool@ihi.org:
 - Final Charter
 - 2 PDSA forms
 - Final report
- After the project is reviewed and approved by the IHI Open School Team, each student team member will be awarded the IHI Open School Advanced Certificate of Completion

FORMS

Overview of the forms:

Charter (Required)

The Charter definitions and guidelines are used to help you flesh out your project. What is your aim? What are you trying to accomplish? Do you need to narrow your scope? Who do you need on your project team? Use the Charter definitions and guidelines forms to create your charter. Your charter should not be a thesis; it should be a one page document.

Charter Assessment Form (Required)

Now that you've created your charter, what's next? Give your faculty sponsor your charter along with the charter assessment form. The charter assessment form will act as a rubric for your faculty as they review your project. They should use both the scoring system and the comment boxes to give you feedback. When you receive the feedback assessment form, revise your charter in response to their feedback. They may encourage you to narrow your scope, include more details, or provide more clarity.

Tree Diagram and Driver Diagram (Optional)

The tree diagram and driver diagram are *optional* forms you may choose to use to visualize your project in another way. You are not required to submit a driver diagram or tree diagram.

Plan Do Study Act (PDSA) Form (Required)

Use the Plan Do Study Act (PDSA) form to carry out your tests. You are required to submit **at least two** PDSA forms at the conclusion of your project. The PDSA forms should be submitted for your test level (as opposed to the overall project level). The final report summary is the final form you are required to submit. You this form to share your lessons learned and overall project learning and should not exceed four pages.

For questions or suggestions to improve this handbook, please email openschool@ihi.org.



STANDARD FORMAT AND DEFINITIONS FOR A CHARTER

What are we trying to accomplish?

General Description (briefly defines WHAT broadly)

- ✓ Provides an initial orientation toward the activities of the improvement initiatives, i.e., design of a new process, improve an existing product or service, etc. Describes the subsystem(s) in the organization where the improvement will take place.

Reason for the Effort (defines WHY)

- ✓ Why is the effort important?
- ✓ How will this improvement benefit the organization?
- ✓ What is the potential downside of this effort for the organization?
- ✓ What data/analysis supports the choice?
- ✓ How does it impact patients?

Expected Outcomes (defines WHAT specifically, still not HOW)

- ✓ Anticipated outcomes (products, tools, and deliverables) or success criteria.
- ✓ Specific objectives to be accomplished.
- ✓ Specific, numerical goals to be attained.
- ✓ Business impact (financial, throughput, cost, and productivity).
- ✓ Time frame: expected dates for key milestones and completion date.

How do we know that a change is an improvement?

Feedback, Measures or Indicators: define the measures that will be used to monitor the impact of this improvement effort:

- ✓ Connect measures to the goals and outcomes of the charter
- ✓ Measures monitor and guide progress of work on charter.
- ✓ Consider qualitative feedback as well as quantitative measures.
- ✓ Consider both outcome and process measures.
- ✓ Are balancing measures needed to guard against sub-optimization (unintended consequences)?

What changes can we make that will lead to improvement?

- ✓ Initial Activities: provide initial focus for the project work, e.g., specific issues to investigate and/or alternatives to consider, concept design for the team to work with, guidance on adapting and testing some specific change ideas, summarize recent patient feedback, do a process map of current reality, etc.
- ✓ Boundaries: list any project constraints, financial limitations, existing guidelines or procedures to be adhered to, software considerations, what is not to be addressed, etc.
- ✓ Resources: Team membership (Includes all members and the rationale for their inclusion on the team) and their expected time commitments for the work.
- ✓ Sponsorship: States the person or guidance team that is providing resources to work on the charter.



CHARTER FORM

What are we trying to accomplish?

Aim statement:

General Description (briefly defines WHAT broadly)

Reason for the Effort (defines WHY)

Expected Outcomes (defines WHAT specifically, still not HOW)

How do we know that a change is an improvement?

Feedback, Measures or Indicators: define the measures that will be used to monitor the impact of this improvement effort:

What changes can we make that will lead to improvement?



CHARTER ASSESSMENT

Student(s) Name _____ Project Name _____

Scale: **1**=Not at all **2**=To a small extent **3**=Somewhat **4**=To a large extent **5**=To a very great extent

What are we trying to accomplish? **Aim and Rationale**

#		Comment/Suggestions
	Charter description clearly states need for improvement.	
	Improvement clearly points to process, product or service or sub-system improvement.	
	Impact on patient or external customer is clear	
	Expected outcomes are clear and the team will know when it has completed the project.	
	Specific, numerical goals to be attained.	
	Project can be completed within time frame	

How will we know a change is an improvement? **Feedback and Measures**

	An appropriate family of measures is identified	
	Measures identified are directly related to the project description, objectives, and goals.	
	Historical data exist on performance of the process or product to be improved.	
	Outcome, process, and balancing measures are specified.	
	Measures can be collected at intervals frequent enough to assess progress on the project	
	Improvement in the project measures can reasonably be expected within project time frame	

What changes can we make which will result in improvement? **Initial Cycles, Boundaries, other Guidance**

	Specific issues to investigate and/or alternatives to consider are given.	
	A concept design or change package is identified	
	Project constraints are defined including what is NOT to be addressed.	
	The objectives clearly state the team can develop, test and implement changes.	
	Project is tied to specific processes or sub-systems	
	Initial activities or PDSA cycles are suggested	

Participation: **Team Membership**

	All appropriate subject matter knowledge is represented on the improvement team	
	Process owner (authority to make changes) is represented or sponsor of team.	
	People with detailed knowledge of the targeted system are on the team.	
	TOTAL RATING	

Total Evaluation Rating

- > 95 Good Project charter definition
- 76-95 Consider improving or clarifying the project charter
- < 75 Rework or Reevaluate the need for this improvement charter



TREE DIAGRAM

Describe Project:

(Check one)

- Redesign existing process, product of service
- Design new process, product of service
- Improve the system as a whole

Aim statement:

Objectives & Measures

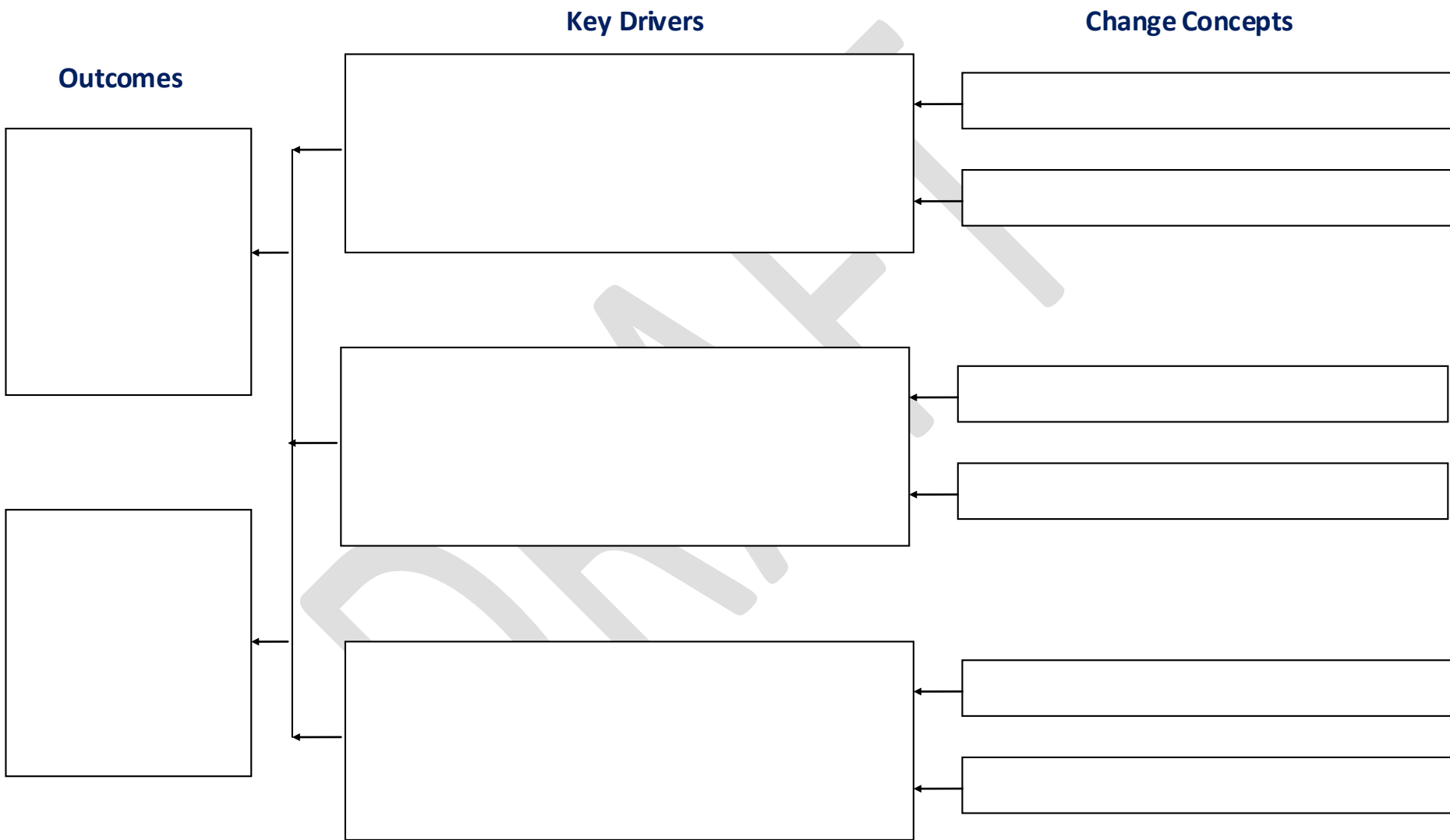
What are we trying to accomplish?

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

What changes can we make that will result in an improvement?



DRIVER DIAGRAM





PLAN DO STUDY ACT (PDSA) FORM

Date:

Project title:

Cycle #:

PLAN

Objectives of this Cycle:

- Collect Data
- Develop a change (or modify a change from a previous change)
- Test a change
- Implement a change

Describe:



What additional knowledge is necessary to take action?

Questions to be answered from the data obtained in this cycle:

- 1.
- 2.
- 3.
- 4.

Predictions:

- 1.
- 2.
- 3.
- 4.

Are historical data available to answer the question above? Yes No

Does the team agree on the predictions?

Yes for Question(s): No for Question(s):

Develop a plan to answer the questions (Who, what, where, when):

- 1.
- 2.
- 3.
- 4.



The plan considered the following methods:

- | | | |
|---|--|---|
| <input type="checkbox"/> Collection forms | <input type="checkbox"/> Planned experimentation | <input type="checkbox"/> Run charts |
| <input type="checkbox"/> Pareto diagrams | <input type="checkbox"/> Survey methods | <input type="checkbox"/> Engineering analysis |
| <input type="checkbox"/> Control charts | <input type="checkbox"/> Simulation/modeling | |
| <input type="checkbox"/> Frequency plots | <input type="checkbox"/> Scatter diagrams | |

Did you assign responsibilities for collection and analysis of the data? Yes No

Is training needed? Yes No

Is the plan consistent with the charter? Yes No

Can the plan be carried out on a small scale? Yes No

Have you considered people outside the team who will be affected by this plan? Yes No

DO

Observations in carrying out the plan:

Things observed that were not part of the plan:

Things that went wrong during the data collection:

- Used a control chart
- Identified special causes as data was collected



STUDY

Analysis of data:

Compare the analysis of the data to the current knowledge:

- Do the results of the cycle agree with predictions made in the planning phase? Yes No
- Under what conditions could the conclusions from this cycle be different?
- What are the implications of the unplanned observations and problem during the data collection?
- Do the data help answer the questions posed in the plan? Yes No



Summarize the new knowledge in this cycle.

Please How did you quantify this learning:

- Flowcharts reflect what was learned.
- Cause and effect diagrams reflect what was learned.
- What was learned can be applied in another area.

Comments:



ACT

What changes are to be made to the process?

List other organizations and people that will be affected by the changes:



- The cause system is sufficiently understood.
- An appropriate action or change has been developed or selected.
- The changes have been tested on a small scale.
- Change responsibilities for implementation and evaluation completed.
- Actions or changes will improve performance in the future.
- Completed an analysis of forces in the organization that will help or hinder the changes

Objective of next cycle:

- Collect data
- Develop a change (or modify a change from a previous change)
- Test a change
- Implement a change

Description:



PLAN DO STUDY ACT (PDSA) FORM

Date:

Project title:

Cycle #:

PLAN

Objectives of this Cycle:

- Collect Data
- Develop a change (or modify a change from a previous change)
- Test a change
- Implement a change

Describe:



What additional knowledge is necessary to take action?

Questions to be answered from the data obtained in this cycle:

- 1.
- 2.
- 3.
- 4.

Predictions:

- 1.
- 2.
- 3.
- 4.

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Does the team agree on the predictions?

Yes for Question(s): No for Question(s):

Develop a plan to answer the questions (Who, what, where, when):

- 1.
- 2.
- 3.
- 4.



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|---|--|---|
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| <input type="checkbox"/> Control charts | <input type="checkbox"/> Simulation/modeling | |
| <input type="checkbox"/> Frequency plots | <input type="checkbox"/> Scatter diagrams | |

Did you assign responsibilities for collection and analysis of the data? Yes No

Is training needed? Yes No

Is the plan consistent with the charter? Yes No

Can the plan be carried out on a small scale? Yes No

Have you considered people outside the team who will be affected by this plan? Yes No

DO

Observations in carrying out the plan:

Things observed that were not part of the plan:

Things that went wrong during the data collection:

- Used a control chart
- Identified special causes as data was collected



STUDY

Analysis of data:

Compare the analysis of the data to the current knowledge:

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Objective of next cycle:

- Collect data
- Develop a change (or modify a change from a previous change)
- Test a change
- Implement a change

Description:



STUDENT IMPROVEMENT PRACTICUM SUMMARY REPORT

Team Members: Up to 4 students may receive credit for one practicum project.

- | | |
|----------------|----------------------|
| 1) Name: _____ | Area of Study: _____ |
| 2) Name: _____ | Area of Study: _____ |
| 3) Name: _____ | Area of Study: _____ |
| 4) Name: _____ | Area of Study: _____ |

Faculty Sponsor: _____
Institution: _____
Title: _____

Health Care Setting Sponsor: _____
Institution: _____
Title: _____

RESULTS

Prediction (project level):

Learning (comparison of questions, predictions, & analysis of data.):

Results: Present your results graphically.



Summary of results:

CONCLUSIONS

Summarize the outcome of the project.

Discuss its significance to the local system

Discuss any findings that may be generalizable to other systems.



Is the project sustainable? What are the requirements for sustainability?

REFLECTIONS/DISCUSSION

Discuss factors that promoted the success of the project and that were barriers to success.

What did you learn from doing this project?

What are your reflections on the role of the team?

FACULTY SPONSOR

Signature: _____
Printed Name: _____

STUDENT(S)

Signature: _____
Printed Name: _____

AUTHORIZATION

Do you authorize for this practicum to be published at www.ihl.org?

Yes

No



CHARTER EXAMPLE #1

Project: Reducing Inpatient Falls

What are we trying to accomplish?

Purpose: To reduce the number of in-patient falls that occur on units 4C and 6W by 30% within 10 months.

Background Information: (Why we want to do this work)

- ✓ Our strategic plan calls for no preventable deaths, injuries, infections, pain, and suffering and the current state of our baseline data shows a general increase in the total number of falls occurring on the inpatient units.
- ✓ Falls are listed on the CMS hospital acquired conditions impacting payment for cases when an injury from a fall occurs during hospitalization. (
- ✓ This is a patient sensitive indicator that nurses own and control. This is a measurement of their practice.
- ✓ A problem analysis uncovered numerous opportunities that can be managed on the units.

Project Goals:

- ✓ Reduce falls to <3.5/1000 patient days
- ✓ Reduce moderate or higher harm from falls to <0.1/1000 patient days
- ✓ Standard, evidence based approach to assessing patients for fall such that:
 - 95% of inpatients will be have a falls risk assigned every 8 hours
 - 95% of patients on 4C and 6W will have evidence of hourly rounding
 - 95% of patient's and families can verbalize their role in falls prevention
- ✓ We will not lose revenue associated with patient falls

How do we know that a change is an improvement?

Measures:

- ✓ Patient days between falls
- ✓ The rate of falls per 1000 patient days
- ✓ The rate of harmful falls per 1000 patient days
- ✓ Patient days between a harmful fall
- ✓ The % if inpatients with falls risk assessment documented every 8 hours
- ✓ The % of patients on 4C and 6W with evidence of hourly rounding
- ✓ The % of inpatient's and families from 4C and 6W that can verbalize their role in falls prevention
- ✓ \$ revenue loss avoided due to fall reduction from baseline each month

What changes can we make that will lead to improvement?

Change Ideas:

- ✓ Develop processes for:
 - Reliable rounding and documentation of rounding
 - engaging patient/families to assist in prevention of patient falls
 - assessing and documenting for fall prevention
 - "huddling" after each fall
 - engaging staff in this initiative. (know why important, drive a culture change that falls should not be acceptable during a patient stay and to modify the plan for each patient.

Team Members:

	Senior Leadership	Process Expert	PI Expert	Patient Care Experience	Patient or Family
Fred J	X				



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Kiesha S (Leader)		X			
Nurse 6W		X		X	
CNA 6W				X	
Nurse 4C		X		X	
CNA 4C				X	
Wynston			X		
Lucille F					X
Julia F		X (transport)			

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CHARTER EXAMPLE #2

Project: Bill Payment

What are we trying to accomplish?

Improve financial measures by designing and implementing a process for payment of all fee services within 9 months
Goals:

- Payment cycle time of 30 days or less
- Decrease interest charges by 50%
- Decrease number of calls regarding payment status by 25%

The project links to our strategic initiatives to Improve Financial Management with

- Prompt payment to avoid interest charges
- Pay for authorized services only
- Eliminate duplicate payments
- Improve employee and patient relations
- Involve staff in design and change processes

How will we know a change is an improvement?

Measures:

- ✓ The % of bills paid in 30 days or less (monthly)
- ✓ The median cycle time for bill payment (Weekly)
- ✓ The % decrease in interest charges paid (Monthly)
- ✓ The \$ saved per month in avoided interest charges (Monthly)
- ✓ The number of calls per week related to bill payment inquiries

What change can we make that will lead to improvement?

- ✓ Stratify bills paying high dollar value bills first to avoid interest costs
- ✓ Reorder sequence of steps to pay bills
- ✓ Reduce wasted bill paying steps
- ✓ Clarify roles/responsibilities in bill paying
- ✓ Guidance: Must work with existing software and number of staff

Team members:

Martha W., Chief, Fee Unit
Carol T., Program Clerk, Fee Unit
Ken H., Business Office Manager

Katie L., Business Office Intern
Cindy E., Claims Clerk, Fee Unit
Shirley S., Chief Quality Officer



TREE DIAGRAM EXAMPLE

Example of a Tree Diagram



Describe Project:

(check one)

___ Redesign existing Process(es), product or service

X__ Design new process(es), Product or service

___ Improve the system as a Whole (mainstay, drivers & support processes)

Brief Description: (include description above)

Design new processes and tools to increase knowledge sharing within the healthcare community.

Establish measures and start data collection

Create community of practice design

Implement design of community of practice as a pilot – measure impact

Replicate successful CoP design

What information do we have/need about the current situation?

What measures are important to understand the health of knowledge sharing in the community? What's our baseline?

What knowledge needs to be shared within the community?

What tools and processes does this community need?

What type of community do the stakeholders support?

What groups and focus areas should pilot the community?

What steps do we take to start the community and attract members?

How do we know this change has been an improvement?

What changes to the design are needed to replicate the CoP in other areas?

What deployment method should be used?

How do we institutionalize this change?

Use proper measurements (28)

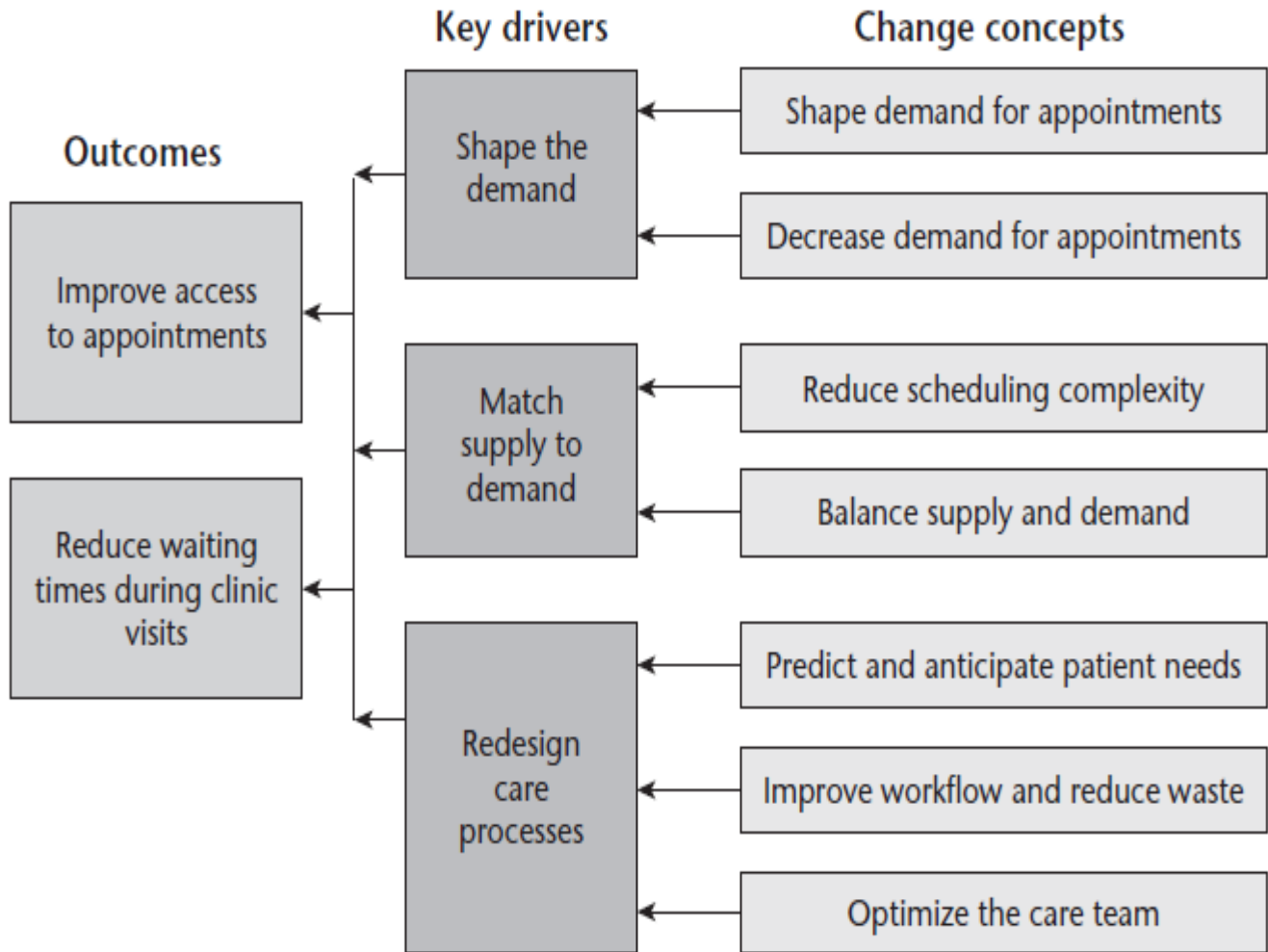
Give people access to information (27)

Develop alliance/cooperative relationships (37)

Standardization (51)



DRIVER DIAGRAM EXAMPLE
ACCESS IMPROVEMENT PROJECT





PDSA FORM EXAMPLE

DATE Dec 6-24, 2007 PDSA 4A

Objective for this PDSA Cycle: **Test Revised Nursing Assessment form that incorporates 5 risk screening tools and triggers to allied health referrals with 5 patients.**

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

This is a test of change

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

Is the revised nursing assessment appropriate in wording, ease of use, etc.?

Does the revised nursing assessment generate referrals to allied health?

Does the revised nursing assessment ensure referrals are made to allied health quickly?

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

Nancy Berman will test revised nursing assessment on 5 patients with various diagnoses over a 2.5 week period. She will track the number of referrals generated, time between admission and referrals initiated, and time to complete assessment. She will also provide feedback about ease of use, perception of patient comfort level with assessment. Allied health will record any inappropriate referrals.

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

Nancy Berman will test revised nursing assessment on 5 patients with various diagnoses over a 2.5 week period.

Predictions (for questions above based on plan):

Referrals will be generated using assessment. Patients will not have a problem with wording of history.

Referrals will be initiated much sooner (days sooner?) compared to using old nursing history. Wording will likely undergo further small changes.

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

Nancy completed 5 nursing assessments. The five assessments generated a total of 7 referrals to the interdisciplinary team. None of the referrals were inappropriate. One of the assessments was not completed as the patient had severe dementia and family was not present. No referrals were generated for that patient. Referrals were made immediately following the completion of the assessment, between 3 and 8 hours after the patient was admitted to the unit. The old nursing history often saw assessments initiated 24-48 hours after admission as the nurses waited for rounds, or further physician input.

Study: *Complete analysis of data;*

Nursing assessment does generate referrals based on risk assessments, and associated discipline specific questions. It also speeds up the initiation of referrals by approximately 24-48 hours (based on baseline data). There were no apparent difficulties with the wording or flow of the document. There will need to be clear



direction for completing assessments for dementia clients (i.e. gathering data from supporting documentation from LTC facility in this one case).

Compare the data to your predictions and summarize the learning

Data matched predictions.

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

At this point, nursing assessment needs to be administered by other staff not on the Flo team. 3 nurses on the floor will be trained on risk assessment tools by Nancy Johnson, and receive orientation to revised nursing assessment. They will be asked to provide feedback to the team, and record established metrics. This will start January 7/08.

DRAFT



ACKNOWLEDGEMENTS & REFERENCES

Thank you to the six IHI Open School Chapters who participated in the initial tests of the IHI Open School student improvement practicum – Johns Hopkins University, the Ohio State University, the University of Colorado – Denver, the University of Dundee, the University of South Carolina, & the University of Toronto.

Thank you to Jo Inge Myhre for developing the initial test forms.

Thank you to Bob Lloyd and Lloyd Provost for lending their improvement expertise.

All of the forms included in this handbook were created by the Institute for Healthcare Improvement and Associates in Process Improvement. The following forms were developed by Associates in Process Improvement. Minor edits were made to suit students' needs.

Thank you for your commitment to improving patient care!

DRAFT