

*Mentor Group XX*

*Applying Curriculum and Assessment Skills to  
Safety and Quality*

DATE

Tempe, AZ

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Workbook

# A Blueprint for Curriculum Development

## Goals:

Participants will review an approach to curriculum development in quality and safety.

## Learning Objectives:

At the conclusion of this session, participants will be able to:

- Establish a goal and learning objectives for a new educational experience in patient safety
- Select strategies to effectively teach patient safety
- Select tools to assess the learner and evaluate the curriculum

## Case:

Dr. Smith has been selected as a core faculty member for her academic department at the Medical Center. There are currently a total of 30 residents across three years of training in the program. Her job includes a part-time clinical practice as well serving as attending of record for resident work.

Recognizing that the Next Accreditation System now mandates hands on integration of residents into the safety architecture of the hospital, the residency program director calls Dr. Smith. He is interested in how to meet the new ACGME requirements for resident education in safety. He would like to develop a new curriculum in safety for the junior class.

In reviewing intern self evaluations he has noted most do not feel they can adequately assess their own understanding of mistakes they see in practice. Recent interviews with interns indicate a wide variability in the exposure to safety structures during their medical school training and many felt they wished they'd had the chance to learn more. The department chair is committed to safe practices and feels all his residents should have an early exposure to the topic.

Based on this feedback, the program director completed a recent formal needs assessment. He learned that only 20% of residents received any training in patient safety or quality improvement in medical school. Interns were not familiar with common concepts in safety including root cause analysis, systems theory, and error disclosure.

The program director asks Dr. Smith to devise a curriculum for the ten juniors based in the inpatient setting, with opportunity to participate in peer review. He feels strongly that the residents not just receive theoretical training but that they also be able to apply what they are taught and contribute to understanding safe practices at the hospital. Dr. Smith is given three hours of time with residents.

The institution has an existing structure where cases are reported to a QA committee. The committee assigns a physician reviewer who speaks with the individuals involved and then discusses at committee. Findings and action plans from these peer review meetings are then reported to the department of healthcare quality and the department chief.

### *[Facilitator note:*

*After having them read the case, make sure they understand the rationale for putting this in place. The rationale helps guide the development to make sure the finished product meets the needs of the learners and the stakeholders (esp the program director in this case). If Dr. Smith doesn't understand the rationale she could end up building a beautiful product but it may be difficult to implement and sustain over time because it doesn't meet anyone's needs... thinking about this up front prevents her from falling into this trap.*

*Rationale :*

- 1) *There are requests from residents and the chief*
- 2) *There are specific learning gaps identified – need to address these*
- 3) *There is a new ACGME mandate to train in this arena – MUST be hands on]*

## Goals and Resources

### Goals

Goals communicate the overall purpose a curriculum is trying to serve. They help identify the learner group, direct the scope of content, and allow you to communicate this to others.

Goal for the new Curriculum:

To provide junior residents with basic knowledge and skills in patient safety.

*[Facilitator note: remind group that goals are typically very broad and describe the whole experience, like a description in a course catalog]*

### Resources

Resources are the people, time and money that are necessary to develop and implement a curriculum. Gathering stakeholders early on allows you to get help in refining the goals, developing content and maintaining the curriculum. Determination of your resources will keep the scope of your curriculum within achievable bounds.

Group exercise:

#### PEOPLE

List the stakeholders and partners that Dr. Smith needs to speak with to design and teach her curriculum. Why are these individuals important for the success of her rotation?

Stakeholder (Buy in needed) Partner (Help with content or teach)	Why? What will they help with?
<i>Program director</i>	<i>Controls time, understand the rationale for program</i>
<i>Interns and residents</i>	<i>Needs assessment, can help tailor content to their learning needs</i>
<i>Faculty, chief residents</i>	<i>Help with content, help role model and teach</i>
<i>Chair of QA committee</i>	<i>Need permission, access to cases; if residents are to present, need the ok and ok of QA committee director</i>
<i>??department of healthcare quality</i>	<i>Need their ok to let residents participate</i>
<i>Risk management??</i>	<i>In some institutions could be an issue</i>
<i>Patients?</i>	<i>Might need to involve them later in work; could be part of needs assessment</i>

## TIME

Dr. Smith has already been allotted learner time to do her teaching. At the end of the curriculum design she will need to

## MONEY

*[Facilitator note: Remind them that funds are useful for purchasing supplies and food, equipment for simulation or model work, stats time if needed, clinical staff for interventions if appropriate, and faculty time for large curricula]*

What might Dr. Smith need money for?

*[Faculty time for teaching, including her?? Who will mentor the residents in their case reviews?]*

Are there surrogates for actual dollars she can ask for instead?

*[Support of the leadership to add responsibility to existing roles if not major increases in work, especially if residents will be doing hands on case review]*

# Selecting Content and Writing Objectives

## Content

### Core content:

Core content is the knowledge and/or skill set that the curriculum is attempting to teach. It can be derived from several sources including existing curricula, your own knowledge and skills, core content experts, the literature, consensus of local practitioners, and regulators' guidelines/requirements. Also a targeted need assessment should be done to gather the learners' input.

Group exercise:

Make a list of topics and organize them into...

*Knowledge:*

*(examples – they and you may come with your own)  
Core principles – all humans err, elements of systems theory*

*Safety culture*

*Elements of contributing factor analysis*

*Root cause analyses and how they are done*

*Role of confidentiality and blame free approach to error]*

*Key concepts in error disclosure.*

*Skills:*

*[Given case, perform chart review and timeline of case*

*Interview individuals in a blame free manner*

*Identify contributing factors – use fishbone*

*Identify risk reduction strategies – using literature if possible*

*Demonstrate how to disclose an error to a patient*

*Attitudes:*

*[Value participation in patient safety as a core physician attribute]*

## Objectives

Specific learner objectives are written expectations of the learner with regards to content. They indicate what the learner is expected to be able to do at the conclusion of the experience and often help identify the appropriate teaching strategy. They can be divided into cognitive (knowledge), psychomotor (skill or behavior), or affective (attitude). When writing objectives it is important to choose specific verbs.

Group exercise:

Select your content areas or topics you think Dr. Smith should try to teach in her QI rotation. For each content area, write an objective, and select a teaching strategy. Remember Dr. Smith has four hours total teaching time available to her.

*[These is one example. Your group should use what they came up with in the previous step; no right answer. Verbs are on the next page. The strategy should match the objective...ie don't use lecture to have them practice a skill. If you look at summary of methods it give you a description of the rotation...in our example – a didactic on error, a second workshop with mock case to illustrate principles and tools of error disclosure, doing real case review. Dr. Smith could use third hour to have them practice their presentation and then present at QAC and then may be at M and M as well??]*

K/S/A	Topic	Objective: “At the end of this curriculum interns should be able to...”	Teaching Method
K	Systems theory/swiss cheese	Describe how system failures allow individual error to reach a patient	Reading Didactic
K	Safety culture	Describe the elements of a culture of safety	Reading Didactic
K	Error reporting	Describe department's method of reporting errors	Didactic
S	Identify contributing factors – use fishbone	Demonstrate use of fishbones and/or timelines to deconstruct process of care	Didactic with discussion using mock case Real live case work up
S	Error reduction strategies	List common error reduction strategies  Identify appropriate risk reduction strategy for a given case	Didactic  Real live case workup
S	Disclosing an error	Demonstrate how to write an aim statement	workshop

*Action words in learning objectives*

When selecting verbs to use in learning objectives use words that are specific and performance based to better inform learner of expectations and guide evaluation.

<b>Words that are less specific</b>	<b>Words that are more definitive</b>	
Know Understand	List Recite Sort Distinguish Define Repeat Identify	Describe Give example of Write Solve Compare Contrast Name
Know how Internalize	Demonstrate Incorporate into behavior Practice Illustrate Perform	
Appreciate Believe Learn Teach Enjoy	Rate as valuable or significant Rank Identify or rate as belief	

*Table created by Lori Newman MEd., and A V Tess MD.*

References:

Kern, D et al. *Curriculum Development for Medical Education*. Baltimore: Johns Hopkins University Press; 1998. Pg 28-37

Mager, R. *Preparing Instructional Objectives*. Belmont: Pitman Press; 1984.

## Assessment and Evaluation Tools

Before selecting a tool it is important to make note of whether the information is to be used for the curriculum developers to make changes to the plan or whether the information is to be used in evaluating the learner or both.

Matching your objective and teaching method is the most effective way to evaluate. If instruction is in multiple settings you do not necessarily need to evaluate each setting. In general, evaluation at the highest level of understanding is most useful. In the interest of time using one tool to assess multiple skills or knowledge areas can be helpful as well.

For knowledge objectives, either written or oral exams can be helpful. Oral exams often allow evaluation of critical thinking skills as well. Evaluation of projects or discussions that are used to demonstrate or teach content can be done with a checklist.

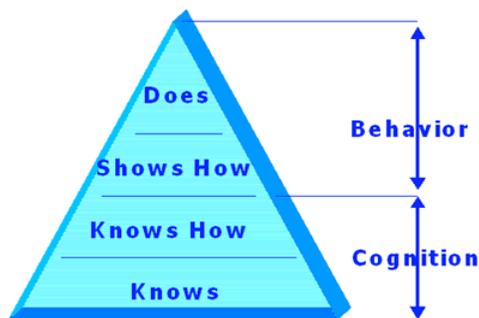
For skill and attitudinal objectives, observation with a simulated patient or direct observation at the bedside can be used. Again checklists can be helpful and are most useful if combined with direct feedback. Asking for learner reflection either as part of a discussion or a written portfolio can also be of value in assessing attitudinal change.

In order to evaluate the curriculum itself, you may want to measure its impact upon patient outcomes. This may be through measuring error rates, patient satisfaction, or whatever clinical area the curriculum is designed to address. For example, if a curriculum is designed to improve the residents' ability to identify and report errors on the electronic reporting system, you may want to measure the number of reports by residents before and after the curriculum.

Whenever possible, take advantage of measures already being tracked. Try not to re-invent the wheel or make extra work for yourself!

Assessment:

Evaluation:



Group exercise:

Describe two learner assessment tools and two methods by which Dr. Smith might measure the impact of your curriculum on the intern class.

Note: These are EXAMPLES ONLY. Go back to the objectives your group created to pick assessment tools. Review the pyramids.

Learner Assessment Tools	Program Evaluation
“Knows”: Can pass a multiple-choice test on the reasons errors occur and methods for preventing them.	Satisfaction: Learners like the program (on a survey)
“Knows how”-Can describe how to report an error using the institution’s error reporting system when asked.	Learning and behavior are under the “learner assessment tools” on the left-hand column
“Shows”-Can complete a fishbone diagram when given a case study of an error	Outcomes: 4 improvement areas identified in a newly designed M&M to focus on improving safety
“Does”-Reports at least 2 errors or near misses using the institution’s error reporting system	ROI/Value: How many hours does this curriculum take for residents and for the teachers? Was anything else removed to make space? How much does it cost to deliver?

*Mentor Group # 2*

*Applying Curriculum Development and  
Assessment Skills to Quality Improvement*

*February 24, 2012*

Tempe, AZ

Karyn Baum MD  
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Workbook

# A Blueprint for Curriculum Development

## Goals:

Participants will review an approach to curriculum development in quality and safety.

## Learning Objectives:

At the conclusion of this session, participants will be able to:

- Establish a goal and learning objectives for a new educational experience in quality improvement (QI)
- Select strategies to effectively teach QI
- Select tools to assess the learner and evaluate the curriculum

## Timeline for session

2:10-2:15	Introduction: Review goals and format of session; Select a time-keeper
2:15-2:30	Read case aloud and review rationale Resources Discussion
2:30-2:45	Writing Learning Objectives
2:45-3:05	Educational Methods
3:05-3:20	Assessment
3:20-3:30	Wrap up

## Case:

Dr. Smith has been selected as a core faculty member for her academic department at the Medical Center. There are currently a total of 30 residents across three years of training in the program. Her job includes a part-time clinical practice as well serving as attending of record for resident work.

The residency program director calls Dr. Smith to discuss how to meet the new ACGME requirements for resident education in quality improvement. He would like to develop a new curriculum in QI for the intern class.

In reviewing intern self evaluations he has noted most do not feel they can adequately assess their own understanding of systems based practice. Recent interviews with interns indicate a wide variability in the exposure to QI during their medical school training and many felt they wished they'd had the chance to learn more. The department chair is committed to quality improvement and feels all incoming interns should have an early exposure to the topic.

Based on this feedback, the program director completed a recent formal needs assessment. He learned that only 20% of interns received any training in patient safety or quality improvement. Interns were not familiar with common concepts in QI including PDSA cycles, process vs outcome measures, and aim statements.

The program director asks Dr. Smith to devise a curriculum for the ten interns based in the ambulatory setting, with opportunity to practice with a small project. He feels strongly that the interns not just receive theoretical training the needs assessment revealed but that they also be able to apply what they are taught to either their own panel or to resident practice data. Dr. Smith is given three hours of time from the intern sessions to deliver didactics and review project work.

### *[Facilitator note:*

*After having them read the case, make sure they understand the rationale for putting this in place. The rationale helps guide the development to make sure the finished product meets the needs of the learners and the stakeholders (esp the program director in this case). If Dr. Smith doesn't understand the rationale she could end up building a beautiful product but it may be difficult to implement and sustain over time because it doesn't meet anyone's needs... thinking about this up front prevents her from falling into this trap.*

### *Rationale :*

- 1) There are requests from interns and the chief*
- 2) There are specific learning gaps identified – need to address these*
- 3) There is a new ACGME mandate to train in this arena – MUST be hands on]*

## Goals and Resources

### Goals

Goals communicate the overall purpose a curriculum is trying to serve. They help identify the learner group, direct the scope of content, and allow you to communicate this to others.

Goal for the new Curriculum:

To provide interns with basic knowledge and skills in quality improvement.

*[Facilitator note: remind group that goals are typically very broad and describe the whole experience, like a description in a course catalog]*

### Resources

Resources are the people, time and money that are necessary to develop and implement a curriculum. Gathering stakeholders early on allows you to get help in refining the goals, developing content and maintaining the curriculum. Determination of your resources will keep the scope of your curriculum within achievable bounds.

Group exercise:

#### PEOPLE

List the stakeholders and/or partners that Dr. Smith needs to speak with to design and teach her curriculum. Why are these individuals important for the success of her rotation?

Stakeholder (Buy in needed) Partner (Help with content or teach)	Why? What will they help with?
<i>Program director</i>	<i>Controls time, understand the rationale for program</i>
<i>Interns and residents</i>	<i>Needs assessment, can help tailor content to their learning needs</i>
<i>Faculty, chief residents</i>	<i>Help with content, help role model and teach</i>
<i>Ambulatory practice director</i>	<i>Need permission, access to QI data, patient registries. If the practice is interested may be able to implement more easily</i>
<i>Patients?</i>	<i>Might need to involve them later in work; could be part of needs assessment</i>

## TIME

Dr. Smith has already been allotted learner time to do her teaching. At the end of the curriculum design she will need to crosscheck her time estimates.

## MONEY

What might Dr. Smith need money for?

*[Facilitator note: Remind them that funds useful for purchasing supplies and food, equipment for simulation or model work, stats time if needed, clinical staff for interventions if appropriate, and faculty time for large curricula]*

*[Faculty time for teaching, including her? Support staff for process improvement within practice?]*

Sources? Are there surrogates for actual dollars she can ask for instead?

*[Grants, teaching dollars from the department. Try NOT to get into a long discussion around funding or you will never finish the session. Defer it to the end, OR suggest that we discuss in the third panel.]*

*[Support of the clinic leadership to add responsibility to existing support staff roles if not major increases in work.]*

*Clinical RVU forgiveness for participating faculty*

*[If projects align with P4P measures for the practice use those dollars to support curriculum]*

## Selecting Content and Writing Objectives

### Content

#### Core content:

Core content is the knowledge and/or skill set that the curriculum is attempting to teach. It can be derived from several sources including existing curricula, your own knowledge and skills, core content experts, the literature, consensus of local practitioners, and regulators' guidelines/requirements. Also a targeted need assessment should be done to gather the learners' input.

Group exercise:

Make a list of topics and organize them into...

*Knowledge:*

*(examples – they and you may come with your own)*  
*IOM six dimensions of quality*

*Elements of PDSA cycle*

*Different types of measures: structure, process, outcome, balancing*

*Role of guidelines in bringing quality to frontline]*

*Skills:*

*[Given data, identify issue or problem; or vice versa, given the problem be able to identify which measures would be useful to collect*

*Draw process map and/or fishbone for a given problem or issue*

*Write an aim statement*

*Design and test an intervention*

*Looking at post intervention data, be able to determine if successful or not]*

*Attitudes:*

*[Value participation in quality improvement as a core physician attribute]*

## Objectives

Specific learner objectives are written expectations of the learner with regards to content. They indicate what the learner is expected to be able to do at the conclusion of the experience and often help identify the appropriate teaching strategy. They can be divided into cognitive (knowledge), psychomotor (skill or behavior), or affective (attitude). When writing objectives it is important to choose specific verbs.

Group exercise:

Select your content areas or topics you think Dr. Smith should try to teach in her QI rotation. For each content area, write an objective, and select a teaching strategy. Remember Dr. Smith has four hours total teaching time available to her.

*[These is one example. Your group should use what they came up with in the previous step; no right answer. Verbs are on the next page. The strategy should match the objective...ie you can't use lecture to have interns practice a skill – you need an active learning method. If you look at summary of methods it give you a description of the rotation...in our example – a didactic on theory, a second didactic with mock case to illustrate principles and tools, and then project work for application. Dr. Smith could use one hour to have the group mentor each other on their projects and a final hour for final presentations to the practice leadership]*

K/S/A	Topic	Objective: “At the end of this curriculum interns should be able to...”	Teaching Method
K	Measures	Define and differentiate between structure, process, outcome, and balancing measures	Reading Didactic
K	PDSA cycle	Describe the elements of a PDSA cycle	Reading Didactic
S	Selecting project based on data	Select a problem to improve after analyzing data from their own practice	Didactic with discussion using mock case Project work
S	Use of fishbones or maps to deconstruct process	Demonstrate use of fishbones and/or maps to deconstruct process of care	Didactic with discussion using mock case Project work
S	Write an aim statement	Demonstrate how to write an aim statement	Project work
S	Design and test an intervention	Design and test an intervention	Project work
S	Looking at post intervention data, be able to determine if successful or not]	Explain whether their project was successful or not	Project work

*Action words in learning objectives*

When selecting verbs to use in learning objectives use words that are specific and performance based to better inform learner of expectations and guide evaluation.

<b>Words that are less specific</b>	<b>Words that are more definitive</b>	
Know Understand	List Recite Sort Distinguish Define Repeat Identify	Describe Give example of Write Solve Compare Contrast Name
Know how Internalize	Demonstrate Incorporate into behavior Practice Illustrate Perform	
Appreciate Believe Learn Teach Enjoy	Rate as valuable or significant Rank Identify or rate as belief	

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In order to evaluate the curriculum itself, you may want to measure its impact upon patient outcomes. This may be through measuring error rates, patient satisfaction, or whatever clinical area the curriculum is designed to address. For example, if a curriculum is designed to improve the residents' ability to identify and report errors on the electronic reporting system, you may want to measure the number of reports by residents before and after the curriculum.

Whenever possible, take advantage of measures already being tracked. Try not to re-invent the wheel or make extra work for yourself!

Group exercise:

Describe two learner assessment tools and two methods by which Dr. Smith might measure the impact of your curriculum on the intern class.

Learner Assessment Tools	Program Evaluation
<p><i>Paper/electronic test to assess knowledge (these can be MCQ's, case-based, etc). Make sure to test key points, and make sure to teach what you are testing.</i></p>	<p><i>Satisfaction-ie paper/electronic survey asking questions such as, did you like this? Was it well organized? What could we improve upon?</i></p>
<p><i>Skills demonstration. Examples include QIKAT, OSCEs, or work in a simulation center. Possibly create a fishbone diagram given a medical error. Again, make sure the skills being tested are both important and clearly taught during the "course"</i></p>	<p><i>Projects created, and projects completed. Also a list of changes to the system based upon the projects.</i></p>
<p><i>360 degree evaluations or self-report of attitudes on the importance of quality and safety</i></p>	
<p><i>Self-reported confidence in the knowledge and skills (PDSA, fishbone, creation of measures, etc)</i></p>	<p><i>Patient outcomes in the project areas (eg if falls were targets, check the fall rate before the project began and after it was implemented)</i></p>