

Utilizing the Advanced Tools of Quality Improvement to Leverage the Power and Reach of Public Health

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August 2010

Introduction:

When public health professionals are confronted with complex community health or organizational issues or problems they need to be able to analyze a lot of information quickly and efficiently to make the best possible decisions to solve the issues or problems. The advanced quality improvement (QI) tools^{2,3} help to synthesize lots of information, identify the critical areas on which to focus, and guide the decision making process.

As stated by Lao Tse, Chinese philosopher, “For every complex question there is a simple answer and it is usually wrong.” The advanced tools of QI are designed to deal with complex issues in a manner which guides those analyzing the issues to focus on hidden interrelationships that are not obvious without detailed analysis. This detailed analysis guides those examining an issue away from the simple answer and into a process of continual refinement of the issue. To make the best possible decisions you need to analyze a lot of information and the advanced tools of QI help you to synthesize and refine information to focus on the critical pieces before developing potential solutions.

The advanced tools of QI are vehicles to help us sort through the many interrelated possibilities we have at the strategic level and narrow them down into the vital few issues to focus our scarce resources on to make the biggest positive impact on the organization and our community. These vital few issues are usually hidden and not apparent when we first start to explore a strategic issue, but the advanced tools of QI provide the means to focus a team on the few priorities that will move the organization to its desired future state as quickly as possible.

The Public Health Foundation (PHF) has observed the Deming Plan-Do-Check-Act (PDCA) of QI techniques/methods successfully applied in public health to help identify and solve complex community health and system problems and issues. Figure 1 shows the PDC/SA cycle. The Plan-Do-Check/Study-Act cycle (PDC/SA) is both simple and powerful. Its simplicity comes from the systematic, straightforward and flexible approach that it offers. Its power is derived from its

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² Management For Quality Improvement: The New QC Tools, S. Mizuno, editor, Productivity Press, ©1988

³ R. Bialek, G. Duffy, and J. Moran, editors, *The Public Health Quality Improvement Handbook*, ASQ Quality Press, ©2009, pp 189 – 213.

reliance on the scientific method, i.e., it involves developing, testing, and analyzing hypotheses. This foundation offers a means to become comfortable with a host of QI methods and techniques, and to progressively evolve into addressing more complex problems, employing additional QI tools, and migrating to system-wide approaches to QI.

Spending adequate time in each phase of the PDCA cycle is imperative to having a smooth and meaningful quality improvement process.⁴

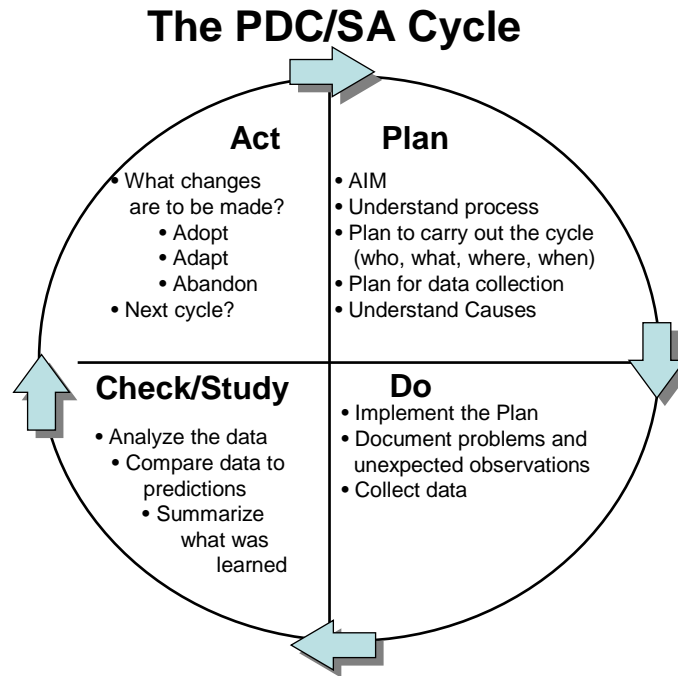


Figure 1

The advanced tools of QI support the PDC/SA Cycle by taking a system approach of continuous refinement of the issue as we move from one tool to the next in a defined sequence of application. This is a process of constant refinement to help us clearly understand the issue being investigated and its interrelated components. Figure 2 shows the General Approach⁵ on how to use the advanced tools of QI in a problem solving sequence to resolve an important issue/problem. When used in a sequence of application the advanced tools of QI form a dynamic process that helps us to continually refine our issue/problem statement which narrows the scope and the approach to solve it.

⁴ The ABCs of the PDCA, http://www.phf.org/resourcestools/Documents/ABCs_of_PDCA.pdf

⁵ R. Bialek, G. Duffy, and J. Moran, editors, *The Public Health Quality Improvement Handbook*, , ASQ Quality Press, ©2009, pp 190.

General Approach On How To Use The Advanced Tools Of Quality Improvement

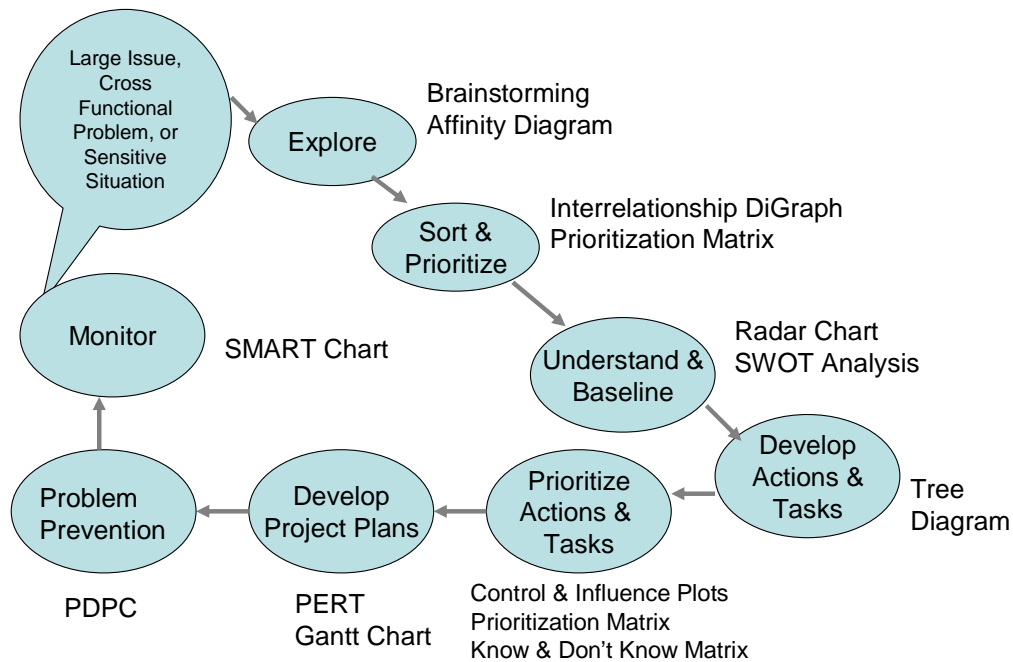


Figure 2

This is a general flow and does not meet all issue/problem situations that could arise. When using the advanced tools of QI, a team or individual should think through an approach they would use and then adopt the best sequence of advanced tools of QI to fit the particular situation they are trying to solve.

Recent Application:

At the 2010 NACCHO annual conference,⁶ the authors conducted an interactive one and one-half hour workshop on the use of two advanced tools of QI to demonstrate to the participants how they can be used to help them “Understand How to Leverage the Power and Reach of Public Health?”

The two tools utilized during the workshop were the Affinity Diagram⁷ and the Interrelationship Digraph⁸. The Affinity Diagram was used to demonstrate how to surface related issues around the issue, “How to Leverage the Power and Reach of Public Health?” Once the issues were surfaced, the Interrelationship Digraph was utilized to understand how the various issues that surfaced are related to each other.

⁶ NACCHO Annual 2010 Conference, July 14 – 16, 2010, Memphis, Tennessee

⁷ R. Bialek, G. Duffy, and J. Moran, editors, *The Public Health Quality Improvement Handbook*, ASQ Quality Press, ©2009, pp 193 – 195.

⁸ R. Bialek, G. Duffy, and J. Moran, editors, *The Public Health Quality Improvement Handbook*, ASQ Quality Press, ©2009, pp 199 – 201.

Affinity diagramming is a tool for gathering, grouping, organizing and understanding large amounts of information and helps to identify and draw out common themes from the information which will show any hidden linkages. Affinity diagramming partners well with brainstorming to organize a large number of ideas/issues.

The process to develop an Affinity Diagram used for this workshop was as follows:

- Developed and posted a broad clear issue statement that focused the group at the macro level. The issue was “*How to Leverage the Power and Reach of Public Health?*”
 1. Workshop participants started with individual silent brainstorming and recorded each of their ideas on a Post-It[®] note making sure that each statement was a complete statement.
 2. Then each participant read and randomly posted their ideas on flipchart paper that was posted on the wall. Participants were instructed not to place their ideas in any order since we did not want to suggest any patterns, categories or headings in advance. They used the whole posting area to randomly post ideas. During this part of the process, other participants asked for clarification when an idea was read, but there was no debate, just clarification.
 3. Once all the ideas were posted the participants did a silent consensus process by doing the following:
 - The entire team gathered around the posted notes
 - There was no talking during this step
 - Individuals looked for ideas that seemed to be related in some way
 - Post-Its[®] that seemed to be related were moved around and placed side by side
 - These steps were repeated until all notes were groupedNote: It is okay to have “loners” that don’t seem to fit a group – these are outliers. It is alright to move a note someone else already moved. If a note seemed to belong in two groups, it was okay to make a duplicate note and post it in both groups.
 4. After the ideas were grouped the participants discussed what the grouping patterns showed or uncovered and then developed a heading for each grouping of ideas. The heading that was placed at the top of a group of ideas had to clearly describe the grouping and was highlighted in a bright color to distinguish it from the ideas under it. It is important for headers to be clear, descriptive and accurately describe the grouping of ideas they represent. It also is important to take the time to do this step well since it is the foundation for the other tools in the process. An example of affinity diagramming is shown in figure 3.

Issue Statement

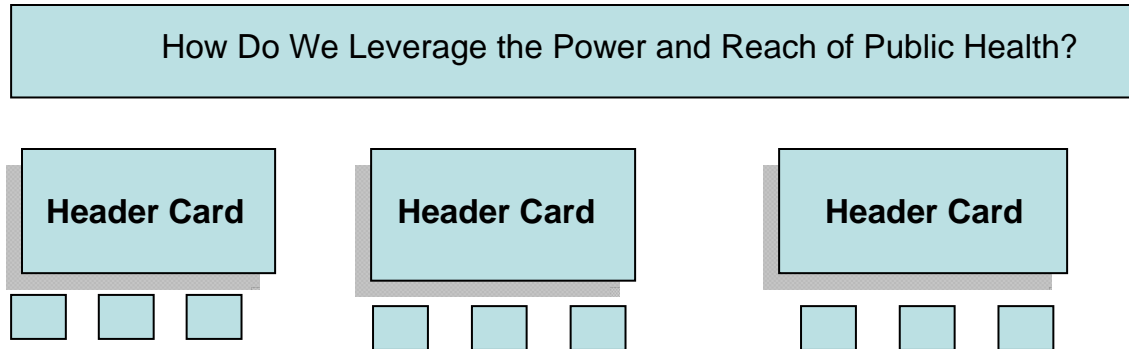


Figure 3

The combined output of the participants' affinity process resulted in five header categories as shown in Table 1.

How Do We Leverage the Power and Reach of Public Health?	
<u>Header Card</u>	<u>Post-It[®] Notes In Each Grouping</u>
1. Address Lack of Funding	Establish sustainable funding for PH preventive services
	Develop strategies to advocate for increased funding
	Engage legislative policy makers
	Organize and lead target lobbying efforts
	Educate policy makers
	Show benefits of investments in PH
	Identify and pursue alternative funding sources
2. Increase Use of Social Media – public health messaging	Utilize social media – Twitter, Facebook, etc.
	Health promotion ad campaigns
	Make the press an ally
	Engage the media weekly on hot topics and emerging issues
	Have a consistent PH message
	Conduct social marketing focus groups
	Increase the awareness with many successful PH stories
3. Identify Advocates for Public Health	ID key people in the community
	Seek appointments for BOH members on other boards
	Find local champions and train them

	Increase number of local advocates
	Have representation at all budget hearings – advocate for PH
4. Develop, Utilize, and Enhance Partnerships	Develop more coalitions – think outside the box
	Engage stakeholders in the community
	Form unconventional partnerships – fire, police, city planners
	Partner with local hospitals to work on public health issues
	Use the power and influence of our partners
	Get clients to tell their stories about receiving PH services
	Involve the community in the decision making process
5. Strengthen Internal Capacity	Assess needs for staff development related to increasing PH competency
	Educate about critical issues
	Provide responsive and excellent customer service
	Train work force in needed core competencies
	Improve internal processes to focus on improving community health

Table 1

Once workshop participants agreed on the affinity categories an Interrelationship Digraph (ID Graph) was used to help visualize how the various group headings of the issue “How Do We Leverage the Power and Reach of Public Health?” are related and discover any hidden linkages. The process to develop an ID Graph is as follows:

- Use the header cards from the Affinity Diagram and spread them out on a large work surface covered with flip chart paper.
- Start with one header card and compare it to all the other header cards. Continue this process until all the header cards have been compared to all the others.
- When comparing header cards use an "influence" arrow to connect related header cards.
- The arrows should be drawn from the header card that influences to the one influenced. A question to ask when comparing header cards is:
 - Does this card cause any others to happen or is it a result from another card(s)? If the answer is “yes” draw an arrow connecting them. If the answer is “no” do not draw an arrow connecting them and move on to the next paired comparison.
- Then determine the strength of the relationship by assigning a “1” for a weak relationship, a “5” for a medium relationship and a “10” for a strong relationship.

- Use only one way arrows. The arrow should point toward the effect and away from the cause.
 - Outgoing arrow = basic cause – if solved, spillover reaction on a large number of other issues
 - Incoming arrow = secondary issue or bottleneck
- Once all the comparisons are completed, count the number of In Arrows, Out Arrows, and the total strength assigned for each header card. An example of one set of comparisons developed by the workshop participants is shown in Figure 4.
- The header card with the most outgoing arrows and highest strength will be a driver. The one with the most incoming arrows and highest strength will be a bottleneck, outcome, or result.
- The tabular results of the arrows and strength can be captured on the ID Graph, but it can be seen that as the number of comparisons increase the graph will become messy and difficult to follow. To help with the analysis a matrix summary diagram is employed to show the relationships and strengths among all the header cards as shown in Figure 5.

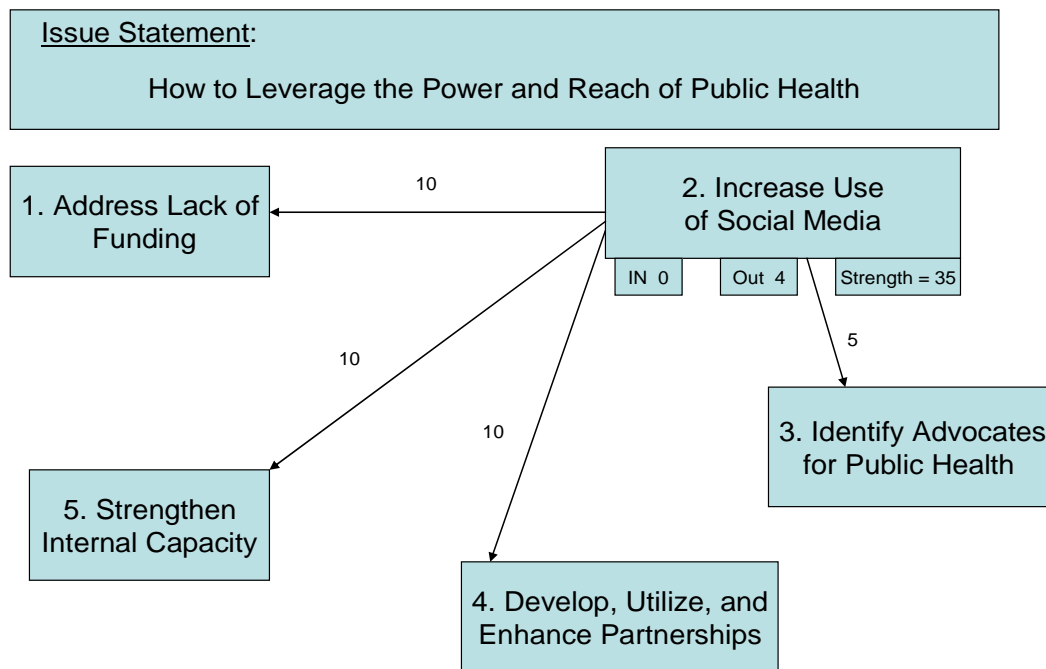


Figure 4

ID Matrix Summary

	1	2	3	4	5	# In	# Out	Strength
1. Address Lack of Funding		← 1 0	← 5	← 5	↑ 10	3	1	30
2. Increase the use of Social Media	↑ 10		↑ 5	↑ 10	↑ 10	0	4	35
3. Identify Advocates for Public Health	↑ 5	← 5		← 5	↑ 1	2	2	16
4. Develop, Utilize, and Enhance Partnerships	↑ 5	← 10	↑ 5		↑ 1	2	2	21
5. Strengthen Internal Capacity	← 10	← 10	← 1	← 1		4	0	22

Figure 5

One thing that is not captured in the ID process is the rich conversations that take place during the development of an ID Graph. This discussion is very valuable since people are exposed to a wide variety of knowledge and experience of the other participants to help them in their decision making.

Analysis:

As can be seen in Figure 5, the main driver of the header cards utilized was “Increase Use of Social Media” which had the highest strength and was a driver of all the other categories. The participants felt that if public health departments did a good job of getting the message out to the community as to what they do and accomplish, there would be more support for adequate funding. The ID Matrix also shows that the header category “Strengthen Internal Capacity” was a bottleneck since all the arrows to the category were incoming and nothing was going out. This is a category upon which to focus as improvements are being considered to make sure public health professionals will be ready to handle proposed changes to improve the entire system. If potential bottlenecks are not addressed as part of the solution process, they can delay improvements to the overall system.

The next step in the process, which was not covered in the workshop because of time constraints, is to take the top prioritized header cards and detail them into action steps using a Tree Diagram that will provide potential solutions to that header card. When the Tree Diagram is being constructed on a prioritized issue, this is when the team can gather data and evidence to further demonstrate and support the interrelationships that were defined to ensure they are valid. This step is a check on decisions made as to what to focus on before developing solutions to the original issue. It is always best to verify and

validate with data, evidence, and potential strategies whenever possible to ensure the team is making quality decisions.

Summary:

The output from these workshop exercises was the synthesis of those who participated in this workshop from many different health departments and with different concerns, challenges, and perspectives. The participants were able to apply the lessons of the presentation to a practical issue that is faced by the public health community. As the participants experimented with the Affinity Diagram, they were able to work with new colleagues in the session and organize their thoughts in logical groups in a manner that allowed the group to come to consensus. The participants also practiced moving from the Affinity Diagram to the Interrelationship Digraph (ID Graph). In the second activity with the ID Graph, participants were able to define the relationships between the issues related of “How to Leverage the Power and Reach of Public Health.” The process of determining how the identified issues related to one another and the direction of the impact from one issue to the other was somewhat challenging to do in the short period of time. Consensus on this exercise took additional time to reach. Also, participants struggled with identifying a one way direction for the arrow from one issue to the next. The exercise was time bound by the workshops length and there is a possibility that other categories could have resulted with more time devoted to the process.

We encourage you to try these exercises and the tools with your staff to help your organization understand and develop approaches on How to Leverage the Power and Reach of your Public Health Agency.