SPECIAL SECTION

FINISHING BIG BY STARTING SMALL

Continuous Improvement Is the Key to Enhancing Community Health

BY MARIAN L. KNAPP

Summary Although healthcare organizations increasingly seek involvement in community health improvement, they are often unprepared to do so because of their inexperience in disease and injury prevention. In recent years, however, continuous improvement (CI) methodology has produced insights that are useful in such projects.

An organization considering a community health improvement project should, from the start, test it through "Plan, Do, Study, Act" (PDSA) cycles.

The project's leaders should begin by selecting an issue to work on. They must accurately define the community and involve its members in the project, because health improvement work is most effective when the people who care most strongly about a problem help solve it.

Leaders should clearly define the project's aim, perhaps through analyzing hospital records and other databases. In forming a collaborative group to work on the project, leaders should begin with a "core team," perhaps adding other members later. This team should track data using three kinds of measurement—global, intermediate, and process—building data evaluation into its daily practices.

The team would do well to get the guidance of someone familiar with CI methodology. It should also use a process involving regular meetings, time lines, a means of communicating with experts outside the area, and a format that enables it to document progress and capture lessons learned.

Healthcare organizations are becoming involved in community health improvement, for two reasons. First, as healthcare professionals increasingly deal with preventable injuries and illnesses, they see that true prevention begins at the community level. Second, as managed care becomes more prevalent, healthcare organizations assume responsibility for the overall health of large populations. It is in such organizations' economic interest to keep people in their communities healthy and out of the hospital—the costliest stop along the healthcare continuum.

Yet healthcare organizations are often not prepared to act on this interest. That is because healthcare training is largely based on the treatment of disease and injury, not on the promotion of prevention.

Continuous Improvement: A Guide to the Future

Over the past 10 years, continuous improvement (CI) methodology, which originated in industry, has been used effectively by healthcare organizations to improve processes and outcomes.[1] In the past four years, pioneer workers have applied CI methodology to community health and healthcare.

Much has been learned from two projects: the Community-wide Health Improvement Learning Collaborative (sponsored by the Institute for Healthcare Improvement and GOAL/QPC)[2] and the Community Based Breakthrough Series Collaborative on the Prevention of Motor Vehicle Injuries (sponsored by the Institute for Healthcare Improvement and the American Society for Quality Control).[3] Both projects used the "Model for Improvement" developed by G. J. Langley, K. M. Nolan, and T. W. Nolan, which incorporates concepts and methods

Ms. Knapp is a consultant for Community Health Improvement, Newton, MA.

defined by W. Edwards Deming and others.[4]

These concepts promote decision making and problem solving by small teams of people who, because they comprehend systems and have gathered the pertinent data, have come to understand the processes in which problems occur. The "Model for Improvement" first asks teams to answer three questions:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes that we make will result in an improvement?

The third question reflects the fact that there are many changes a team might make. Until a particular change is tested, however, the team cannot be certain it will result in an improvement. Changes are best tested on a small scale. If a change does not produce improvement on a small scale, it is unlikely to do so on a large one.

Once a team has decided to attempt a change, it should test it through using "Plan, Do, Study, Act" (PDSA) cycles. In the "plan" phase, the team defines the test and predicts what might be learned from it. In the "do" phase, the team carries out the test and collects data from it. The team then "studies" the data and, depending on the results, "acts" on the test—that is, either modifies or abandons it.

By completing multiple small PDSA cycles, one team in Anchorage, AK, reduced the rate of postneonatal deaths among native Alaskans. Another team, in Baton Rouge, LA, reduced the school absenteeism rate among children at risk for violence.[5]

The work done by these teams produced insights that have proved to be useful in the application of CI principles to community health (see **Figure** at right).

Selecting an Issue and Initiating Action

Once a healthcare organization has decided to initiate community health improvement activities, it searches for practical ways to take action. Often the first step is to understand the issues that concern the community. There are a number of good models for identifying community needs. The APEXPH (Assessment Protocol for Excellence in Public Health)[6] and the PATCH (Planning Approach to Community Health)[7] models both provide frameworks for assessing needs, setting priorities, and developing a plan.

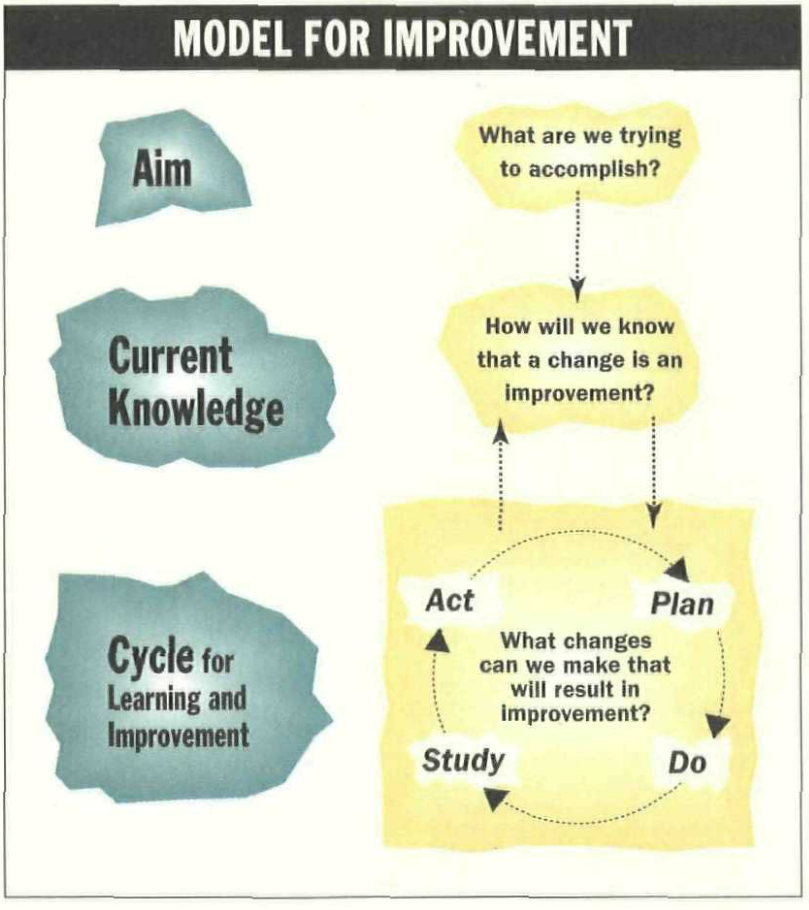
Hospitals and other healthcare organizations have data that can be used to identify community needs. For example, a team in London, Ontario, analyzed data involving elderly people who came to the emergency room after a fall. From their analysis, team members determined the scope of the problem and the types of injury sustained. Then they interviewed a group of such patients and learned that the elderly knew little about falls prevention or available exercise programs. Discovering that the elderly were particularly afraid of falling on public buses, the team worked with the department of transportation to train bus drivers in making safe starts and stops for elderly passengers.

Often the first step is to understand the issues that concern the community.

It is not necessary to wait until large-scale assessments are completed, however. In Twin Falls, ID, a pediatrician is the leader of a team trying to reduce motor vehicle injuries among teenagers. "Ask the first person to walk into your office what is worrying her, her family, or her neighborhood," recommends the pediatrician. "Then ask the next 10 people the same question." Because every individual represents some segment of a community, together they will provide insights into broader community concerns. A more comprehensive assessment will likely confirm that the problem affects more than a small number of people.

Defining the Community

Healthcare organizations—especially tertiary care centers in urban areas—are sometimes discon-



nected from their immediate surroundings and thus have difficulty identifying a community to work with. What, in healthcare terms, is a "community"? Is it a city or town concerned about the health of its citizens? A specific neighborhood that happens to be worried about violence? A group of people without access to healthcare? A group of people who suffer from asthma?

A community is all of these. Indeed, a good way to define a community is to consider the issues its members want to work on. Of course, different groups will care about different things; a group worried about child abuse may not be concerned about falls among the elderly. Work on a problem is most effective when people who care strongly about that problem come together to create positive change.

For example, in Brookline, MA, Deaconess Hospital and the local health department formed a team to work on reducing injuries among elderly pedestrians. This decision was made after focus groups among the elderly and data from the state registry of motor vehicles indicated that such injuries were a serious issue in the community. The team later expanded to include the area's council on aging, the state transportation department, and local police departments.

Clarifying the Aim

Once the team has decided on a general issue to address, it must clearly define the aim. Without a clear aim, the team will be confused about its work; indeed, it will founder before it even begins.

A good way to begin is by analyzing information from hospital records or other community databases. For example, a team in Burnsville, MN, decided to examine data from the state transportation department as part of its plan to cut the number of local motor vehicle injuries. The data showed that the majority of such injuries occurred at four intersections on a county road. To clarify its aim, the team decided to study one of those intersections.

Leaders of a team just beginning a community health improvement project will sometimes err by making the team too big.

Forming a Team

Leaders of a team just beginning a community health improvement project will sometimes err by making the team too big. In an effort to ensure that all sectors are represented, they talk to many people, inviting them to meetings to discuss the project issue and a process for improvement. Although leaders should involve the right people in the project, they should not involve too many initially, because that could slow the work.

In fact, community health projects seem to work best with a "core team." The core team examines data, chooses the issue, clarifies the aim—and then identifies the people who have the interest, time, and necessary skills to participate in the project. In Denver, for example, a physician-led team decided to try to reduce the number of motor vehicle injuries among drivers of fleet vehicles. Wanting to engage the business sector in their work, the team's leaders defined a single employer—a utility company—as the project's community. In doing so, the team leaders added the expertise and "buy-in" they needed and yet kept the team small.

Data and Measurement Systems

Teams can use data not only to identify issues and clarify aims, but also—and more important—to set up a measurement system that will track progress over time. This is one of the most difficult tasks facing teams. It may be that, in a given project, the necessary data concerning the region and its inhabitants are not readily available; or that state and local databases vary in the types and quality of the information they contain. Even so, the team must use whatever relevant data exist to create a graphic display.

The process of identifying and displaying data can be viewed as a PDSA cycle from which team members can learn what data are really needed. Many of the teams involved in the Community-wide Health Improvement Learning Collaborative came to realize that a lack of good data inhibited their progress toward improvement. As a result, several teams—including those in Monroe, LA, and Twin Falls—are considering the development of community health databases.

The teams involved in the collaborative discov-

CI PRINCIPLES FOR COMMUNITY HEALTH

Efforts to improve community health should be based on these ten principles:

- Identify opportunities for improvement.
- Identify the community which is to be the "customer."
- Define a clear aim.
- Make decisions based on data.
- Display data graphically so that the community can follow its progress.
- Form a team made up of people who know the process in which problems occur.
- Acknowledge that teams are more successful than individuals working alone.
- Train teams in a structured problem-solving process.
- Set a large aim but conduct small tests in "Plan, Do, Study, Act" (PDSA) cycles.
- Remember that improvement never ends.

ered it was helpful to separate measurements into three different types.

Global Measurements Global measurements concern the larger issues, those relating to a project's overall aim. They might include, for example, the monthly number of infant deaths, of elderly people injured in falls, of traffic injuries, or of deaths involving teenage drivers.

In the long run, measurements like these will be affected by individual team projects. Still, the plotting of global measurements has a large significance for community work because they reveal trends. By publishing them in newspapers and displaying them in presentations, a team can make the community aware of both the problem and the efforts being made to solve it.

Global measurements can also be used to help the community see itself as a system. The team trying to reduce postneonatal deaths among native Alaskans in Anchorage has created a system that measures "days between deaths." The postneonatal death rate has fallen since the team established a clinic designed to serve women at risk for this problem. And as the community has seen the "days between deaths" measurements lengthen, it has become convinced of the program's value. As a result, the Alaska Native Medical Center has decided to make the program part of its pediatric service.

Intermediate Measurements Teams may argue that global measurements are not useful for the short term because the changes made will have no significant impact on them for several years. For that reason, teams should design some intermediate measurements they believe are related to their overall aims. In a project to reduce vehicle injuries among teenagers, the number of teens cited for traffic violations would be an intermediate measurement. Another would be the number of women who complete high-risk reduction plans in a project to cut postneonatal deaths. Improvement in an intermediate measurement cannot by itself ensure improvement in global measurements—and thus the success of the project. Yet a team can be confident that, by carefully choosing intermediate measurements, it is tracking progress toward its global aim.

Process Measurements These are measurements useful in testing small changes within specific interventions in PDSA cycles. In Kingsport, TN, a team trying to cut motor vehicle injuries tested a comprehensive driver education program, assessing the driving skills of those who took it. Those assessments led to modifications in the driver education program.

In Alberta, Canada, a team interviewed mothers who identified themselves as being at risk for abusing their children. The team learned that an effective program to prevent child abuse must be comprehensive, have its center within walking distance of clients' homes, and be staffed by people the mothers could trust.

Teams employing CI methodology have found small tests of change an effective technique for moving to action quickly.

Learning from Small Tests of Change

Process measurements are usually the data resulting from small tests of change. Teams just starting out in community health improvement often want to design the perfect program or make a big initial impact, but they usually learn that completing small projects is the best way to get to the larger goal. In fact, teams employing CI methodology have found small tests of change an effective technique for moving to action quickly.

To make these small tests, teams can design interventions based on team members' experience, experts' advice, or the literature. Testing changes on a small scale first, in iterative PDSA cycles, enables teams to learn what works and what does not, thus minimizing the risk when failures occur. In fact, the best learning often results from tests that do not go well.

In Allentown, PA, for example, a team tested the use of crash dummies as an instructional tool to encourage seat belt use. The team performed its test in two elementary schools, planning to implement it in all the city's schools later. Results showed, however, that seat belt use actually declined after the intervention.

Teams function best when they assume that every experience, whether a success or a failure, is an opportunity to learn.

Evaluation

With CI methodology, teams do not delay evaluation until a program has been operating for some time. Global measurements track progress toward the ultimate goal, intermediate measurements track the results of specific interventions, and process measurements weigh the effectiveness of each step. Evaluation is thus built into the improvement process and is part of the team's regular work.

Sustaining Progress in the Future

As teams move deeper into their projects, documenting results along the way, they must decide how they want to continue. There is no single right answer. For instance, one strategy might call for turning the successful program over to others. The London, Ontario, team that designed a program to reduce falls among the elderly eventually turned it over to a local group of family physicians because the physicians agreed to build the program into their daily practices.

In Camden, NJ, on the other hand, a team

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COLLABORATION

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Turf An effective way to deal with potential turf problems is to design the process so that those concerned about losing control over their work, or organization, or issue, are brought in early. Leaders should let such people know that their contribution is honored and work hard to keep turf battles from splitting the effort.

It may be that a community already has a collaborative going. In that case, the leaders of a new initiative should think about how their project relates to, for example, the local Healthy People 2000 group, the local health and human services network, or the mayor's blue ribbon panel. Leaders should ask, Is a new effort really needed, or can the necessary work be done within the existing structure?

Time A collaborative effort will almost always take longer to carry out than one conducted by a single organization. That is because of the difficulty of managing multiple schedules—for example, the local chamber of commerce meets on the second Tuesday of each month, and the high school basketball team plays on Thursdays.

Also, some groups come to the table ready to make decisions and allocate resources, while others are at a more exploratory stage. And new people join the group and need to be oriented. When the effort gets bogged down, its leaders should:

- Set meeting dates as far in advance as possible, urging participants to schedule their meetings around the effort's meetings.
- Work on small issues if the collaborative group cannot agree on larger ones. If, for example, the public health department must get the legislature's permission before participating in a health plan for underserved children, the group can start work on a smaller initiative in the meantime.
- Keep meetings public and open to newcomers, but also organize an effective orientation process, so that newcomers can be brought up to speed outside regular meeting times. □

For more information, call Julia Weaver, National Civic League, 1-800-223-6004.

CONTINUOUS IMPROVEMENT

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from Our Lady of Lourdes Medical Center decided its goal was to improve health citywide. The team, discovering that other hospitals and managed care organizations had been working toward the same end, later expanded to include them.

Supporting the Work of Teams

Experience from the two national collaborative efforts shows that teams must have support and guidance to be successful. It is not enough to assign a team an issue, ask it to develop a program, and then evaluate the program after several years.

Teams need guidance in the improvement process, especially at the beginning of their work. The nature of this guidance will vary, as will teams' degree of need. For example, teams often need the assistance of someone who knows CI methodology and can use it to help keep the process objective. Teams will also benefit from receiving the guidance of those who have both practical and research knowledge of the particular issue being worked on, those who are expert in measurement and the display of data, and those who understand team and community dynamics.

In addition, teams will benefit if they use a process requiring regular meetings, time lines, a means of communicating with experts not available locally, and a format that enables them to document progress and capture lessons learned.

Ten Lessons for Success

The work of the national collaborative teams indicates 10 lessons for teams planning community health improvement projects:

- Create a large goal, but start with a small project.
- Define a clear aim. Without it, the team will falter.
- Create an appropriate core team and expand it according to project needs.
- Set global measurements at the project's beginning and use them to track progress.
- Use data to make decisions in each of the project's phases.
- In selecting interventions, try what is already known to work.
- Make progress in small PDSA cycles.
- Do not be afraid to fail. It is part of the learning.
- Complete small projects in a CI framework. They will lead to the larger goal.
- Find local and national experts who can provide timely advice. □

For more information, call Marian L. Knapp at 617-928-0641; e-mail mlknapp@ix.netcom.com.

NOTES

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