Quality Improvement Initiative in School-Based Health Centers Across New Mexico

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ABSTRACT

BACKGROUND: Quality improvement principles have been applied extensively to health care organizations, but implementation of quality improvement methods in school-based health centers (SBHCs) remains in a developmental stage with demonstration projects under way in individual states and nationally. Rural areas, such as New Mexico, benefit from the use of distance education techniques to reach providers throughout the state.

METHODS: The Envision New Mexico (ENM) Quality Improvement Initiative involves training in quality improvement concepts and methods, identification of best practices for selected clinical services, and repeated use of data to measure changes leading to improvement. The ENM employs the Model for Improvement and the "Plan-Do-Study-Act" tool, which enables providers to self-evaluate, set goals, and assess results with their own data.

RESULTS: Providers tend to overestimate their use of best practices. Contrasting these perceptions with findings from medical record reviews can provide impetus and focus for quality improvement through changes in specific clinical practices and management systems. Preliminary findings from New Mexico suggest that quality improvement interventions can be effective, with initial improvements over baseline reviews typically in the 20-40% range.

CONCLUSION: Systematic efforts to enhance the quality of care can help improve both the effectiveness and efficiency of SBHCs, and provide evidence of the value of the care provided. Simple, efficient quality improvement techniques, with the use of distance learning technologies, can help achieve the full promise of expanded school-based health care.

Keywords: child and adolescent health; school health services; school-based clinics.


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Across the country, school-based health centers (SBHCs) provide an array of programs such as behavioral health, dental services, and preventive efforts around obesity, asthma, and reproductive health. In addition to primary health care, SBHCs can offer health promotion and disease prevention services while allowing providers to view their patients within their school and community context.

There are high expectations that SBHCs will improve access to care, increase preventive care, and fill in gaps in the health care system especially evident among disadvantaged populations of children. These hopes are fueled by the increasing awareness of the chasm between what children need from the health care system and what is often provided. School-based health centers represent an important opportunity for adolescents and children living in poverty who often experience barriers to health care access.

Since 2005, SBHCs have been a key strategy in New Mexico for improving the health care safety net for children and adolescents. With fewer than 2 million people spread across 33 counties, the state sees building and supporting SBHCs as a means to...
serve the needs of school children. Many of these children and adolescents live in poverty and often experience barriers to health care access. The New Mexico Department of Health has recently undertaken an unprecedented expansion of SBHCs across the state, funding a total of 59 in 2009. In all, there were 81 SBHCs in New Mexico in 2009, with sponsorship and support from the University of New Mexico School of Medicine, Federally Qualified Health Centers, Indian Health Service, New Mexico tribal organizations, local school districts, and 3 sites supported by Atlantic Philanthropies (the Elev8 program).4

Quality Improvement

Quality improvement principles and goals have been applied extensively to health care organizations, but implementation of quality improvement methods in SBHCs remains in a developmental stage with demonstration projects underway in individual states and nationally.5 Quality improvement methods to increase efficiency and improve patient care are now seen as a strategy to strengthen SBHCs,5,6 a perspective actively promoted by national organizations7,8 and to help fulfill the promise of this public investment.

Envision New Mexico (ENM) conducts quality improvement training, development, and evaluation services to pediatric providers across the state. The Quality Improvement Initiative (QII) seeks to improve clinical services and delivery systems in SBHCs. As part of the Department of Pediatrics at the University of New Mexico (UNM), ENM maintains an expert staff, utilizes up-to-date information technology, and draws upon the resources of the UNM Health Sciences Center to train and support health care providers in employing “best practices” to ensure effective and efficient health services. This report describes the implementation, initial impact, and findings from the QII during the 2008-2009 school year.

METHODS

Participants

In fall 2008, ENM implemented procedures to screen all New Mexico Department of Health funded sites to identify those with the best capacity to participate in quality improvement interventions. Reflecting the part-time nature of SBHC operations in New Mexico, sites were considered if they had at least 16 hours per week of both medical staff time and program coordinator time. These sites were recruited and matched to specific interventions based on their needs and interests. A total of 13 clinical “teams” representing 18 SBHCs, at both high schools (14) and middle schools (4), participated during the 2008-2009 academic year.9

Topics

The QII involves training in quality improvement concepts and methods, identification of best practices for clinical services, and repeated use of data to measure changes leading to improvement. The ENM employs the Model for Improvement and the “Plan-Do-Study-Act” (PDSA) tool, which encourages providers to self-evaluate, set goals, and assess results.10,11 The ENM trainers worked directly with the staff at the selected SBHCs to train them in quality improvement methods and the use of medical record data to track improvements.

Three “best practice” models were offered:

1. Pediatric Overweight Prevention, Identification, and Treatment.
2. Improved Clinical Practices/Early Periodic Screening, Diagnosis, and Treatment examinations (required annual examination for children under Medicaid).
3. Behavioral Health: Student Depression Screening, Assessment, and Treatment.

These 3 areas were defined through discussions with the Department of Health, Office of School and Adolescent Health, the primary funder of SBHCs in New Mexico. The 2008 State of New Mexico Comprehensive Strategic Health Plan identified the following areas of improvement for New Mexico youth: healthier weight, mental health/suicide prevention, pregnancy prevention, and immunization compliance. The best practices models employed provide key objectives and related measures that are employed as indicators of clinical quality improvement.

Measures

The QII implementation was based on the following steps:

1. Presentation of the “best practices” model and related performance measures.
2. Self-assessment of current performance by the SBHC staff.
4. Quality improvement methods training specific to the topic.
5. Multiple additional record reviews to track improvement.

Impact measures were obtained through staff self-evaluations and medical record reviews at the SBHC sites. Process measures included attendance at site visits and training events, as well as through documentation of observations and reporting by the ENM staff. Field notes and periodic progress reports demonstrated indicators of the progress occurring with each team.
A tool developed by the ENM called the “Content Area Specific Assessment,” was used to measure perceptions of performance for comparison with results of medical record reviews. The Content Area Specific Assessment is loosely based on the “Strengths/Weaknesses/Opportunities/Threats” model of analysis. The Content Area Specific Assessment was designed to assess provider perceptions of existing proficiency with key “best practices” performance measures prior to the QII training. This tool is employed to focus discussion on the measures that will be used to assess performance of “best practices,” and to emphasize the importance of actual observations from the records as opposed to provider perceptions. The completion of the Content Area Specific Assessment tool was followed immediately by the first round of medical record reviews (the baseline) to establish actual performance, to be followed by a series of record reviews over the next 6–18 months intended to track changes in response to the training provided by the ENM. This tool has been refined through use; a copy is available upon request from ENM (http://envisionnm.org).

The SBHC—Continuous Quality Improvement tool developed by the Center for Health and Health Care in Schools was used as a reference document in the development of the ENM initiative.12 The ENM initiatives were largely consistent with the Continuous Quality Improvement tool and included mental health and risk for depression and physical examination. We also assessed the completeness of the annual physical using the requirements of the Early Periodic Screening, Diagnosis, and Treatment framework, which includes evaluating the completeness of immunization status. In some cases, we chose different screening tools, for example, one screening instrument was a modified version of the American Medical Association’s, “Guidelines for Adolescent Preventive Services” questionnaire, called the Student Health Questionnaire. The measures used were similar. Our protocol required that the Student Health Questionnaire be completed no later than the third visit, the standard recommended by the New Mexico Office of School and Adolescent Health.13

Medical record review tools specific to each content area were also developed by the ENM. Information abstracted from patient records did not contain identifying information such as name, birth date, or zip code. These reviews are designed to reflect provider practice patterns and not patient outcomes.

For all record reviews, simple random samples of the target population were drawn by SBHC staff, following instructions by ENM. The target sample size was 30 usable records, providing acceptable statistical power as the size of anticipated changes was generally large. The sampling frame was all students seen during a defined period of time, providing for independent samples representing a particular set of visits. All statistical tests reported in this analysis are 2-tailed, independent samples, t tests. For quality improvement, the use of data is to provide an overview if incremental changes over time, rather than focusing on the differences in values at any 2 points in time.

**Procedure**

The QII procedure included an initial site visit, ongoing training opportunities offered via telehealth, coaching on the use of the Plan, Do, Study, Act and Model for Improvement, and follow-up support through phone contact or additional site visits. The ENM worked directly with staff at the selected SBHCs to train them in quality improvement methods and to demonstrate medical data review procedures.

**Initial Site Visit.** For each SBHC, an initial 2-4 hour site visit served to orient SBHC staff to the QII process. These visits included the following:

1. Orientation to the Model for Improvement and the PDSA tool.
2. Information on the specifics of the “best practices” model underlying the selected initiative at that site.
3. Administration of the Content Area Specific Assessment for assessment of current perceptions of practices.
4. Baseline medical record reviews conducted by the SBHC personnel with instruction from the ENM staff.

**Training and Follow-Up**

**Telehealth.** Participation in training via telehealth14 organized by the ENM was an important avenue for engagement and continuous learning for SBHCs. Our experience suggests that telehealth is an excellent way to impart information to sites (including trainings and group discussions), but should not take the place of face-to-face interactions and the development of strong working relationships. The use of Web-based technology allows for training and support without the time and expense of travel for each event.

There were 45 Web-based seminars offered by ENM projects between July 2008 and June 2009. The SBHC staff was free to participate in as many events as they chose. Continuing education/continuing medical education credits were offered for all Webinar programs, free of charge to SBHC team members, to the extent allowed by the accrediting body (eg, continuing education credits for counselors could be given if the training was presented by a licensed counselor, but not if it was presented by a medical provider).

**Ongoing Contact.** One of the main challenges for ENM in conducting QII with SBHCs around New Mexico was to maintain communication, provide
training at a distance, and keep SBHC staff engaged in the process in the face of competing demands on time and energy. The ENM staff made specific efforts to keep in touch with SBHCs, usually through contact with the site administrative coordinator. Follow-up site visits were made depending on the need and opportunity. A limiting factor was SBHC staff availability because of factors including ongoing heavy clinical responsibilities, lack of support for meeting time, pressure to produce billable hours, etc. In spite of these factors, most sites participated in additional site visits in support of their QII, with all Improved Clinical Practices teams, 3 of 4 pediatric overweight sites, and 2 of 4 behavioral health sites participating in second site visits.

Plan-Do-Study-Acts. Subsequent steps in the QII called for use of PDSAs to identify and implement changes to administrative systems and clinical practices designed to improve performance in the pursuit of best practices. Depending on the needs of the SBHC team and the nature of the obstacles to change, a variety of activities were conducted between February and the conclusion of the school year in June.

RESULTS

Content Area Specific Assessment and Medical Record Review Findings

Pediatric Overweight. The pediatric overweight best practices model focuses on 2 key measures: documentation of body mass index percentile and key messages. Key messages are evidence-based messages regarding physical activity and nutrition habits for all children regardless of weight (Table 1).

These results are relatively typical of what happens in the QII process. Medical record reviews showed that team members overestimated their use of best practices. After the QII intervention, the teams demonstrated the improvement by focusing on the specific practices involved.

Improved Clinical Practices. The Improved Clinical Practices model was evaluated on 2 items: completion of the Student Health Questionnaire and documentation of Early Periodic Screening, Diagnosis, and Treatment components. The Student Health Questionnaire should be administered on the first visit to the SBHC, or by the third visit if it is medically inappropriate on first visit (e.g., if the student is acutely ill or in crisis during the initial visits). The Early Periodic Screening, Diagnosis, and Treatment best practice model sets a high bar for performance; a total of 13 critical items must be completed to get a “pass” on this measure (Table 2).

The teams were doing well with the Student Health Questionnaire for nearly all students seen. The teams overestimated their compliance with all Early Periodic Screening, Diagnosis, and Treatment requirements; however, after the QII intervention, the significant improvements were seen during the second medical record review.

Behavioral Health. Behavioral health assessment relies on 2 items: completion of the Student Health Questionnaire and documentation of risk assessed. Risk “assessed” means the Student Health Questionnaire was signed, dated, and had a risk assessment value (high, moderate, and low) assigned by the medical or behavioral health provider (Table 3).

For behavioral health, the Student Health Questionnaire provides an assessment of issues related to depression and an opportunity to identify the need for an immediate intervention with the students and additional services. Significant improvements were made for both behavioral health assessments after the QII intervention.

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Table 1. Pediatric Overweight Comparison of Content Area Specific Assessment Self-Rating and Medical Record Review Results (2 SBHC Teams)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Self-Rating†</th>
<th>Medical Record Review 1</th>
<th>Medical Record Review 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index percentiles are calculated and recorded on all first visits and well child checks</td>
<td>60%</td>
<td>3 (15%)</td>
<td>26 (95%)**</td>
</tr>
<tr>
<td>Key messages are being discussed at all well child checks</td>
<td>60%</td>
<td>2 (10%)</td>
<td>12 (44%)**</td>
</tr>
</tbody>
</table>

*p ≤ .01.
**p ≤ .001.
†Percentage of staff who expected this item to have been completed three-fourths or more of the time.
SBHC, school-based health center.

Table 2. Improved Clinical Practices Comparison of Content Area Specific Assessment Self-Rating and Medical Record Review Results (5 SBHC Teams)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Self-Rating</th>
<th>Medical Record Review 1</th>
<th>Medical Record Review 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of students that complete the Student Health Questionnaire</td>
<td>80%*</td>
<td>189 (94%)</td>
<td>126 (58%)*</td>
</tr>
<tr>
<td>Early Periodic Screening, Diagnosis, and Treatment components are documented</td>
<td>53%†</td>
<td>15 (8%)</td>
<td>53 (41%)**</td>
</tr>
</tbody>
</table>

*p ≤ .05.
**p ≤ .01.
†Percentage of staff who expected this item to have been completed three-fourths or more of the time.
‡Medical record review “pass” required presence of 13 items.
SBHC, school-based health center.
A number of statistical limitations are inherent in data-driven quality improvement. Lack of sophisticated electronic data systems means that sampling charts is a manual process with potential for sampling bias and data errors in the data collected. For example, one pediatric overweight site reviewed a set of records where nearly all cases were above the 85th percentile. Further discussion about sampling and its relation to the quality improvement process resolved this misunderstanding.

The effort to manually select and review records means that sample size is a balance between statistical needs and practical issues. Many SBHCs struggle to regularly review as many as 30 records. Small sample sizes reduce statistical power but multiple sampling points can support the validity and reliability of the findings. Measurement error likely occurs because of the lack of systematic recording of quality improvement measures in the medical records, an issue that can be addressed through review of findings with the SBHC staff, and can make future record reviews easier. In some cases, different providers within the same SBHC had different recording practices, making it difficult to abstract information from a cross-section of records.

Electronic medical records may offer a solution to these and other logistical problems facing quality improvement efforts in SBHCs and elsewhere. Specific quality improvement measures and reports will need to be incorporated into the systems as they are developed.

Visits by the ENM staff served to engage SBHC teams in the QII and provided an opportunity for assessing the results over time. Online trainings and group discussions supplemented ongoing interactions between ENM and SBHC staff members. The success of the QII is dependent on implementation of a challenging program in a range of settings, and often requires addressing systems change and team building before clinical best practices become feasible. During the year, 5 of the 13 teams experienced loss of key staff. Recruiting and retaining staff in SBHCs is generally recognized as an ongoing challenge to the system. In the short run, this loss of key staff slows progress and over the long run it is a critical issue for SBHCs, in general. Thus far, informal feedback from participants has been positive and ENM has instituted more systematic feedback methods (end of year wrap-up and surveys) that will help improve program content and delivery in the future.

In the QII, there were consistent and sizeable improvements in performance on the second record reviews, following the work with ENM. These results are encouraging regarding the value of the QII in support of SBHCs to improve the quality of clinical services provided to students. Establishing additional SBHCs has increased access to vital care, but the

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**DISCUSSION**

Past experience in clinical quality improvement has shown that provider perceptions of performance generally exceeded what can be demonstrated by an actual review of medical records. Without some systematic process for monitoring performance it is difficult for clinicians to maintain an accurate sense of how well they are doing on specific practice objectives and how to make changes that lead to improvements. The need to develop a mechanism for tracking performance measures over time is a key lesson of the QII.

Medical record reviews are a challenge for SBHC staff. The ENM provides training in sampling and abstracting, provides coaching throughout the process, and reports results to each site, including any data quality issues identified. These reports provide an ongoing basis for focusing the quality improvement process.

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**Table 3. Behavioral Health Comparison of Content Area Specific Assessment Self-Rating and Medical Record Review Results (2 SBHC Teams)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Medical Record Review 1</th>
<th>Medical Record Review 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Student Health Questionnaires administered</td>
<td>79%&lt;sup&gt;3&lt;/sup&gt;</td>
<td>44 (75%)</td>
</tr>
<tr>
<td>Risk assessed on Student Health Questionnaire</td>
<td>100%&lt;sup&gt;7&lt;/sup&gt;</td>
<td>22 (37%)</td>
</tr>
</tbody>
</table>

<sup>1</sup> Percentage of staff who expected this item to have been completed three-fourths or more of the time.
<sup>3</sup> During first visit (or third visit if medically appropriate).
<sup>4</sup> SBHC, school-based health center.
payoff in improving child and adolescent health in New Mexico may be greatly enhanced by systematic efforts to enhance the quality of the care delivered.

IMPLICATIONS FOR SCHOOL HEALTH

In New Mexico, SBHCs are often isolated, part-time programs attempting to meet the health needs of the student population. Quality improvement mechanisms can help providers give better care and demonstrate the quality of the care provided. Long-term development and political support may depend on who is served and how well they are served. Quality will be an important consideration in establishing SBHCs as viable medical homes for these children.

Using established quality improvement techniques, distance delivered training, and on-site facilitation makes it feasible to bring best practices to widely dispersed SBHCs in a rural state such as New Mexico. A partnership between the local practitioners, the university, and the health department can overcome some of the barriers of isolation and scale of operations, and encourage teamwork and identification with a larger community of advocates for improved care for school children.

There is increasing evidence that quality improvement can be a successful strategy for strengthening SBHCs. Systematic improvements can address both effectiveness and efficiency of care, addressing both specific clinical practices and the systems that support the provision of high-quality care. Early results from the QII in New Mexico are consistent with expectation that targeted, short-term educational interventions reinforced with simple performance data, can result in best practices becoming standard practice.

Because of their ability to operate outside of the usual constraints of a traditional health care provider office, SBHCs have the potential to become a strong partner for the patient-centered medical home in New Mexico. A “medical home” describes an enhanced model of primary care in which provider care teams address the multifaceted needs of patients and provide comprehensive, coordinated, and patient-centered care.17

The National Committee on Quality Assurance, among others, has worked to create a working definition of the “medical home.” To date, SBHCs do not have a defined role either as providing medical homes to their patients or as adjuncts to community practices that have adopted the medical home model. There is, however, a strong argument to be made that for particular subpopulations the SBHC provides key elements of the medical home to otherwise disenfranchised patients—the uninsured and adolescents.

Examples of the services that SBHCs provide that fit into the medical home model include risk assessment screening, preventive health care, care coordination, mental health services, and active participation of patients into the health care delivery at the SBHC. All of these services are difficult to provide in the context of a community health care center. Adolescents in schools with SBHCs could be comanaged and receive much of their care through the SBHC while maintaining a relationship with their community-based primary care provider. In some cases, the SBHC has the capacity to serve as a medical home. By participating in quality improvement, SBHCs demonstrate their capacity to provide evidence-based, well-coordinated, and patient-centered health care. As the field of primary care moves toward the patient-centered medical home SBHCs that are actively improving the quality of the care they provide will have the ability to meet the emerging standards in primary care.

Human Subjects Approval Statement

The ENM QII has approvals from the University of New Mexico Human Research Review Committee (No. 05-227) and the Navajo Nation, Human Research Review Board (No. 07-198).

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