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Electronic Student Health Questionnaire (eSHQ) enhances risk assessment for adolescents

SUMMARY

The electronic Student Health Questionnaire (eSHQ) improved early identification of health risk behaviors and initiation of discussions about protective factors for adolescents treated in school-based health centers (SBHC).

Developed under Colorado and New Mexico's Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) Quality Demonstration grant, the eSHQ is a computer tablet-based risk screening instrument. Providers who used the eSHQ reported it produced more complete risk data and facilitated referrals between primary care and behavioral health services. The eSHQ generated SBHC-level and statewide reports for all students who used it. These reports allowed comparisons across SBHCs within a State and across the two States to help improve population health management and advocate for support of SBHCs. Implementation requires ongoing training and technical support rather than one-time costs.

Problems Addressed

- **Adolescence is a time when numerous risks to health emerge.**[1] Failure to assess these risks systematically can cause providers to miss opportunities to intervene and change risky behaviors before they become habitual. In general, discussing health risks with adolescents can promote healthy habits and improve care overall.[1-3]
- **Adolescents are reluctant to divulge private information.** Screening tools can collect risk information both efficiently and without embarrassment. A study has shown that adolescents are less forthcoming when sensitive information is collected by a person rather than by computer.[4]
- **Paper-based risk screeners can be cumbersome to use and complicate data collection, analysis, and storage**. Adolescents complete paper-based screeners inconsistently, and providers use of the data is variable.[5,6] Consequently, risk detection rates are low.[6,7]
- **It is difficult to use data from paper-based screeners to monitor risk over time.** Lack of electronic data makes it hard to track whether students' risks have been addressed, both on an individual basis and at the population level.

What the Staff Did

CHIPRA quality demonstration staff from New Mexico and Colorado collaborated to develop and implement risk screeners for adolescents in 20 different SBHCs.

CHIPRA quality demonstration staff—

- **Developed paper-based risk screening tools.** CHIPRA quality demonstration staff refined a paper-based risk screening tool that was already in use in New Mexico by adding items adapted from existing tools and guidelines, including those in *Bright Futures*.[8-13] Two versions of the risk screening tool were developed: one for high school and one for middle school students. The questionnaires were 30 and 33 questions long, respectively. Both versions embedded behavioral health questions adapted from the Patient Health Questionnaire-2 (PHQ-2), a two-question screener for depression,[14] and the CRAFFT, a six-question alcohol and drug abuse screener.[13]
- **Pilot tested, refined, and translated the risk screeners.** Several SBHCs pilot tested the paper-based risk screeners. After finalizing the content using feedback from the pilot sites, risk screeners were translated into Spanish.

- **Developed computer tablet versions of the risk screeners for both students and providers.** Paper-based questionnaires were converted to an electronic format for a computer tablet. The resulting eSHQ was designed to be user-friendly and efficient. It included skip patterns so that students could progress through the information quickly. The provider version allowed providers to comment on the student's assessment of risk. It also included an electronic notification system to alert providers of risk scores that required further action.
- **Helped SBHCs integrate screening into their workflow.** In the 20 SBHCs that were part of the CHIPRA quality demonstration, students used computer tablets to complete the eSHQ in waiting areas and exam rooms; providers had corresponding tablets in their offices. In most SBHCs, the front office clerk or medical assistant handed students the tablet to complete the eSHQ in the waiting room. During the visit, providers reviewed the students' responses to the risk screening tool, probed as needed, and made notes on their own tablets if their assessment of risk differed from the student's response.
- **Provided SBHC staff with technical support and training.** CHIPRA quality demonstration staff provided technical assistance to SBHC staff, particularly during early implementation stages. For example, State staff helped establish wireless connections and the computer platform needed to support tablet use. Providers were trained to access and use eSHQ data. This training and support continued throughout the project.
- **Developed aggregate reports for individual SBHCs and for the States**. In addition to individual reports on each student that completed the eSHQ, State-hired consultants developed reports showing the risk profile for all students who took the eSHQ at a given SBHC. These reports gave SBHCs a profile of risk for their entire population, which enabled them to act on areas of concern. The consultants also developed reports for the State as a whole, giving information to the appropriate State agency on areas of concern for their population.

Did It Work?

SBHCs using the eSHQ were able to screen a substantial number of adolescents, producing important information on student risk profiles.

- **A substantial number of middle and high school SBHC-using students in both States completed the eSHQ.** During the 2013–2014 school year, almost 3,000 students in the demonstration project took the eSHQ: 1,861 in New Mexico and 1,076 in Colorado.[15] These numbers represent approximately 53 percent of all students who used the SBHCs during the school year. In both States, middle school (MS) students were more likely to complete an eSHQ than high school (HS) students (CO HS= 41%, CO MS= 66%, NM HS=52%, NM MS=64%).
- **The eSHQ provided more complete data than paper-based questionnaires.** Many SBHCs reported that students were more thorough in completing the questionnaire on the computer tablet. Students found it more engaging and easier to navigate than paper-based versions, according to staff reports. Additionally, because skip patterns were built into the electronic application, the number of unanswered items was reduced.
- **Providers credited the eSHQ with facilitating discussions about risks with adolescents and referrals to behavioral health providers.**[16] Providers viewed the eSHQ as more confidential for students than a paper-based survey. They reported that highlighting risk areas on the screen made it easier to identify health risk behaviors and initiate discussions about protective factors. The eSHQ improved the integration of primary care and behavioral health by identifying specific risk behaviors that made referrals easier.
- **The eSHQ produced actionable information on risk profiles for the students.** SBHC staff and quality improvement consultants used aggregate data to track and respond to changes and student-level data to ensure appropriate diagnosis, treatment, and followup. For example:
  - Staff at one middle school SBHC was alerted to an increased prevalence of drug use and potential abuse, which prompted them to intervene. Specifically, an advisory group conducted a drug use/abuse awareness campaign, and SBHC staff developed youth-friendly resources regarding marijuana and other drugs.

  - School staff routinely used information on sexual activity from individual students to initiate laboratory tests for chlamydia and other sexually transmitted infections, initiate treatment, and monitor students.
  - School staff routinely used information on suspected depression from the eSHQ to trigger further assessment to confirm the diagnosis, initiate appropriate treatment, and monitor students to assess the effectiveness of treatment.

- **Aggregated risk data were used to advocate for continued support of SBHCs**. CHIPRA quality demonstration staff shared aggregate reports with school administrators and other stakeholders to demonstrate the level of need among students and encourage the continued support of SBHCs. Data included findings like these—
  - Although few middle school students reported having sex, by high school approximately 50 percent reported that they have had sex.
  - Many youth in both States watch too much TV and do not eat enough fruits and vegetables compared with goals set by Healthy People 2020.
  - Almost one in four high school students in Colorado and nearly one in three in New Mexico seen at these SBHCs have one or more symptoms of depression.
  - In each State, about 14 percent of high school students have seriously considered suicide.

Adoption Considerations

Based on the experiences of Colorado and New Mexico, the eSHQ may have utility in other States. The screeners were successfully implemented in SBHCs in rural, urban, and frontier areas of both States. They were also implemented in schools that served predominantly White student populations as well as those with predominantly Hispanic/Latino populations. Even with the potential for broad application, other States and organizations considering adopting the eSHQ should be aware of what it takes to implement and sustain it.

Implementing organizations need extensive technical support. SBHCs and other health care organizations serving vulnerable adolescents are unlikely to have the necessary technical resources to troubleshoot issues such as problems with wireless connections or the tablet platform.

Fully integrating the eSHQ into electronic health records (EHR) is difficult. Ideally the eSHQ data would become searchable for each student's EHR. Health care organizations may have to settle for importing the eSHQ data as a PDF file, foregoing the ability to query the EHR for specific information from the eSHQ.

Computer tablets and interfaces have to be maintained. Using the eSHQ involves the costs associated with server maintenance, application updates, and improvements such as clinical enhancements.

Ongoing training is required. Because of staff turnover and system updates, ongoing training in the use of the eSHQ is essential.

Endnotes

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This Special Innovation Feature was produced as part of the national evaluation of the CHIPRA Quality Demonstration Grant Program, a set of 10 grants awarded by the Centers for Medicare & Medicaid Services to improve the quality of health care for children enrolled in Medicaid and the Children's Health Insurance Program.

Additional information about the national evaluation and the CHIPRA quality demonstration is available at **http://www.ahrq.gov/chipra/demoeval/**.

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