A. BACKGROUND

Spirometry is a recommended component of asthma diagnosis and treatment in the primary care setting¹, yet few primary care providers report routine use of spirometry in the provision of care for their asthma patients.²,³ Errors in classification of asthma severity have been reported when assessment is based on symptoms alone.⁴ This misclassification can lead to inadequate treatment⁵ that may result in an increase in morbidity⁶ and increased health care utilization and overall cost. However, even when an objective measure such as spirometry is used to aid in asthma severity classification, primary care providers have a high rate of failing to meet the quality goals for testing established by the American Thoracic Society.⁷,⁸,⁹,¹¹

Currently no self-paced, distance-learning programs exist to train staff to perform high-quality spirometry tests. John Hankinson Consulting developed a CD-ROM spirometry course for occupational nurses, but it was not designed for the primary care setting, requires about 10 hours to complete, and costs between $200-300.¹⁰ The National Institute for Occupational Safety and Health⁹ (NIOSH) offers a two-day spirometry training course that costs about $400 each, plus travel and other expenses; due to the high costs, these training courses are rarely used by primary care providers.

Powell and Stout at the University of Washington’s Child Health Institute recently developed a distance-learning tool to train primary care providers and their staff how to properly use spirometry to assist in managing chronic lung disease (in particular, asthma and COPD). This CD-ROM program, “Spirometry Fundamentals™: A basic guide to lung function testing”, is a computer-based self-paced training program that teaches primary care providers and staff the techniques required to perform high-quality spirometry, and addresses clinical interpretation of the spirometric data. There are short quizzes at the end of each of 10 modules, and the entire program takes just over an hour to complete.

B. PROPOSED PROGRAM

1) Distribution: To distribute Spirometry Fundamentals™, harnessing the expertise of the Children’s Marketing Communications Department to reach primary care clinics in the diverse areas of Washington, Wyoming, Alaska, Montana and Idaho (WWAMI).

Participants will be recruited from the WWAMI region, leveraging the relationship Children’s has with primary care providers and utilizing the expertise of the Children’s Marketing Communications Department. Participants will include primary care providers (physicians) and their support staff (medical assistants and/or nurses, in most cases) and will be recruited as practice pairs (referred to collectively as practice pairs from here forward). Physicians will order and interpret spirometry tests based on their clinical judgment, and support staff will coach the spirometric maneuver.
Practice pairs must have access to a spirometer and agree to receive and view the Spirometry Fundamentals™ CD-ROM in advance of the expert support component. Included with the CD will be a letter explaining that each member of the practice pair should view the CD at their convenience over the following two weeks.

We will coordinate a marketing and distribution campaign with the Children’s Marketing Communications Department. The goal will be to recruit practices who are currently employing or attempting to employ spirometry in their office practice, and who are willing to view Spirometry Fundamentals. We will attempt to enroll from 10 to 15 practice pairs for the first wave of this intervention.

2) Expert Telephone Support: To provide access to an expert in performing spirometry once the participant has viewed the entire Spirometry Fundamentals™ CD-ROM. Coaches (nurses or medical assistants) will have telephone access to a respiratory therapist to address issues related to coaching the spirometric maneuver. Physicians will have telephone access to a pediatric pulmonologist to discuss issues pertaining to interpreting the spirometric data for clinical use in children.

A respiratory therapist from either Children’s or Northwest Asthma and Allergy Clinic in Seattle, Wash., will serve as the spirometry coach trainer. Dr. Ted Carter, a pediatric pulmonologist based at Children’s will serve as the content expert for providers. Both of these individuals will be available by telephone to practice pairs, a system that will be developed and coordinated by Ellen Kuwana.

A list of days and times when the experts will be available will be posted on the Web site and will be updated weekly by the study coordinator. These scheduled phone calls will address questions, review coaching of the maneuver and guide interpretation of the results.

*Telephone support for the spirometry coaches and for the primary care physicians who will be interpreting the spirometric results:*

Telephone support sessions will be of two types, those for the coaches and those for the interpreting physicians. The respiratory therapist/pulmonary function technician involved with the program will run the sessions for the coaches, and the pulmonologist will run the sessions for the interpreting physicians.

*Telephone support for the coaches:*

Conference calls will be scheduled for one week after enrollment and then every two weeks thereafter. The coaches will also be able to post questions on the Web site, which will be answered electronically. In addition, if a coach wishes to speak with the respiratory therapist or pulmonologist to discuss an issue that cannot be handled with the scheduled conference calls, then the study coordinator will arrange a phone consultation.

*Scheduled conference calls*: These will last approximately one hour. The first three conference calls will have a pre-set agenda. The later conference calls will deal primarily with answering specific questions and trouble shooting. For the later
conference calls, the agenda will be based upon the specific needs of the participating coaches. We will encourage all coaches to be present for the conference calls.

*Conference call #1*

This will take place one week after the start of the program. Each coach will have reviewed the Spirometry Fundamentals modules. The respiratory therapist will have reviewed information on each of the spirometers being used by the participating practices and will be familiar with how these spirometers operate.

Agenda:

1. Review with the coaches the modules and any questions concerning them.
2. Emphasize the keys to obtaining acceptable flow-volume curves.
3. Provide useful coaching tips, especially for children.
4. Review the spirometers to ensure that the coaches know how to use them.

*Conference call # 2*

This call will be approximately two weeks after the first conference call.

Agenda:

1. Review any issues the coaches have with operating their spirometers.
2. Discuss specific concerns that the coaches have with obtaining spirometric results.
3. Answer questions concerning the Spirometry Fundamentals modules.
4. Provide tips on how to get patients to perform the FVC maneuver properly.
5. Review how to determine if the patient is providing good FV-curves.

*Conference call #3*

Same agenda as for conference call #2.

*Later conference calls:*

Agenda:

1. We will obtain input from the coaches before the conference calls and set up tentative agendas. By this time, each coach should be familiar with the spirometer and understand how to obtain good results.

*Telephone support for the primary care physicians interpreting the studies:*

Conference calls will be scheduled for one week after enrollment and then every two weeks. The physicians will also be able to post questions on the Web site, which will answered electronically by the pulmonologist. In addition, if an interpreting physician wishes to speak with the pulmonologist concerning an issue that cannot be handled with the scheduled conference calls, then the study coordinator will arrange phone consultation.
The scheduled conference calls: these will last approximately one hour. Before each conference call, the program coordinator will send out an agenda to each participant and make sure that the participants have all the materials required for the conference call. The program coordinator will set up the calls at times that are most conducive to a high participation rates. The first three conference calls will have pre-set agendas. The later conference calls will deal primarily with answering specific questions and trouble shooting. For the later conference calls, the agenda will be based upon the specific needs of the participating physicians. We will encourage all physicians to be present for the conference calls.

Conference call #1

This will take place one week after the start of the program. Each physician will have reviewed the Spirometry Fundamentals modules that pertain to interpreting the flow-volume curve. Specifically, each interpreting physician will have reviewed the modules on acceptability and reproducibility of the F-V curve (module 7), the pre-post bronchodilator response (module 10), and interpretation for clinical utility (module 9). The physicians should know what type of spirometer they are using, and this information will be available by the time of the first conference call.

Agenda:

1. Review the modules and any questions concerning them.
2. Emphasize the keys to obtaining good spirometric results and knowing when the tests are interpretable.
3. Briefly review the specifics of the spirometers.
4. Answer questions concerning interpretation of the results.

Conference call #2

This will take place approximately two weeks after the first conference call.

Agenda:

1. Review any issues with obtaining good spirometric results and review how to determine when results are interpretable.
2. Review the spirometric parameters (FVC, FEV-1, FEF25-75, and FEV-1/FVC ratio).
3. Review how to interpret results with emphasis on determining airways obstruction and bronchodilator response.
4. Answer any questions concerning the Spirometry Fundamental modules.
5. Provide tips on how to get patients to perform the FVC maneuver properly.

Conference call #3

Agenda:

1. Review F-V curves (test results) that the interpreting physicians will have submitted before the call. We will send out a packet of all the F-V curves, devoid of any patient identifying information, so that all can learn from the interpretations.
2. We will review the number of tests done at each site, problems with interpretation, and the overall success of the program.
Later conference calls:

1. We will obtain input from the physicians before the conference calls and set up tentative agendas. By this time, each physician should have interpreted enough studies provide input on how successful the program has been and offer advice on how we can improve it.

3) User Feedback: To survey participants about their experience using the program to facilitate improvement of the Spirometry Fundamentals™ training tool.

An evaluation survey about Spirometry Fundamentals™ will also be posted online to collect feedback including length of time it took to complete review of the CD, participant suggestions for additional technical features that might be helpful, opinions about content, opinions about whether the program enhanced perceived ability to perform spirometry and interpret results, and whether the participant would recommend Spirometry Fundamentals™ to colleagues.

TIMELINE

November 2006 through January 2007:
- Develop Web site to coordinate expert support call schedules
- Develop Web-based version of Spirometry Fundamentals™ evaluation survey
- Children’s Marketing Communications Department contacts WWAMI sites about Spirometry Fundamentals™ CD-ROM resource and support program

January/February 2007:
- Enroll interested clinical practices
- Obtain verbal and written consent for participation
- Mail out Spirometry Fundamentals™ CD-ROM, plus project information

February-April 2007:
- Allow two weeks for users to view Spirometry Fundamentals™ CD-ROM
- Coordinate expert support calls
- Collect data on user volume, call content, and user satisfaction

April 2007:
- Collect user feedback surveys
- Follow-up e-mail or phone calls to thank participants for completing project

May/June 2007:
- Compile user feedback information, write up report

References


