Telehealth Process Evaluation

2010-2011

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Overview

Purpose of the Evaluation

The purpose of this evaluation is to identify course corrections for the Asthma Telehealth Program. The evaluation will address fidelity of implementation, reach, and dose delivered.

Background on Telehealth

The Utah Department of Health (UDOH) Asthma Program began offering asthma continuing education in February 2010 based on recommendations from the National Asthma Education Prevention Program’s (NAEPP) Diagnosing and Management Guidelines. The NAEPP Guidelines recommend the use of multifaceted, clinician education programs that reinforce guidelines-based asthma care and are based on interactive learning strategies.1 Utilizing the Utah Telehealth Network (UTN) at the University of Utah, the Asthma Telehealth Series was established to improve the knowledge and practice of asthma care in Utah. The Asthma Program coordinates quarterly sessions to address educational needs and professional practice gaps by integrating competencies, standards, and evidence-based guidelines. The Asthma Program, in partnership with UTN, utilizes distance-learning technologies to maximize reach, including Telehealth networks, videoconference systems, audio bridges, and web streaming. The program is capable of reaching all levels of health care providers in rural, frontier, suburban and urban areas.

Methodology

The evaluation group worked together to structure the evaluation plan for the telehealth program. The evaluation was carried out using a non-experimental design and mixed methods for data collection. The quantitative data analyses included descriptive and inferential statistics, along with some content analysis. The qualitative data were analyzed for themes and pertinent recommendations.

Evaluation Questions

The evaluation questions were written by the evaluation group and reflect the interest of the vested stakeholders in the task force and action groups. These questions will be answered throughout the remainder of the report:

1. How is the objective of educating health professionals (HPs) on the diagnosis and management of asthma being met?
2. In what ways are the messages relevant and at the appropriate education level for the intended audience?
3. What were barriers or external factors to implementation as planned?
4. In what ways can the program be improved?
5. Are the proper measures in place for collecting data for a future outcome evaluation?

Data Collection

The data were collected using several methods. The first step was to conduct a thorough literature review of key concepts related to telehealth programs and distance learning. The second step involved compiling data collected from each telehealth session. These data included: registration and sign-in forms; evaluations; pre- and post-tests; and archive use. The next step involved interviewing the Utah Asthma Program (UAP) staff members involved with the telehealth program and other UDOH programs.
that use telehealth. Notes were taken during the key informant interviews and written up by asthma
program staff.

Data Analysis

All of the data were analyzed using Microsoft Excel and contain primarily descriptive statistics. The
qualitative data collected in the key informant interviews and open response questions in the evaluation
were used to support themes found in the quantitative data, but were also analyzed separately for
themes.

Results

The results of the literature review, mini-program content evaluations, and key informant interviews will
be presented according to the evaluation question topics. Over the course of the seven telehealth
programs, 177 evaluations were completed and returned via email, fax, and online. A total of 170 pre-
tests and 155 post-tests were completed. Over the seven telehealth programs, a total of 410 people
registered for one of the sessions. In total, 159 participants returned sign-in forms.

How is the objective of educating health professionals on the diagnosis and
management of asthma being met?

Health professionals readily use Internet-based programs to obtain continuing education (CE) or
continuing medical education (CME). In 2001, only about 2.7% of physicians were using the Internet for
CME. In 2003, it was estimated that 45-64% of physicians participated in Internet-based CME. Because
of the convenience of Internet-based CE, the field continues to grow. Studies on the effectiveness of
Internet-based versus live workshop education have yielded inconclusive results as to the efficacy of one
over the other. Changes in attitudes and knowledge appear to be comparable across teaching methods
and a few studies have suggested increased behavioral change with online CME participation. The
literature suggest that telehealth is an appropriate method for sharing education on health issues.

In examining the telehealth program topics listed in Table 1, the first seven programs appear to be
relevant to the target audience, although there is some overlap between telehealth 3 and 7. Also,
programs 3 and 7 are not as relevant to NAEPP guidelines as mentioned earlier as the focus for topics in
the telehealth programs. The topics are relevant to asthma in Utah, but may not be as relevant to HPs.

<table>
<thead>
<tr>
<th>Table 1: Telehealth Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
</tr>
<tr>
<td>Telehealth 1</td>
</tr>
<tr>
<td>Telehealth 2</td>
</tr>
<tr>
<td>Telehealth 3</td>
</tr>
<tr>
<td>Telehealth 4</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
</tr>
<tr>
<td>Telehealth 5</td>
</tr>
<tr>
<td>Telehealth 6</td>
</tr>
<tr>
<td>Telehealth 7</td>
</tr>
</tbody>
</table>

The evaluations collected from participants in the first seven programs list topic ideas, which contain
suggested speakers ranging from ER doctors who often treat asthmatic patients, to proper asthma
education for parents and patients. This list should be consulted for future speakers and topics, but should also be compared with the NAEPP guidelines.

The second consideration is whether HPs are utilizing the telehealth programs. The first graph, *Fig. 1*, shows the overall number of participants who registered for the telehealth programs and those participants who turned in sign-in forms. The true number of participants cannot be identified because some people register but don’t watch the broadcast, and only the participants seeking continuing education credit turn in the sign-in forms, despite the UAP asking all those viewing the program to turn them in.

*Figure 1: Average Number of Participants by Registration and Sign-in Form*

![Graph showing average number of participants by registration and sign-in form.](image)

*This is the average for the three telehealth programs presented in 2011; the final telehealth for 2011 will be in November.*

After interviewing the UAP telehealth coordinator, one of the reasons for the large increase in participants in year two was that a list was obtained containing the email addresses of all licensed physicians, physician assistants, and nurses in Utah. The Division of Occupational and Professional Licensing (DOPL) sent a list containing contact information for all HPs in Utah. Only email addresses were used from this list and were used to inform HPs of the UAP Telehealth Program. This email was sent out before the fifth telehealth program, which is reflected in the number of sign-in forms turned in by HPs as seen in *Figure 2*.

*Figure 2: Number of Health Professionals Who Returned Sign-in Forms*
In year one, the telehealth program with the fewest returned sign-in forms was Air Quality and Health. A similar topic, Asthma ED Visits and Air Quality, had the fewest HPs. This may be a topic of interest for other audiences, but appears to be of less interest to HPs. Programs more specific to the treatment of asthma appear to be more popular with HPs.

In order to maintain this higher number of HP participants, participants must be given a reason to return to the telehealth programs. Figure 3 shows that 15.3% of HPs had participated in more than one telehealth program since it began. A larger percentage of health professionals (81%) had participated in only one telehealth program, but increases in HP attendance have only occurred within the last year. If this upward trend continues, the percentage of returning attendees should increase during the next few years. In the future, it will be advantageous to monitor this measure and make course corrections in order to increase the number of returning telehealth participants.

Figure 3: Percent of Health Professionals Who Attended One or Multiple Telehealth Programs

Another benefit of the telehealth program in reaching HPs with asthma information is that the webinar and PowerPoint presentations are available online for use at any time. The table below shows the archived use of the telehealth presentations.

Table 2: Archived Telehealth Presentation Use

<table>
<thead>
<tr>
<th>Telehealth Program</th>
<th>Archived use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Telehealth Program</strong></td>
<td><strong>PPT downloads</strong></td>
<td><strong>Webinar views</strong></td>
</tr>
<tr>
<td>Obesity and Asthma</td>
<td>4093</td>
<td>574</td>
</tr>
<tr>
<td>Asthma Severity</td>
<td>2963</td>
<td>550</td>
</tr>
<tr>
<td>Air Quality and Health</td>
<td>2768</td>
<td>563</td>
</tr>
<tr>
<td>Childhood vs. Adult Onset Asthma</td>
<td>198</td>
<td>614</td>
</tr>
<tr>
<td>When Asthma is Hard to Treat</td>
<td>645</td>
<td>588</td>
</tr>
<tr>
<td>Asthma Device Training</td>
<td>289</td>
<td>250</td>
</tr>
<tr>
<td>Asthma ED Visits and Air Quality</td>
<td>130</td>
<td>Data NA</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11,086</strong></td>
<td><strong>3,139</strong></td>
</tr>
</tbody>
</table>
There are more downloads for the first few presentations as they have been available the longest. Although HPs cannot receive CE credit for viewing the archived version, a fair number of people have viewed them (3,139).

**In what ways are the messages relevant, useful, and at the appropriate education level for the intended audience?**

The data collected on the evaluation forms and pre- and post-tests for the telehealth programs help to answer this evaluation question. There have been several positive comments on the quality of the program and the information learned through the presentations. Suggestions for future topics for the telehealth programs are asked on the evaluation form.

The evaluation form contains a 5-point Likert scale for rating the presenter, presentation, and overall quality of the program. It also contains a qualitative section on program impact and suggestions. The presenter is evaluated on ability to teach effectively, subject knowledge, and effectiveness of teaching methods. The presentation is graded on the extent to which the two learning objectives listed on the evaluation were met. Table 3 shows the quantitative results of the evaluation handout.

**Table 3: Results of the 5-point Likert Scale Questions in the Evaluation Form**

<table>
<thead>
<tr>
<th></th>
<th>Evaluation of presenter</th>
<th>Evaluation of learning objectives</th>
<th>Overall quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telehealth 1</td>
<td>4.52</td>
<td>4.32</td>
<td>4.39</td>
</tr>
<tr>
<td>Telehealth 2</td>
<td>4.43</td>
<td>4.50</td>
<td>4.67</td>
</tr>
<tr>
<td>Telehealth 3</td>
<td>4.80</td>
<td>4.60</td>
<td>4.80</td>
</tr>
<tr>
<td>Telehealth 4</td>
<td>4.23</td>
<td>4.05</td>
<td>4.27</td>
</tr>
<tr>
<td>Telehealth 5</td>
<td>4.00</td>
<td>4.09</td>
<td>3.93</td>
</tr>
<tr>
<td>Telehealth 6*</td>
<td>4.61</td>
<td>4.45</td>
<td>4.45</td>
</tr>
<tr>
<td>Telehealth 7</td>
<td>3.93</td>
<td>3.75</td>
<td>3.78</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4.36</strong></td>
<td><strong>4.25</strong></td>
<td><strong>4.33</strong></td>
</tr>
</tbody>
</table>

*These data were different from the rest because the online evaluation form was different from the paper-based evaluation.

The overall quality of the telehealth program was “high” (4.33) or “very good” on the Likert Scale. The presenters also scored very well (4.36) and the learning objectives appear to be very well-taught (4.25). The quotes below from program participants show further evidence of the quality of the telehealth program. Telehealth 7 received low marks in all categories and it is believed that this was largely due to the large amount of background noise during the presentation.

“Thank you for facilitating this very informative continuing education program. I plan to use the 9 Steps of Correct MDI Technique as a guide when I provide teaching to patients regarding their use. I must admit that I had not been aware that I was previously teaching MDI technique to patients incorrectly until now. Thanks again for the training and education to improve my practice and provide better patient care. I’m looking forward to your next educational offering already!”

“Your topic selection is always great. Do you have anyone who could present on the use of home visits to improve asthma outcomes?”
Overall, there were knowledge gains for participants who completed both the pre- and post-tests. It is concerning to see the percent of participants whose score either stayed the same or decreased; however, overall, there was a larger prevalence of score increases. Table 4 shows the individual pre- and post-test percentages for four of the seven programs.

Table 4: Percent of Individuals With an Increase, Decrease or No Change Between Pre-test and Post-test Scores

<table>
<thead>
<tr>
<th></th>
<th>Increase</th>
<th>Decrease</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telehealth 1</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telehealth 2</td>
<td>50.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Telehealth 3</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telehealth 4</td>
<td>66.6</td>
<td>16.6</td>
<td>16.6</td>
</tr>
<tr>
<td>Telehealth 5</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telehealth 6</td>
<td>82.8</td>
<td>3.4</td>
<td>13.8</td>
</tr>
<tr>
<td>Telehealth 7</td>
<td>41.2</td>
<td>17.6</td>
<td>41.2</td>
</tr>
</tbody>
</table>

In two of the programs, an identifier was not placed in the pre- and post-tests so responses could not be compared. In the fifth telehealth, the data were unreliable because of question construction issues. In Telehealth 7, the “no change” category was high because six participants scored 100% on both tests.

During further analyses of the pre- and post-tests results, some participants incorrectly answered different questions between the pre-test and post-test. This makes it difficult to identify if these were true knowledge gains. In order to get a more highly-developed picture of knowledge gains, learning gain scores were computed for each individual. Because many of the pre- and post-tests contain the same number of questions, each mark on Figure 4 does not necessarily represent one participant.

Figure 4: Individual Learning Gain Scores For the Four Telehealth Programs

As shown in Figure 4, participants with a drop in their score had higher pre-test scores, which does increase the likelihood of possible negative learning gains. Although it is not shown in Figure 4, those participants with a 100% on the pre-test whose score stayed the same accounted for 10 of the 56 participants with calculated learning gain scores. So, a large portion of those without learning gains had
perfect scores to begin with.

In the evaluation form there was also a question on intended practice changes. Of those who completed the evaluation forms, 52.5% marked that they would make practice changes based on information from the telehealth program. Samples of the intended practice changes shared by participants are listed in the box below.

- Counsel on weight loss strategies and give more information to parents about healthy weight.
- Encourage asthma action plans for even mild and moderate asthma.
- I now feel more informed about asthma, so when doing patient teaching, I will have more information to suggest for improved control of asthma.
- Be more vigilant in stressing allergens in home and removal of them with asthmatics and allergy inflicted patients.
- Making sure all patients with inhalers show technique before discharge to correct any misuses. (I work in a hospital)
- I will be more aware of the implications for students with asthma on inversion, especially prolonged inversion days. I will be an advocate for myself (having asthma) and students in regards to physical and recess activity during school hours.

What were barriers or external factors to implementation as planned?

The Asthma Telehealth Program was modeled after the Diabetes Telehealth Program, which decreased barriers to implementation. Although the program implementation was similar to the Diabetes Program, different issues have arisen in relation to participant reporting and feedback. The staff member managing the telehealth program identified three main barriers to implementation. The first was technological issues. There were problems with web streaming reported during some of the telehealth programs, as well as issues opening up presentations when sent as zip files. Some organizations have firewalls that are set too high to allow for Internet streaming. Also, frequent updates to the web streaming have also caused technical access issues. The third barrier relates to limitations of the UTN tracking systems. Currently, there is no way to identify how many people are participating in the telehealth program. The only measures are the number of pre-registered participants and the number of returned sign-in forms (Table 5).

<table>
<thead>
<tr>
<th>Registration form count</th>
<th>Sign-in form count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>151</td>
</tr>
<tr>
<td>Year 2</td>
<td>259</td>
</tr>
<tr>
<td>TOTAL</td>
<td>410</td>
</tr>
</tbody>
</table>

Table 5 shows a large discrepancy between registrants and returned sign-in forms. This is largely due to the fact that the sign-in forms are used to award CE credits and those who don’t desire CE credit often do not turn in the form.
The second issue was getting health care providers and partners interested in the telehealth presentations. When the program began, listserv members and other various partners were informed. Obtaining the DOPL list assisted in overcoming this barrier. Prior to receiving the DOPL list, an average of nine health care providers attended each telehealth. After emailing everyone on the DOPL list, each telehealth program averaged 35 medical professionals. Use of the DOPL list helped increase participation of HPs in Utah, but interest must be continually cultivated. Word has spread slowly to other HPs in Utah and throughout the United States. From the sign-in forms, it can be ascertained that the program has reached HPs in at least 12 different states. Using an online medium means that people throughout the United States and the world can engage in these webinars.

Currently, there is CE credit available only for nurses and respiratory therapists. In order to reach more HPs, the UAP needs to apply to provide CMEs and credit for pharmacists. Another issue related to involvement of HPs is timing. Not all HPs have a scheduled lunch hour and the time of telehealth program may not fit into their schedule. This barrier may not be something the Asthma Program can overcome, so the archived presentations are a good option.

**In what ways can the program be improved?**

The answer to this question will include smaller corrections which are not listed in the recommendations section. The first improvement relates to an issue mentioned during an interview of the staff member over telehealth, which was noise on the phone line. This was a consistent complaint in all of the telehealth evaluation forms. In discussing this problem with the Utah Diabetes Program, staff mentioned that their secretary knew how to mute all of the participant lines, which has decreased the ambient noise issue. The secretary and staff of the Utah Asthma Program should learn how to do this in order to improve the quality of the telehealth program.

Improvements must also be made in the pre- and post-tests surveys. One idea would be to set earlier deadlines for obtaining the PowerPoint presentations. This will allow for more time to put together well-structured pre- and post-tests questions. Also, reviewing materials on writing appropriate pre- and post-tests questions would be beneficial.

The final issue is low response rates to pre- and post-tests and evaluations. There were two telehealth programs during the first year where only three to seven people completed these forms. Some course corrections have already been made, such as adding the evaluation to the end of the posttest online, but this has not substantially improved response rates. Researching ways to improve response rates as well as streamlining forms and return methods may be beneficial.

**Are the proper measures in place for collecting data for a future outcome evaluation?**

In reviewing the current data collected and the key informant interview notes, some changes will need to be made in order to have a more robust outcome evaluation. First, some contact information will need to be collected in order to allow for follow-up surveys on practice changes. The Diabetes Program currently collects enough contact information to allow for follow-up surveys related to practice change. The next step will be to provide a telehealth with a call-to-action. The Diabetes Program was looking into a telehealth where physicians were asked to refer patients to the Utah Tobacco Quit Line. The Quit Line records the name of the referring physician and progress of the participant in the Quit Courses. This method allows for specific data collection on HPs as well as patient-level data. The UAP could do a similar telehealth with medical professionals.
The final area of data collection relates to the archived views. If possible, it would be beneficial to collect a bit of demographic data on those who view the archived version of the telehealth program. The UAP telehealth coordinator should work with the epidemiologist on these demographic questions.

**Limitations**

There were several limitations in this evaluation, which relate primarily to data collection. Although technology is constantly evolving, many public health-type questions such as “why” and “who” remain unable to be answered. One item that cannot be answered at this time is how many people are actually participating in the telehealth programs. Some people may register and not watch the program; others may not register but view the program with a group of coworkers, and; some may register, watch the program, but not turn in a registration form. No true number could be identified. The second limitation relates to missing data. On the first two pre- and post-tests, a personal identifier was left off, so results were not available for comparison. On the sixth telehealth pre- and post-tests, one of the questions was written in such a way that it couldn’t be analyzed. Also, in telehealth #6, an online evaluation form was introduced in hopes of improving response rates. The problem encountered during this first attempt was that it was not uploaded correctly and two questions were omitted from the online form when compared with the paper form.

**Recommendations**

Some of the recommendations have been listed in the above portions of the evaluation report, specifically in the last two evaluation question sections. Below are further recommendations to consider.

**Timing**

Continue with the format of quarterly telehealth programs. The literature suggests that in order to achieve the greatest potential, CME must be a continuing effort that is not casual, sporadic, or opportunistic. With the resources available within the UAP, having more programs each year would put too much strain on the current staff. Also, it is better to have well-developed quarterly programs as opposed to poorer quality monthly programs.

**Presentations**

Work with presenters a bit more on presentation skills. Consider having the presenters include one or two slides with takeaway points. This will reinforce key messages. Also, halfway through the presentation, have the moderator or speaker quickly summarize what has been covered to that point. Some people may join the program late and would benefit from a recap, while others will better solidify concepts as they are repeated.

Another recommendation for improving the presentations would be to enhance the question-and-answer section following the webinar. In looking at the webinar programs, there are few if any questions asked of the presenter. Perhaps adding an instant messenger feed will allow for more engagement and produce more questions throughout the presentation and at the end as well. In an article by Gen Guanci, it is suggested that best practices for webinars are to pose a question or ask for participant questions every 10-15 minutes during the presentation.
Topics
Attention to the topics selected for the telehealth programs must be more of a priority and involve a form of selection criteria. Mazmanian and Davis noted that assessment of learning needs is critical for effective CME and relying on physicians to identify learning needs may be problematic.4,7 The NAEPP Guidelines should be the primary source for telehealth topics. Another great source of webinar presentation topics would be to look at gaps identified in the physician focus groups.

Continuing Education and Assessments
In interviewing staff involved with telehealth programs, UDOH is allowed to award CE credit only to nurses, disease-specific educators and respiratory therapists at this time. It will be important to gain the ability to give CME credit and possibly education credit to pharmacists. This will improve the reach of the program to include all health educators and also improve the amount of data collected for each telehealth session.

As mentioned in the question regarding data that must be collected for an outcome evaluation, data on participant change or patient level data are most desirable. Another measure to consider is the skill/ability change based on web-based education. This would involve asking two practice-based statements, which are linked to the learning objectives of the program. The participants would indicate his or her skill level before and after participating in the CE using a 5-point Likert scale.8 This method could be used and a follow-up survey could address continued use of these increased skills/abilities.
References


