# Assessing the Use of Two-Way Interactive Video (TWIV) Conferencing to Offer Heart Failure Continuing Education to Rural Pharmacists

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**ABSTRACT.** To assess the effectiveness of using two-way interactive video (TWIV) conferencing technology to offer heart failure continuing education to rural pharmacists, a continuing education program was simulcast from a metropolitan hospital to two rural hospitals via TWIV conferencing. A series of three surveys (pre-program, post-program, six month follow-up) were administered to assess heart failure knowledge and pharmacist confidence when treating patients with heart failure. Fifteen pharmacists participated in the study. Baseline heart failure knowledge significantly improved in the post-program vs. pre-program assessment (90% vs. 66%, $P = 0.002$) as did the six month follow-up assessment vs. pre-program assessment (81.3% vs. 66%, $P = 0.034$). Confidence levels of heart failure patient management were significantly improved in the post-program vs. pre-program evaluation ($P < 0.022$). This study showed

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that TWIV conferencing can be an effective way to offer live continuing education to pharmacists practicing in a rural setting. 

**KEYWORDS.** Continuing education, heart failure, distance education, rural pharmacists

## *INTRODUCTION*

Continuing education for practicing pharmacists is not only a requirement, but essential for keeping up to date on current treatment guidelines, drug therapies and the latest developments in pharmacy practice. Obtaining live continuing education credit may be especially challenging for pharmacists who live and practice in rural settings. Many times the only options for rural pharmacists to obtain continuing education credit is via hard copy publications, Internet or by attending regional or national meetings. Having the technology and ability to participate in a live continuing education session without the need to travel great distances can offer rural pharmacists the opportunity to remain current on the most effective drug treatments as well as convenient and cost effective. Likewise, the ability to deliver continuing education to several rural locations at the same time can be advantageous and possibly cost effective to the provider.

Two-way interactive video (TWIV) conferencing technology allows real time audio and video communication between two or more distant locations. It allows the presenter and participants from several locations to interact with one another simultaneously as if they are in the same room. The presenter can see and hear the participants at each site and the participants can see and hear both the presenter and the other participants. As a result, simultaneous communication occurs between everyone involved.

Recent literature has reported TWIV use by health care professions such as nursing, occupational therapy and physician assistant programs to train and instruct students (1-5). It has also been used by physicians to educate patients (6). To date, no studies have reported TWIV use to educate practicing pharmacists.

The primary objective of this study was to use TWIV conferencing technology to offer disease state management continuing education to rural pharmacists and to assess its effectiveness at improving both the

knowledge and confidence level of the participants. This study was reviewed by the Creighton University Institutional Review Board prior to beginning and was accepted with exempt status.

## *METHODS*

A two hour continuing education program entitled, "Acute and Chronic Hospital Management of Heart Failure" was developed and took place at a major metropolitan hospital. This hospital is a member of a hospital alliance organization consisting of 32 total hospitals in which all but three are in rural locations. At the time of the study, the metropolitan hospital and four of the rural hospitals in the alliance had the technology to simultaneously communicate with one another through two-way interactive video (TWIV) conferencing. The program was simulcast in real time from the metropolitan hospital to participating pharmacists at two of the four rural hospitals. Technical difficulty prohibited two of the hospitals from participating. Pharmacists completing the program were awarded two credit hours of pharmacy continuing education.

The continuing education program was primarily focused on medications used in acute and chronic heart failure management. The program consisted of a presentation of the most recent practice guidelines of heart failure management according to the American College of Cardiology and American Heart Association (ACC/AHA). Studies published since the release of the guidelines were also presented to provide the most current information.

The two-way interactive video technology was delivered via fiber optic line. Each presentation site required one video camera and one monitor for viewing other locations. The video camera was able to focus on the presenter, presentation slides and the participants individually or at the same time. To ensure the presentation was delivered properly it was necessary to have a TWIV facilitator at each location before, during and after the presentation. The TWIV facilitator set up the necessary equipment, operated the video camera and ensured communication was maintained throughout the presentation.

To assess the effectiveness of using TWIV conferencing to deliver heart failure continuing education, a series of three surveys were administered. A pre-program survey was mailed to the rural hospital locations and was administered just prior to the beginning of the presentation. The pre-program survey was used to establish baseline knowledge of heart failure as well as the participants' feelings of confidence when

treating patients with heart failure. In addition, a ten question multiple choice quiz was given to participants to assess baseline heart failure knowledge. The quiz questions were derived from the most recent practice guidelines established by the ACC/AHA and addressed heart failure epidemiology, pathophysiology and proper drug therapy for both acute and chronic heart failure patients.

The pre-program survey also established baseline confidence levels of the participants when treating heart failure patients. This was done by asking five questions using a Likert scale. The Likert scale asked participants to rate their answers from 1 to 5 on the scale with 1 representing "strongly disagree" and 5 representing "strongly agree." The questions which assessed the participants' confidence in managing heart failure patients are listed in Table 1.

A post-program survey was also mailed to the rural hospitals and was administered immediately following the continuing education program. This survey again addressed participant's knowledge of the heart failure practice guidelines that had just been discussed during the presentation. It also assessed how this newly learned information may effect their confidence in treating patients with heart failure. Participants answered the same multiple choice and Likert scale questions that were asked in the pre-program survey.

A follow-up survey was sent to the program participants six months following the completion of the program. The six month follow-up survey assessed the retention of the participant's heart failure knowledge as well as the participant's retention of the feelings of confidence when treating patients with heart failure. The same multiple choice and Likert scale questions were again asked as in the pre-program survey. Three

TABLE 1. Heart Failure Confidence Level Assessment Questions*

1. I am confident that I can differentiate acute heart failure from chronic heart failure.
2. I am confident that I can discuss the basic treatment regimen for a patient with acute heart failure.
3. I am confident that I can discuss the basic treatment regimen for a patient with chronic heart failure.
4. I am confident in my ability to assess the treatment of heart failure patients and make appropriate recommendations.
5. I am confident in my ability to educate heart failure patients regarding their drug therapy.

*Likert scale: (1) Strongly Disagree; (2) Disagree; (3) Undecided; (4) Agree; (5) Strongly Agree

additional questions were asked in this follow-up survey to see if the participants have received additional heart failure information since the completion of the continuing education program, and if they were able to apply the information learned in a practice setting and in what way.

A statistical comparison of the knowledge and confidence levels between the three surveys for each participant was done by using the non-parametric statistical procedure of the Wilcoxon signed rank test. Mean knowledge quiz scores and Likert scale scores for each confidence question was compared. Comparisons were made between the pre-survey and post-survey, pre-survey and six month follow-up survey, and the post-survey and the six month follow-up survey. A P value of less than 0.05 was considered to be statistically significant.

## *RESULTS*

A total of 15 participants (10 female/5 male) completed the study. The mean age of the participants was 43.1 years with a mean 19.9 years of pharmacy practice experience. A majority (93%) of the participants practiced pharmacy in a hospital setting.

Baseline heart failure knowledge significantly improved in the post-program quiz compared with the pre-program quiz (90% vs. 66%, P = 0.002) as did the six month follow-up quiz compared with the pre-program quiz (81.3% vs. 66%, P = 0.034). Heart failure knowledge, however, was not significantly different between the post-program quiz and the six month follow-up quiz (P = 0.066) indicating a retention in knowledge (Figure 1). In addition, the Likert scale scores which assessed the participants' confidence levels of heart failure patient management were significantly improved in the post-program evaluation compared with the pre-program evaluation. A summary of the results is listed in Table 2.

Further questions asked in the six month follow-up survey revealed that 23% (3/13) of the participants earned an average of 2.7 additional continuing education hours specific to the topic of heart failure in the time between the original continuing education presentation and the six month follow-up. In addition, 38% (5/13) of the participants applied the information learned from this heart failure continuing education presentation to their practice of pharmacy. The information learned was specifically used to talk with other health care providers about appropriate heart failure medications as well as to offer better patient counseling to patients with heart failure.

FIGURE 1. Comparison of the Mean Heart Failure Knowledge Quiz Scores

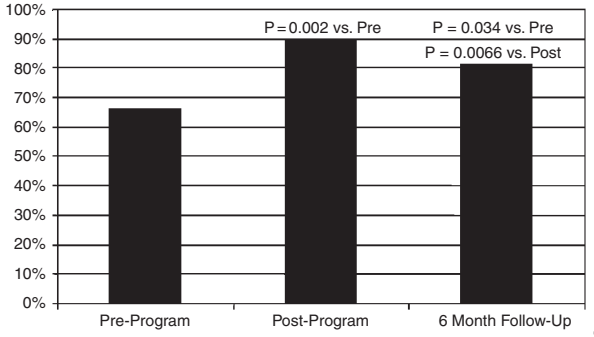


TABLE 2. Heart Failure Knowledge and Confidence Mean Scores in the Pre-, Post- and Six Month Follow-Up Surveys

| | Mean Score | | | P value | | |
|---|---|---|---|---|---|---|
| | Pre-program | Post-program | 6 Month Follow-Up | Pre vs. Post | Pre vs. 6 mo. f/u | Post vs. 6 mo. f/u |
| HF knowledge | 66% | 90% | 81.3% | 0.002* | 0.034* | 0.066 |
| Differentiate acute from chronic HF† | 2.50 | 4.14 | 3.64 | 0.015* | 0.027* | 0.070 |
| Discuss treatment of acute HF† | 2.64 | 4.08 | 3.71 | 0.022* | 0.084 | 0.166 |
| Discuss treatment of chronic HF† | 2.57 | 4.00 | 3.93 | 0.007* | 0.006* | 0.705 |
| Assess treatment/ make recommendations† | 2.50 | 3.86 | 3.43 | 0.010* | 0.037* | 0.141 |
| Educate patients† | 2.64 | 4.07 | 4.07 | 0.010* | 0.007* | 1.000 |

*Statistical significance ($P < 0.05$)

† Likert scale: (1) Strongly Disagree; (2) Disagree; (3) Undecided; (4) Agree; (5) Strongly Agree

HF = Heart Failure

## *DISCUSSION*

As the prevalence of heart failure increases, so does the complexity of the treatment. A great deal of research is currently being conducted in this area with new studies being published weekly. Therefore, the ability for pharmacists to keep current on the recent advances in treatment is challenging. It can be even more challenging for pharmacists who live

and practice in rural areas of the country to keep current because they may not be exposed to live continuing education information as frequently as those who practice in metropolitan areas.

Previous publications have shown that offering distance education through the use of two-way interactive video (TWIV) conferencing is an effective means of transferring information (1-6). Until this current study, TWIV conferencing had not been reportedly used to offer rural pharmacists live continuing education credit. This current study showed that disease state knowledge, specifically about heart failure, can be significantly improved through a continuing education presentation. This improved knowledge was shown to be sustained for at least six months. In addition, offering this information via TWIV conferencing has shown to be an effective means of offering live continuing education to rural pharmacists. It should be noted, however, that this sustained heart failure knowledge could have come from other continuing education courses or reading material obtained during the sixth month follow-up period.

This study also showed that pharmacists can feel more confident about differentiating acute and chronic heart failure, discussing heart failure treatments with other health care professionals and educating patients after participating in a heart failure continuing education presentation through the use of TWIV conferencing. In addition, this study showed that this enhanced level of confidence can be maintained for at least six months. Overall, the use of TWIV conferencing technology was able to effectively deliver continuing education information, which helped improve heart failure treatment knowledge and confidence in rural pharmacists as well as sustain these findings for at least six months.

Although this study did show important and significant findings, there were some limitations. Of note, most of the pharmacists participating in this study practice pharmacy in a hospital setting. Additional studies should be done on pharmacists who practice in other rural settings. In addition, the study did not account for the number of heart failure patients regularly treated by the participants. This may have had some influence on the results as those pharmacists who treat heart failure patients more often and who may have a greater knowledge base and feel more confident when doing so. Additional limitations include a small sample size with no control group and the use of a single disease state may make it difficult to generalize the results.

## *CONCLUSIONS*

The use of TWIV conferencing has previously been shown to be an effective means of educating students in other health care professions and patients. This study was able to show that it can also be an effective way to offer live continuing education to pharmacists practicing in a rural setting. Pharmacist can be a valuable member of the heart failure management team (7). Enhancing the knowledge and confidence of pharmacists when treating patients with certain diseases like heart failure can further enhance their value as a health care professional. Additional studies in this area should be done with larger sample sizes and more disease states in order to make the conclusions more applicable to a greater number of pharmacists.

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