

Enabling Sleep Apnea Patient-Centered Care via an Internet Intervention

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| Organization: | Veterans Medical Research Foundation |
| Mechanism: | RFA: HS07-007: Ambulatory Safety and Quality Program: Enabling Patient-Centered Care through Health Information Technology (PCC) |
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Summary: Continuous positive airway pressure (CPAP) is the therapy providers use most often to treat Obstructive sleep apnea (OSA) syndrome. Poor adherence to CPAP therapy is well-documented. This project developed an integrated remote monitoring device and Internet-based portal for patients with OSA who are prescribed CPAP treatment. The project evaluated the intervention's effect on patients' experience of care, CPAP adherence, and OSA outcomes.

OSA syndrome is a common condition that is treated with a CPAP flow generator, a machine that blows air at a physician-prescribed pressure into a facemask or nasal pillow. The Restraxx Data Center (RDC), composed of the Restraxx wireless module, affixes to and transmits data from the CPAP flow generator, and the server/database, which houses the data and restricts access to authorized health care professionals.

The objectively-measured adherence data from the RDC was transmitted to both patient and provider and used as the central outcome measure to evaluate the intervention. The provider portal contained information including adherence, volume of air leak, and number of apneas and hypopneas per hour. With this information, the provider continuously monitored the patient's progress and made ongoing decisions to support the patient and/or alter his or her treatment plan.

The team organized the data provided by the RDC into user-friendly pieces of information that are provided to the patient through the Internet Positive Airway Pressure (i-PAP) patient portal. The portal included a learning center with information on sleep apnea and the CPAP device, charts that provided objectively-measured adherence and efficacy data, self-tracked changes in weight, sleepiness, physical activity, and other user-defined factors over time. The learning center also contained self-assessment materials (including research surveys) an interactive troubleshooting guide, and cleaning instructions.

The research team conducted a randomized controlled clinical trial to evaluate the effects of the interactive portion of the CPAP treatment. Both the usual care group and the i-PAP patients were provided with CPAP devices and education materials on OSA. The trial evaluated the effect of having the Internet-based portal to facilitate the flow of information and communication between providers and patients in addition to the CPAP device. The team evaluated whether and how the i-PAP intervention affected OSA-related outcomes, CPAP adherence, patient-centeredness of care, patient assessment of and satisfaction with care, and patient activation. In addition, the team examined indicators such as use of the Web site and the frequency and nature of clinical contacts to understand the reasons behind any effects.

Specific Aims:

- Examine the effect of the i-PAP intervention compared to usual care on the patient's experience of the quality of patient-centered, collaborative care. **(Achieved)**
- Examine the effect of the i-PAP Internet intervention compared to usual care on the level of CPAP adherence. **(Achieved)**
- Examine the effect of i-PAP compared to usual care on OSA outcomes. **(Achieved)**
- Perform a basic cost analysis of the i-PAP intervention compared to usual care, applying a micro-cost methodology of measuring the quantity of inputs used in the production of care and the unit cost of each. **(Achieved)**

2011 Activities: Data were aggregated and transferred from Excel to SPSS. Scoring and data value checking were completed; scoring algorithms for questionnaires had been completed previously. Data analysis and manuscript development continued during this period.

Due to delays stemming from following up with the project subjects, the project team used a 12-month no-cost extension. The team used this time to finish data analysis. As last self-reported in the AHRQ Research Reporting System, project progress was on track and project budget spending was on target. The project was completed in August 2011.

Impact and Findings: The main finding of the study was that the i-CPAP intervention resulted in higher adherence relative to the usual care group. This difference was almost 1 hour per night. However, the difference of 1 hour per night did not appear to make a difference in the measured OSA symptoms between the interventional groups.

The key advantage of the i-CPAP intervention was the availability of resources important to the patient, including the learning center, the troubleshooting guide, and the data tracking. In the development of the i-CPAP intervention, the project was not able to execute certain functions due to privacy and confidentiality concerns related to local policies. These functions included: 1) setting up an e-mail contact system between patient and provider; 2) setting up a forum or bulletin board for enrolled participants; and 3) allowing for greater tracking possibilities. Health-related behavior change is in large part susceptible to several key behavioral change techniques, including goal-setting, self-monitoring, peer support, and increased self-efficacy. It may be that in omitting peer support, the intervention lost a potentially efficacious component. In a previous study by this research team, a group self-management program with peer support as one of its core components had a slightly larger effect. The key advantage of the i-CPAP intervention is its ability to provide OSA patients with the information they need when they need it, which is consistent with a patient-centered, collaborative care approach. The i-CPAP intervention provides the core of future interventional efforts using this technology.

Target Population: Adults

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the electronic exchange of health information to improve quality of care.

Business Goal: Implementation and Use
