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ORIGINAL ARTICLE

Comparing Multicomponent Interventions to Improve Skin Care Behaviors and Prevent Recurrence in Veterans Hospitalized for Severe Pressure Ulcers

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Abstract

Objective: To compare a multicomponent motivational interviewing (MI)/self-management (SM) intervention with a multicomponent education intervention to improve skin-protective behaviors and prevent skin worsening in veterans with spinal cord injury (SCI) hospitalized for severe pressure ulcers (PrUs).

Design: Single-blinded, prospective, randomized controlled trial.

Setting: Six Veterans Affairs SCI centers.

Participants: Veterans admitted for a severe (stage III/IV) PrU were followed up to 6 months postdischarge.

Intervention: Telephone-based individual MI counseling plus SM skills group (SM+MI; n=71) versus an active control group of telephone-based individual educational counseling plus group education (n=72).

Main Outcome Measures: Self-reported skin-protective behaviors, objective skin worsening.

Results: Intention-to-treat analyses found nonsignificant increases in skin behaviors in the SM+MI versus education control intervention arms at 3 and 6 months. The difference in behaviors used between SM+MI and education control intervention participants was 4.6% (95% confidence interval [CI], −11.3 to 2.7) (0−3mo) and 3.0% (95% CI, −8.7 to 3.9) (0−6mo). High rates of skin worsening were observed (n=74, 51.7%), usually within 3 months postdischarge and most frequently within the month postdischarge. Skin worsening, skin-related visits, and readmissions did not differ by study arm. Study limitations are presented.

Conclusions: For persons with chronic SCI and severe PrUs, complicated by multiple comorbidities, a primary focus on improving patient behavior is likely insufficient to address the complex problem of PrUs in SCI. More health care systems−level changes such as collaborative care may be needed to reduce PrU recurrence, especially in this era in which many people are discharged from the hospital unhealed or with little sitting tolerance.

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Pressure ulcers (PrUs) are a common and costly complication of spinal cord injury (SCI).[1] Research, expert clinical opinion, and clinical practice guidelines all stress that PrUs in SCI are multifactorial,[2] with all persons with SCI at lifelong risk of developing them.[3-6] PrU prevention typically occurs during post-SCI rehabilitation, focusing on educating patients about pressure relief, skin

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hygiene, adequate nutrition, environmental skin risks, avoiding harmful substance use, maintaining proper equipment, and seeking timely medical attention.[5] Given the complex nature of SCI PrU risk, it is not surprising that prevention of community-acquired PrUs remains a challenge.

Treatment of severe PrUs usually follows an acute care model.[7] Despite published guidelines, there is little agreement on and low implementation of the clinical practice guidelines,[8,9] and variability across settings.[8] Usual care for PrUs for veterans with SCI typically includes medical and nursing care, and specialty care (eg, plastic surgery, infectious disease, nutritional consultation) is provided on an as-needed basis. Physical therapy involvement with wound care (eg, electrical stimulation) or postsurgery protocols is also common (eg, equipment assessment, seating evaluation, progressive sitting program).[10]

In conceptualizing severe PrUs as a chronic, recurrent condition,[8,11] we examined PrU prevention through the lens of the Chronic Care Model[12] (CCM). This model has led to improved patient care and health outcomes in other chronic health conditions.[13] The CCM focuses on (1) enhancing patient activation via self-management (SM), through education, improved motivation, and skill building; (2) redesigning the health care system to provide proactive patient support and productive patient-provider interactions; (3) providing decision support to providers to maximize adherence to evidence-based guidelines; and (4) creating information systems that provide timely data. Standard PrU treatment does not typically include all of these CCM elements.[14]

Our team has now conducted 3 PrU prevention randomized controlled trials (RCTs) in veterans with severe (stage III/IV) PrUs, each incorporating successively more CCM elements (see supplemental table S1, available online only at http://www.archives-pmr.org/). Our first study[15] compared enhanced education plus proactive telephone counseling to usual care and found that the treatment group demonstrated significantly greater PrU knowledge and lower rates of, and longer time to, PrU recurrence compared with those receiving usual care. Our next multisite RCT[16] compared individualized education plus motivational interviewing[17] (MI) to usual care. Changes in clinical practices made recruitment very difficult: PrU hospitalizations were shorter, and >50% of patients were discharged home with open skin.[18] This study ended early because of the low volume of participants discharged with healed ulcers. PrU recurrence was higher (40%) and earlier than expected (median time to recurrence, 4mo). No significant differences in time to PrU recurrence were observed between the groups.

The current study was designed to be more powerful by including more elements of the CCM and to address the scientific and logistical weaknesses of our previous trials. Individual MI sessions from the previous study were retained, but we added an SM group component designed to build skills and provide peer support. SM training was used because of its strong evidence base, including studies[19-22] conducted in veterans. Even though this was an initial trial, we decided on a rigorous education and attention control design because there was evidence from the first study that systematic education improved outcomes.[15]

We added decision support as a health care systems—level change and to standardize important elements of PrU treatment across sites. All site principal investigators were SCI physicians and 4 of 6 site principal investigators were SCI service chiefs. They agreed to provide routine assessment and treatment of key comorbid conditions with onsite monitoring and decision support provided by a site coordinator (SC). In order to try to intervene earlier and interrupt the pattern of recurrence observed in the prior study, we shortened the intervention period to 6 months and increased the frequency of intervention calls. To overcome prior recruitment problems, we decided to include people who were discharged with healed or unhealed PrUs. Self-reported use of skin-protective behaviors replaced PrU recurrence as the primary outcome. We used digital photography and planimetry to assess "skin worsening" as a secondary outcome.

We hypothesized that patients randomly assigned to the SM skills group and individual MI counseling arm (SM+MI) would report greater improvement in self-reported skin care behaviors (primary outcome) and lower rates of skin worsening (secondary outcome) compared with those in the control arm receiving individual and group education on general SCI health. Further, we predicted that the SM+MI arm would have better tertiary outcomes (ie, PrU knowledge, self-efficacy, communication with providers, community integration) compared with education control condition intervention controls.

List of abbreviations:

CCM	**Chronic Care Model**
ITT	**intention to treat**
MI	**motivational interviewing**
PrU	**pressure ulcer**
RCT	**randomized controlled trial**
SCI	**spinal cord injury**
SM	**self-management**
SM+MI	**self-management and motivational interviewing intervention**
VA	**Veterans Affairs**

Methods

Study design

This study was a multisite, single-blind RCT comparing an SM+MI intervention to an education control intervention (see supplemental table S2, available online only at http://www.archives-pmr.org/). Participants were randomly assigned at discharge from the hospital by the Hines Data Coordinating Center. Randomization was 1:1, blocked (using random block sizes of 2, 4, 6, and 8),[23] and stratified by hospital, previous PrUs (0, 1, 2+), and skin status at discharge (open vs closed).

Participants

Participants were recruited from 6 participating Department of Veterans Affairs (VA) SCI centers between April 1, 2009, and March 31, 2011. Participation required admission for treatment of a severe (stage III or IV) pelvic ulcer, being ≥18 years of age, and being ≥6 months post-SCI. We excluded patients with a terminal diagnosis, severe psychiatric comorbidities (eg, current psychosis), cognitive impairments that limited their ability to consent or participate, severe hearing loss, and wounds not expected to heal. People discharged to nursing homes unable to direct their own care were also excluded.

Procedures

Site coordinators monitored admissions, approached potential participants, and obtained informed consent. Before randomization,