

Healthcare provider practices, barriers, and facilitators for weight management for individuals
with spinal cord injuries and disorders

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Accepted version – citation:

Locatelli SM, Gerber BS, Goldstein B, Weaver FM, LaVela SL. Health care provider practices,
barriers, and facilitators for weight management for individuals with spinal cord injuries and
disorders. *Top Spinal Cord Inj Rehabil* 2014; 20: 329-37.

Structured Abstract

BACKGROUND

Even though weight management is essential for individuals with spinal cord injuries and disorders (SCI/D), little is known about current practices, barriers, and facilitators.

OBJECTIVE:

To describe weight management delivery in the Veterans Affairs (VA) SCI/D System of Care, including barriers/facilitators experienced by health care providers.

METHODS

Qualitative focus groups were conducted in person at four geographically dispersed VA medical facilities delivering care to Veterans with SCI/D. Thirty-two employees involved in weight management efforts participated. Audio-recordings were transcribed and analyzed using qualitative content analysis techniques.

RESULTS

Participants at SCI centers reported that weight management treatment was delivered through the center by a multi-disciplinary team using education (e.g., written materials), and counseling/consults. Participants at SCI spoke facilities generally depended on facility-level programs (e.g., MOVE!) to deliver treatment. Spoke facilities discussed barriers to delivering treatment through their SCI team, including staff shortages, and resource and structural issues. MOVE! staff discussed barriers, including limited wheelchair space in classrooms. Staff participants across facilities noted Veterans with SCI/D were hesitant to use facility-level programs, because of non-specific SCI-relevant information and discomfort attending sessions with general Veterans. Other barriers, for both centers and spoke facilities, included necessary medications that increase weight, lack of evidence-based guidelines for weight management,

safety concerns, and facility layout/accessibility. Facilitators included facility leadership support, provider involvement/prioritization, and community resources.

CONCLUSIONS

Weight management programs delivered through the SCI team, with peers and SCI-relevant content, are likely more acceptable and beneficial to individuals with SCI/D. Program classrooms should provide ample space for individuals with SCI/D.

KEY WORDS

Weight reduction programs, Obesity, Overweight, Veterans, United States Department of Veterans Affairs

Studies estimate over 70% of individuals with chronic spinal cord injuries and disorders (SCI/D) are overweight/obese.^{1,2} Patients' weight increases rapidly following rehabilitation,^{1,3} which increases their risk for weight-related conditions,^{4,5} and impacts their functional status, by limiting ability to ambulate and perform transfers.⁶ Research suggests individuals with SCI/D could benefit from weight management, including nutrition/dietetics and physical activity.^{7,8}

Understanding barriers and facilitators to weight management in SCI/D is essential. Individual-level barriers to exercise include beliefs that exercise is unsafe, lack of energy/motivation, limited knowledge about safe exercises, and other health conditions preventing exercise, as well as lack of home exercise equipment, lack transportation to a fitness facility, and feeling unwelcome in fitness facilities.⁹ Cowan and colleagues⁹ found provider guidance was essential; although over half of all respondents said their doctor had recommended exercise, less than a quarter reported receiving specific instructions on safe exercises.

To facilitate weight management efforts among individuals with SCI/D, research on barriers and facilitators experienced by healthcare providers is paramount. Though some interventions exist for the SCI/D population, e.g., EatRight SCI¹⁰ and Project Shake It Up,¹¹ studies discuss important systems-level barriers, which include a lack of targeted interventions for SCI/D,¹² and a lack of evidence-based guidelines on weight management in this population.¹³ Providers may experience difficulty discussing weight concerns with patients; providers who also struggle with weight issues may also be less likely to discuss weight management strategies with overweight/obese patients.¹⁴ However, little is known about what weight management services medical facilities currently provide for individuals with SCI/D, as well as staff perceptions about barriers and facilitators to providing targeted weight management.

A large proportion of individuals with SCI/D are Veterans eligible for Veterans Affairs (VA) services.¹⁵ The SCI/D System of Care is a “hub and spoke” system, including 24 regional Hub facilities and approximately 150 affiliated spoke facilities. SCI hubs (centers) provide comprehensive primary and specialty care for Veterans with SCI/D through interdisciplinary SCI care teams, including physicians, nurses, psychologists and/or social workers, therapists, and dietitians, and are typically located within large VA Medical Centers. Veterans with SCI/D receive an annual evaluation at their nearest SCI center, which includes medical history, physical examination, and screenings by multiple providers. Though Veterans who live near their SCI center can receive all care at that facility, many attend SCI Spokes instead for primary care needs; Spoke facilities have dedicated SCI primary care teams, most frequently a physician, nurse, and social worker, with other providers (e.g., therapists, dietitians) available in departments outside of SCI.¹⁶

Weight management services are also offered through VA’s MOVE! weight management program, which provides multi-disciplinary treatment through groups and individual consults with physicians, dietitians, psychologists, and/or therapists to any Veteran,^{17,18} though MOVE! programs vary across sites in disciplines involved, and number/structure of meetings.¹⁹ While Veterans with SCI/D are included in these efforts, little is known about specific practices for this population, including SCI-specific programs, involvement in general programs, and barriers and facilitators of such care. The purpose of this study was to explore providers’ perspectives on facility- and system-level weight management practices, barriers, and facilitators to treating overweight/obesity in the Veteran SCI/D population.

Methods

Design

Cross-sectional qualitative focus groups were performed at four geographically-dispersed VA facilities caring for Veterans with SCI/D. To obtain a range of views, we conducted two focus groups at SCI centers and two at SCI spoke facilities.

Participants

Thirty-two employees (centers: $n=17$; spokes: $n=15$) involved in weight management efforts at the four facilities participated in the focus groups. Participants included physicians ($n=4$), nurses ($n=10$), psychologists ($n=3$), social workers ($n=2$), therapists (physical/occupational/recreational, $n=7$), and dietitians ($n=6$). Potential participants were identified by the chief or coordinator of the SCI center or clinic, who shared information about the focus group with providers involved in weight management care and researcher contact information for providers to volunteer to participate.

Procedure

Focus groups lasted approximately one hour, and were conducted in-person by 1-2 researchers experienced in focus group moderation. The semi-structured focus group guide was generated from a literature review of weight management for individuals for SCI/D; expertise of study team members (including weight management, public health, and SCI healthcare delivery); a MOVE! best practices evaluation;²⁰ and implementation constructs from the theoretical framework guiding our work, the Consolidated Framework for Implementation Research.²¹ Focus groups were audio-recorded and transcribed verbatim by research assistants. This study was reviewed and ruled exempt by the VA Central Institutional Review Board.

Data Analysis

Data were analyzed using qualitative content analysis techniques, in which a word or phrase summarizes the topic of a passage of text.²² Following qualitative research methods,^{23,24} the first author (S.M.L.) began open coding²² after the first focus group to identify basic concepts of treatment delivery, and barriers/facilitators. This basic codebook was shared with an additional research team member, and a final codebook was generated through discussion and examination of the results; alterations and additions to the codebook were made through discussions with the research team to reach consensus and aid in identification of themes. Previously coded transcripts were reanalyzed using the updated codebook until saturation was reached.²⁴ Constant comparative analysis²⁵ through axial coding²⁴ was conducted to elucidate relationships among weight management treatment delivery and barriers/facilitators, and to determine facility characteristics related to differences. NVivo 8 qualitative analysis software (QSR International, Doncaster, Victoria, Australia) was used to manage data and facilitate comparative analysis by examining coded results by facility characteristics. The following themes and categories emerged from analysis: how weight management treatment is delivered (through SCI center/clinic, through general facility programs for all), barriers (staff and resource shortages, facility characteristics, competing patient needs), and facilitators (hospital prioritization and leadership support, provider involvement and prioritization, community resources, and flexible care provision regulations).

Results

How weight management treatment is delivered

Through the SCI team

Participants at SCI centers discussed delivering treatment through the center. Efforts tended to be informal, involving discussions between patient and providers, including physicians, nurses, dietitians, and therapists, about weight management:

“In the annual evaluation, weight... usually comes up and there’s usually some conversation about what they’re doing, what could facilitate more activity.” (Center #2 Participant)

Education about weight management was often given in the form of written materials, frequently described as “home-grown”. Additionally, Veterans with SCI/D may consult with psychologists, dietitians, and physical/rehabilitation therapists outside of the annual evaluation. Efforts tend to be one-on-one, and topics covered are based on patient interest and needs:

“It’s a lot [of] patient-specific [information]... we’ll address that patient’s [needs specifically].” (Center #1 Participant)

However, participants at one center discussed developing a program for Veterans with SCI/D, to ensure information is standardized and evidence-based, and to reduce the time burden of continuing to deliver one-on-one treatment:

“[We] are going through extreme efforts to care for each individual... We’re going to... be challenged to think outside the box... [and] come up with some really creative interventions.” (Center #2 Participant)

Through general facility programs

Participants at SCI spoke facilities stated that few weight management efforts took place through their clinic, and generally referred to facility-level programs (e.g., MOVE!).

Participants at centers also discussed their facility's MOVE! program, which Veterans with SCI/D could join. Across facilities, MOVE! was delivered through group educational sessions (covering nutrition, behavior change, and physical activity), with some individual consults available with dietitians. MOVE! staff stated that Veterans with SCI/D tended to request consults instead of group:

“Overall we hear [they] would prefer individual follow-up.” (Center #1 Participant)

Barriers to weight management

Staff and resource shortages

Participants discussed a variety of staff and resource shortages. Insufficient staff to offer weight management treatment was frequently discussed, particularly at Spokes. This is due in part to smaller SCI teams found at Spokes. Patients being seen in these clinics are referred for other types of providers, which can result in a shortage of available appointments, especially with regard to therapy staff:

“PT [physical therapy] and OT [occupational therapy]... do not have enough time... Their chief retired, and [there] hasn't been leadership there to say... ‘We're going to assign people.’” (Spoke #1 Participant)

Staff shortages also resulted in safety concerns for physical activity:

“There [are] lots of logistic [issues].... [For example, in the pool,] the free swim is [an issue]... because of staffing and the lifeguard. There's a lot of interest for our patients getting in the pool... The problem will be staffing.” (Center #2 Participant)

Lack of knowledge was also a barrier. Providers outside of the SCI team may feel uninformed about weight management in SCI:

“We don’t know nearly what [SCI providers] know in terms of how to help this population and their unique needs... I would imagine we’d need a different team... or at least an additional member who has a specialty in that area.” (Center #1 Participant)

Further, SCI providers at both centers and spoke facilities often did not recommend MOVE! to Veterans with SCI/D because they felt unfamiliar with the program:

“One of the barriers might even be not [having a] good understanding of the MOVE! program... If I had more knowledge, I [would be] able to present it better.” (Spoke #2 Participant)

Similarly, participants discussed perceived lack of evidence to guide and inform weight management practices as a resource barrier. Participants across facilities discussed the lack of evidence-based guidelines for weight management in the SCI/D population:

“There’s a huge gap in us being able to truly, based on sound data... provide education to our patients.” (Center #2 Participant)

Participants also suggested that a lack of evidence-based guidelines hindered identifying other resource needs and gaps, and planning comprehensive weight management efforts:

“We can’t really identify right now what... support we need, because we don’t know... [the] interventions that are going to be effective.” (Center #2 Participant)

Staff participants across facilities noted that Veterans with SCI/D were hesitant to use facility-level programs, because of non-specific SCI-relevant information and discomfort attending sessions with general Veterans:

“The ones that have gone to [MOVE!]... their comment is that... it’s not geared for SCI patients.” (Spoke #2 Participant)

Measuring obesity among Veterans with SCI/D was also a barrier to effective weight management, which participants suggested was related to resource shortages, such as limited availability of wheelchair-accessible scales:

“We [have to] wheel them all the way into the PT area, roll them up [on the scale] and subtract the difference of the wheelchair... It’s still not part of our... routine.” (Spoke #1 Participant)

Other methods of measuring obesity, such as body mass index (BMI) and body fat percentage, were seen as not optimal in the SCI/D population, by participants across facilities:

“BMI has been documented as an issue in individuals with spinal cord injury because [of difficulty obtaining] actual height, spasticity, tone... [It’s not a] true reflection of adipose tissue versus lean body mass.” (Center #2 Participant)

Facility characteristics

Facility characteristics were also frequently discussed, and were considered barriers due to issues with layout and accessibility. For instance, navigating to healthier food options was seen as a major barrier at both Centers and Spokes:

“There [are] two cafeterias in this hospital and the one that [has] healthier food options is significantly further away... It’s not the most accessible place either... That’s another barrier to getting healthy food.” (Center #2 Participant)

The location physical activity and therapy space also poses as a barrier for some Veterans with SCI/D:

“There’s two different parts in SCI... We have the acute center here, and the residential center [across campus] a quarter of a mile away... [Therapy is only available in the acute center.] It’s such a long haul... that they’re... pushed into ambulatory assistance, which then decreases their exercise.” (Center #1 Participant)

Spoke facilities also discussed issues with accessible physical activity space, including pools and equipment that are inaccessible for individuals in wheelchairs:

“[They have access to the] regular pool... So the patients have to be... mobile enough to get themselves in and out of the pool.” (Spoke #1 Participant)

Though MOVE! was often seen as an alternative source of weight management for Veterans with SCI/D, facility layout and accessibility was also problematic within MOVE!:

“The main room [for MOVE!] is not accommodating... We might be able at times to fit two or three [manual] chairs in there... But you cannot get one [power] wheelchair in the room.” (Center #1 Participant)

Competing patient needs

Competition with other conditions and complications of SCI/D also presented as barriers. Providers within centers and spoke facilities were hesitant to “push” weight management due to other concerns requiring more attention:

“Competing demands of other [conditions] ... more screenings that need to be addressed, all these things interfere and they start de-prioritizing what should be considered a very high priority.” (Spoke #1 Participant)

Providers noted that, due to these competing demands, their approach tended to be more “reactive” to already existing overweight/obesity than “proactive” in terms of preventing weight gain:

“I think we have a quality program as far as just addressing new SCI injury... But how do we instill a sense in that Veteran of... connecting the dots of ‘You’re going to put this additional weight on now that you’re injured’?... These are our challenges.” (Center #2 Participant)

Relatedly, providers recognized that Veterans with SCI/D see food as one of the remaining factors under their control; this affects how much providers discuss the importance of weight management with Veterans with SCI/D:

“They have their injury itself, and then you’re telling them to stop the most enjoyable thing in their life, so that’s... the hardest thing to do.” (Center #1 Participant)

SCI centers have tried to create a “home-like environment”, and Veterans are encouraged to make choices regarding food options. However, this creates an additional barrier to weight management:

“They can order what they want, they can choose what they want, and we... encourage that, [but] on the other side we’re trying to stop them from gaining weight... [It’s] a double bind.” (Center #1 Participant)

Similarly, some participants commented on medications indicated for other conditions that can result in weight gain, and suggest more attention be paid to this side effect when prescribing medications:

“There’s an additional issue here related to medications... that either work against or... facilitate weight loss... Especially with psychiatric medications, there’s... trouble balancing what’s an effective treatment versus what are the liabilities in terms of weight gain.” (Center #2 Participant)

Facilitators of weight management*Leadership support*

Participants discussed the importance of strong leaders at a variety of levels as facilitators of weight management. For instance, leadership within the SCI center or clinic helped to set the tone for practices within the department:

“Over the course of three different [SCI] chiefs [weight management has] always been emphasized.” (Center #1 Participant)

Participants also discussed the importance of facility leadership in allocating funding and other resources:

“Our service line has a fairly good reputation for providing quality care and program development... Were we to take something to [facility leadership] for funding... it would be met well.” (Center #2 Participant)

Provider involvement

Participants also discussed involvement by providers, and stated that physicians play a key role in encouraging weight management efforts among patients:

“Our physicians have been amazing and really... going the extra mile... I think we’re very lucky in that regard... We have a variety of really talented players that care about the Veterans and the population we serve.” (Center #2 Participant)

Relatedly, participants emphasized the strong influence physicians have on patient behaviors:

“We have to be at the point where we have to have every provider on board ... The primary care physician really [sets] the rules... Unless that MD says it... it’s not perceived as gospel [by the patient].” (Spoke #1 Participant)

Community resources

Though resources within the facility were viewed as important, participants also discussed community resources to facilitate weight management and overcome barriers:

“And for folks... who have expressed interest in exploring their exercise options... we try and figure out what is the most accessible option to them... [We’ll] identify gyms that are in their area, or we’ll... help them figure out how they would access a pool in their local community, and how to access a locker room... Or if they also don’t have access to that, [we work on] getting them equipment that they can utilize in their home.” (Center #2 Participant)

Flexible care provision regulations

Participants at centers also stated that caring for individuals within the VA SCI/D System of Care could facilitate weight management efforts, due to their ability to keep patients as long as necessary and because of strong continuity of care:

“Something that actually does facilitate the weight loss... is the fact that we can keep our patients indefinitely. I don’t have an insurance company here telling me to stop.” (Center #1 Participant)

“We see these folks from the time they’re injured to the time they pass away and we get to know them fairly intimately... [That] makes you a little more successful.” (Center #2 Participant)

Discussion

This study provides information on current practices, barriers, and facilitators, and documents information that once only existed anecdotally. Providing comprehensive weight management treatment to individuals with SCI/D requires not only attention to the experiences of this population, but also practices, barriers, and facilitators from the perspective of care

providers. As other studies have shown, participants in our study felt patients may not be amenable to weight management discussions, and thought that providers avoided such discussions for many reasons, including discomfort with the subject matter, difficulty asking patients to change nutrition and physical activities, and belief that competing medical needs were more important. However, research suggests that providers, especially physicians, can have a strong influence on patients' behavior.^{26,27} In fact, even participants in the present study felt patients would be most receptive to discussions with a physician.

Introducing optimal weight management strategies into an SCI/D care setting requires involvement by a variety of providers, and may necessitate the need for multiple levels of intervention. Participants discussed many ways the multidisciplinary team was utilized with regard to weight management care, and highlighted the importance of calling upon the expertise of other providers. Recommendations exist for how to incorporate weight management discussions into busy and complex care settings, even when patients have other competing needs.²⁸ Above all, patients desire empathetic, and personalized discussions with their providers, with discussion of how weight may impact their health and other conditions. Additionally, patients prefer when providers ask if weight is a concern, or if the patient has thought about losing weight, rather than simply telling the patient to lose weight. Motivational interviewing is another approach that has been used in overweight/obese populations,^{29,30} as well as SCI/D populations,³¹ to guide patients toward behavior change. These approaches help the patient to make weight management a priority, increasing the chance that they will lose weight. Physicians can then refer the patient to resources to assess current nutrition and physical activity behaviors, and support behavior change. Finally, physicians should follow-up with patients about additional needs. Incorporating these relationships into practice requires strong communication

between providers; leadership, which participants also highlighted as a facilitator to weight management efforts, can assist by providing venues for communication and collaboration.

Participants also reported perceived resource barriers to delivering weight management, and some facilities instead depended on facility-level programs, like MOVE!. However, participants across facilities believed Veterans with SCI/D were hesitant to join MOVE! due to non-SCI-specific information and discomfort attending groups with able-bodied Veterans. Individuals who are overweight or obese often perceive stigma about weight issues, and as a result, prefer self-monitoring of nutrition and engagement in exercise, and feel uncomfortable in group programs.³² Research suggests that when a condition is stigmatizing, individuals seek out similar others for support.³³ Without a targeted program, Veterans with SCI/D may not receive sufficient weight management treatment to decrease risk for overweight/obesity and weight-related conditions – conditions that increase mortality² and decrease quality of life.³⁴

Efforts to deliver targeted weight management are essential to obtaining patients' commitment. Within VA, some facilities have developed a separate MOVE! program for women, based on feedback that women experienced different issues with regard to weight than men, and felt more comfortable discussing their concerns in a women-only environment.¹⁹ The same could perhaps be said for individuals with SCI/D, who may experience different needs, and require different adaptations. If a separate group were offered to individuals with SCI/D, additional time could be given to sharing success stories and overcoming barriers, and discussing SCI/D-specific weight management, such as differences in basal metabolic rate from the general population, which can result in caloric intake requirements approximately 75% lower than able-bodied persons.³⁵

Across facilities, participants discussed unawareness of evidence for weight management in individuals with SCI/D. More research is needed on targeted weight management interventions,¹² particularly activities and exercises that can be adapted for individuals with SCI/D and that could be implemented into medical facilities with minimal need for additional resources, as participants suggested that the dearth of evidence for weight management practices influenced resource requests and planning. Perceptions about evidence are a key component in the uptake of evidence-based practice guidelines;^{21,36} a perceived lack of evidence could prevent providers from recommending necessary services.

Additionally, future research should explore indicators of overweight/obesity in SCI/D, as many providers in this study felt current indicators (e.g., BMI) were problematic, and potentially inaccurate for this population. Laughton and colleagues³⁷ suggest altering cut-off scores for the SCI/D population to 22 kg/m², rather than 25 kg/m², for overweight. Additional research is needed to determine whether altering cut-offs of pre-existing measures will suffice, or whether new measures should be developed. Such information would assist providers in identifying which individuals are most in need of weight management, to help with allocating the scarce resources and time discussed by participants.

Structural barriers were also reported, particularly facility layout and accessibility of physical activity space and classrooms. Cowan and colleagues⁹ reported that, though structural barriers were less prevalent in their sample than other barriers, these barriers had the strongest effects on exercise. Involvement by individuals with SCI/D and their providers in facility and program planning could improve accessibility and participation for this population. Participants in the present study also discussed the use of community resources and home-care resources to overcome resource barriers. Non-profit organizations could assist facilities in identifying

community resources accessible to Veterans with SCI/D; these relationships should be explored by providers and staff in SCI centers and clinics.

Study limitations

A single focus group was held at each facility and it is possible that not all relevant disciplines were represented in these groups. However, a key facility representative at each focus group site was involved with recruitment and schedules were developed to accommodate key staff. Due to the interdisciplinary nature of VA SCI care, focus groups were more suited for the present study, because they allowed team members to discuss a variety of contributions and practices.²³ Another limitation is that individuals in the focus groups may have been unaware of all current weight management practices at the facility, including practices occurring in individual appointments. However, the purpose of the study was to obtain information on overall weight management efforts within SCI/D, as well as potential barriers and facilitators. Care was taken to include individuals who would be knowledgeable about overall weight management practices within the SCI center or clinic, along with “front-line” providers involved in individual appointments. A next step in this line of research is to survey facilities throughout the VA SCI System of Care about weight management efforts taking place, to obtain information on the prevalence of activities, barriers, and facilitators. Future research should examine how providers handle different patient factors in the delivery of individualized care.

Conclusions

Overall, these findings suggest that additional attention be paid to weight management efforts for Veterans with SCI/D, especially to facilitators of weight management. Facilities caring for individuals with SCI/D could benefit from increased leadership and provider support for weight management efforts, as well as greater knowledge of community resources for weight

management. Efforts must be undertaken to counteract barriers of limited evidence and competing patient needs, both through efforts by SCI care providers and researchers. Work is needed to balance support of patient choice and ability of providers to make recommendations about nutrition and physical activity. Further, weight management efforts delivered through the SCI center or clinic, with SCI/D-specific information and among peers, may be preferred by Veterans with SCI/D.

Acknowledgments

This work was presented at the meeting for the Association of Spinal Cord Injury Professionals (ASCIP), September 2, 2013, Las Vegas, Nevada, with an abstract published in the September 2013 issue (Volume 36, Issue 5) of the *Journal of Spinal Cord Medicine*. Other than this abstract, this work has not been published in any other form.

This paper reflects only the authors' opinions and does not necessarily reflect the official position of the Department of Veterans Affairs or the United States Government. The authors declare no conflicts of interest related to this manuscript. Study funding was provided by the Department of Veterans Affairs Health Services Research & Development, Spinal Cord Injury Quality Enhancement Research Initiative, Rapid Response Project (RRP) 12-213 (PI: Sherri LaVela, PhD, MPH, MBA).

References

1. De Groot S, Post MWM, Postma K, Sluis TA, van der Woude LHV. Prospective analysis of body mass index during and up to 5 years after discharge from inpatient spinal cord injury rehabilitation. *J Rehab Med*. 2010;42:922-928.
2. Groah SL, Nash MS, Ward EA, et al. Cardiometabolic risk in community-dwelling persons with chronic spinal cord injury. *J Cardiopulmonary Rehab Prev*. 2011;31:73-80.
3. Crane DA, Little JW, Burns SP. Weight gain following spinal cord injury: a pilot study. *J Spinal Cord Med*. 2011;34:227-32.
4. Martin Ginis KA, Jörgensen S, Stapleton J. Exercise and sport for persons with spinal cord injury. *Phys Med Rehabil*. 2012;4:894-900.
5. Rajan S, McNeely MJ, Hammond M, Goldstein B, Weaver F. Diabetes mellitus is associated with obesity in veterans with spinal cord injuries and disorders. *Am J Phys Med Rehabil*. 2010;89:353-61.
6. Stenson KW, Deutsch A, Heinemann AW, Chen D. Obesity and inpatient rehabilitation outcomes for patients with a traumatic spinal cord injury. *Arch Phys Med Rehabil*. 2011;92:384-90.
7. American Dietetic Association Spinal Cord Injury Evidence Based Nutrition Practice Guideline, June 2009. Available from: <http://www.guideline.gov/content.aspx?id=14889>. Accessed September 17, 2013.
8. Neto FR, Lopes GH. Body composition modifications in people with chronic spinal cord injury after supervised physical activity. *J Spinal Cord Med*. 2011;34:586-93.

9. Cowan RE, Nash MS, Anderson KD. Exercise participation barrier prevalence and association with exercise participation status in individuals with spinal cord injury. *Spinal Cord*. 2013;51:27-32.
10. Chen Y, Henson S, Jackson AB, Richards JS. Obesity intervention in persons with spinal cord injury. *Spinal Cord*. 2006;44:82-91.
11. Block P, Vanner EA, Keys CB, Rimmer JH, Skeels SE. Project Shake-It-Up: Using health promotion, capacity building and a disability studies framework to increase self efficacy. *Disabil Rehabil*. 2010;32(9):741-54.
12. Rimmer JH, Chen M-D, McCubbin JA, Drun C, Peterson J. Exercise intervention research on persons with disability: what we know and where we need to go. *Am J Phys Med Rehabil*. 2010;89:249-63.
13. Hicks AL, Martin Ginis KA, Pelletier CA, et al. The effects of exercise training on physical capacity, strength, body composition and functional performance among adults with spinal cord injury: a systematic review. *Spinal Cord*. 2011;49:1103-27.
14. Zhu DQ, Norman IJ, While AE. The relationship between doctors' and nurses' own weight status and their weight management practices: A systematic review. *Obesity Rev*. 2011;12:459-469.
15. U.S. Department of Veterans Affairs. VA and spinal cord injury. Fact sheets. 2009, Jan. Available at http://www1.va.gov/opa/publications/factsheets/fs_spinal_cord_injury.pdf. Accessed September 10, 2013.
16. U.S. Department of Veterans Affairs. VHA handbook 1176.01: spinal cord injury and disorders (SCI/D) system of care. 2011, Feb. Available at

http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=2365. Accessed September 10, 2013.

17. Kinsinger LS, Jones KR, Kahwati L, et al. Design and dissemination of the MOVE! Weight-Management Program for Veterans. *Prev Chronic Dis*. 2009;6:A98.
18. Weiner BJ, Haynes-Maslow L, Kahwati LC, Kinsinger LS, Campbell MK. Implementing the MOVE! weight-management program in the Veterans Health Administration, 2007-2010: a qualitative study. *Prev Chronic Dis*. 2012;9:E16.
19. Locatelli SM, Sohn M-W, Spring B, Hadi S, Weaver FM. Participant retention in the Veterans Health Administration's MOVE! weight management program, 2010. *Prev Chron Dis*. 2012;9:120056. doi:<http://dx.doi.org/10.5888/pcd9.120056>
20. Kahwati LC, Lewis MA, Kane H, et al. Best practices in the Veterans Health Administration's MOVE! weight management program. *Am J Prev Med*. 2011;41(5):457-64.
21. Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Impl Sci*. 2009;4:50.
22. Saldaña J. *The coding manual for qualitative researchers*. Los Angeles, CA: Sage; 2009.
23. Krueger RA, Casey MA. *Focus groups: a practical guide for applied research* (3rd ed.). Thousand Oaks, CA: Sage; 2000.
24. Corbin J, Strauss A. *Basics of qualitative research techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage; 2008.
25. Rennie DL. The grounded theory method: application of a variant of its procedure of constant comparative analysis to psychotherapy research. In: Fischer CT, ed. *Qualitative*

research methods for psychologists: introduction through empirical studies. San Diego, CA: Elsevier Academic Press; 2006: 59-78.

26. Ndetan H, Evans MW, Bae S, et al. The health care provider's role and patient compliance to health promotion advice from the user's perspective: analysis of the 2006 National Health Interview Survey data. *J Manipulative Physiol Ther*. 2010;33:413-418.
27. Rose SA, Poynter PS, Anderson JW, Noar SM, Conigliaro J. Physician weight loss advice and patient weight loss behavior change: a literature review and meta-analysis of survey data. *Int J Obesity*. 2013;37:118-128.
28. Rao G, Burke LE, Spring BJ, et al. New and emerging weight management strategies for busy ambulatory settings: a scientific statement from the American health Association endorsed by the Society of Behavioral Medicine. *Circulation*. 2011;124:1182-1203.
29. Artinian NT, Fletcher GF, Mozaffarian D, et al. Interventions to promote PA and dietary lifestyle changes for cardiovascular risk factor reduction in adults: a scientific statement from the American Heart Association. *Circulation*. 2010;122:406-441.
30. DiLillo V, West DS. Motivational interviewing for weight loss. *Psychiat Clin N Am*. 2011;34:861-869.
31. Molton IR, Jensen MP, Nielson W, Cardenas D, Ehde DM. A preliminary evaluation of the motivational model of pain self-management in persons with spinal cord injury-related pain. *J Pain*. 2008;9:606-612.
32. Ciao AC, Latner JD, Durso LE. Treatment seeking and barriers to weight loss treatments of different intensity levels among obese and overweight individuals. *Eat Weight Disord*. 2012;17:e9-e16.

33. Davidson KP, Pennebaker JW, Dickerson SS. Who talks? The social psychology of illness support groups. *Am Psychol.* 2000;55:205-217.
34. Hetz SP, Latimer AE, Arbour-Nicitopoulos KP, Ginis KAM. Secondary complications and subjective well-being in individuals with chronic spinal cord injury: associations with self-reported adiposity. *Spinal Cord.* 2011;46:266-72.
35. Price M. Energy expenditure and metabolism during exercise in persons with a spinal cord injury. *Sports Med.* 2010;40:681-696.
36. Rycroft-Malone J, Seers K, Chandler J, et al. The role of evidence, context, and facilitation in an implementation trial: implications for the development of the PARIHS framework. *Impl Sci.* 2013;8:28.
37. Laughton GE, Buchholz AC, Martin Ginis KA, Goy RE. Lowering body mass index cutoffs better identifies obese persons with spinal cord injury. *Spinal Cord.* 2009;47:757-62.

Supplemental Material: Semi-Structured Focus Group Discussion Guide

I. WELCOME and INTRODUCTIONS

Welcome to our focus group today and thank you all for your time. My name is _____ and I will be leading the discussion today. Focus groups are informal group discussions, and they provide a way for us to learn how a group of people feel about a particular topic or issue. We are conducting this focus group as part of a research study; our main purpose here today is to learn your thoughts about current practices, barriers, and facilitators to weight management for Veterans with SCI/D. Understanding current practices will inform subsequent weight management implementation activities and adaptations for SCI/D care throughout the SCI/D System of Care. The efforts of this work will facilitate next-steps and future goals to address weight management and incident overweight/obesity in Veterans with chronic SCI/D. If you would like to learn more about this research, you can contact me at [*moderator contact information*] after today's session.

Before we begin, there are a few “housekeeping” issues we need to address.

- First, we'll be audio-taping this discussion so that we can focus on what you are saying and not have to concentrate on taking detailed notes.
- Remember, there are no right or wrong answers. Everyone's opinion is welcomed, appreciated, and important.
- Please feel free to say anything that you want. Everything that you say will be kept confidential. If we use what you have shared with us today, we will not identify you as the speaker.
- Please contribute as much as possible, as it is truly your thoughts and ideas that matter to us.
- Also, please know that, if at any time, for any reason, you wish to stop your participation in this focus group discussion; you are free to do so.

Does anyone have any questions about today's discussion?

II. FOCUS GROUP QUESTIONS (*Developed using literature/expert guidance, 3 CFIR readiness for implementation sub-constructs, and MOVE! implementation best practices.*)

What are the current strategies/approaches used by SCI providers to address weight management in Veterans with SCI/D?

Probes: “to treat obesity” and “to prevent overweight/obesity”

What have been the barriers/facilitators to any type of weight management strategies for Veterans with SCI/D?

What have been the barriers/facilitators to MOVE-related weight management strategies for Veterans with SCI/D?

- What are the barriers to referring individuals with SCI/D to the MOVE! program?

Who is involved with these efforts at your facility (in SCI/D care)?

- What staff members are involved with obesity treatment/prevention in your SCI center/primary care team?
 - Probes: Behavioral health specialists, nutrition health specialists, physical activity specialist, physician/PA/NP, nursing
- Briefly tell me about the roles that other staff members have with respect to patient weight management.
- How do these disciplines coordinate with each other? How do they coordinate with MOVE!?

[Intervention source]

How did your facility become involved with a weight management program in SCI/D? The MOVE program for SCI/D?

- Would you say the implementation of weight management efforts/MOVE! was more externally driven or internally motivated? Why?
- Did you feel like your SCI facility's participation was voluntary?

[Evidence quality/strength]

What kind of information have you seen that showed whether weight management efforts would work in the SCI/D cohort?

- Information from your own research, consensus guidelines, published literature, or other sources?
- From coworkers? From supervisors?

What are your thoughts about the availability of evidence for weight management in SCI?

- What are you using?
- What do you feel is missing?

[Relative advantage/complexity]

What kind of services are you currently offering to Veterans with SCI/D who are overweight or obese at your facility?

- To what extent are the existing services multi-disciplinary? Which disciplines are involved?
- Was MOVE! viewed as a better alternative than other weight management interventions that may have been available for Veterans with SCI/D? Why or why not?
- To what degree was there "competition" for funds, time, or attention because of other initiatives that may have been taking place concurrently?

[Patient needs/resources]

Do you feel that the weight management practices at your facility meet patients' needs?

- Better patient outcomes? Which outcomes?

[Networks/communications]

Which type of communication: formal communication (e.g., email communications through the chain-of-command) or informal communication (e.g., a hallway conversation with a co-worker) has tended to be most helpful for you to accomplish your weight management related activities?

- Was communication a facilitator? Lack of communication a barrier?

[Adaptability]

How could weight management programs, such as MOVE!, be more flexible for Veterans with SCI/D?

How could weight management programs better accommodate unique differences at your facility?

[Relative priority; Leadership engagement]

How would you describe the commitment of involved staff at your facility?

How would you describe the commitment of leadership to SCI/D weight management efforts at your facility?

Who oversees weight management (treatment and prevention) efforts in SCI/D at your facility?

How do recommendations for management and prevention of overweight/obesity in Veterans with SCI/D get communicated to SCI staff/providers?

- What are barriers to carrying out these recommendations? Facilitators?

[Process: planning/engaging]

What mechanisms are in place to facilitate the effective implementation of weight management practices at your facility?

How did advanced planning influence implementation?

What strategies are used to engage SCI teams in weight management practices?

[Access to information and knowledge]

Do health care providers at your facility have access to education? Access to experts? with regard to weight management in SCI/D?

[Information and knowledge]

Is training provided to SCI providers with information specific to weight management practices for persons with SCI?

Do you use a standard curriculum in program education?

- Probes: Formal patient education in SCI Center/PCT, Formal patient education through MOVE! [Adaptability, complexity]
 - Tailored dietary plan?
 - Tailored physical activity plan?
 - Behavioral modification strategies?
 - Medications?
 - Surgery?

[Structural characteristics]

Does the size status/location of your facility impact the weight management practices at your

facility? (Spoke/Hub; small/large; rural/urban; small/large patient volume)

[Individual identification with organization]

Describe the willingness of individuals within your facility to use weight management practices in the SCI/D cohort?

- How do individuals perceive their relationship with your facility?
- Summarize, as a whole, how committed the SCI staff is to your SCI facility?
- To the weight management efforts at your facility?

[Available resources, adaptability]

Please discuss the facility resources available to maintain and manage weight in Veterans with SCI/D.

- Are resources available to SCI providers for use in SCI/D care? Such as existing materials (e.g., MOVE!) adapted for use in SCI/D or other cohorts with mobility impairments?
 - What have been the issues in using these resources in SCI/D?
 - Are resources available, e.g., special scales? Extra staff to help facilitate measurement/patient movement to table and/or use of lift equipment?
 - Is guidance available on how/when/ to assess weight and height in this population?
 - Is time allotted to do so?
- Are VA MOVE? resources available/adaptable for SCI/D?
 - Educational materials: diet materials suited to individuals with SCI/D?
 - Educational materials: physical activity materials suited to individuals with SCI/D?
 - Educational setting: space/room for wheelchairs? Peers with SCI/D?
- Are there strategies that the overall MOVE program is using that might be more or less appropriate for the SCI population (e.g., teleMOVE, My HealtheVet, peer support)?
- Discuss the role of telehealth options in weight loss for Veterans with SCI/D (e.g., is there a potential role for teleMOVE in SCI/D? Are there barriers?)

What are the ways which you assess/measure BMI status in Veterans with SCI/D at your facility? [Interviewer: they may not measure BMI – proceed by probing for barriers?]

- How do you measure weight? Special Scale? Skinfold? Waist circumference? Etc.?
- How do you obtain height information for Veterans with SCI/D at your facility?
 - Measure: How you measure height weight in Veterans with SCI/D Supine?
 - Existing data: Historical height?

How do you assess patient readiness for weight management?

How do you handle patients who drop out of treatment or fail to show up for treatment?

- Could you tell me reasons you've heard about why patients choose to stop participating?

- After an individual completes treatment, what are the challenges of providing post-treatment follow-up? What are the facilitators?
- Based on your observations, which aspects of treatment have been the most helpful to patients with SCI/D?
 - Most feasible?
- Based on your observations, which aspects of treatment have been the least helpful to patients with SCI/D?
 - Least feasible?
- Is SCI/D patient data used to assess program quality or outcomes at your facility?
 - What are the barriers and facilitators to patient data and documentation for persons with SCI/D?
 - Have you made any changes to your program based on these results (e.g., quality improvement)? Examples?

III. DISCUSSION WRAP-UP

Thank you very much for the time you spent with us today. Your ideas and responses will really help us as we work toward next-steps and future goals to address weight management and incident overweight/obesity in Veterans with SCI/D.

Do you have any questions for us?