

## Shed MEDS Study Abstract

Geriatric syndromes are clinical conditions common in older adults that are multifactorial in origin and involve several organ systems.<sup>1</sup> The co-occurrence of multiple syndromes within the same patient is prevalent and associated with adverse health outcomes.<sup>2</sup> Older patients are likely to experience new onset of geriatric syndromes during hospitalization. Patients discharged from the hospital to skilled nursing facilities (SNF), which comprises 1.7 million Medicare beneficiaries per year, are a particularly high risk group for loss of independence.<sup>3,4</sup> Recent data show that only 28% of SNF patients are living at home 100 days after SNF discharge.<sup>5</sup> We report novel preliminary data that patients discharged from the hospital to SNF, and ultimately SNF to home, experience an average of two geriatric syndromes in both care settings, with 57% experiencing three or more. Unfortunately, there is little recognition of these syndromes in each setting. Effective management of geriatric symptoms across this continuum could improve outcomes in SNF patients.

There is a dearth of evidence related to efficacious interventions to manage geriatric syndromes because it is difficult to implement a multifactorial intervention that addresses all of the syndromes experienced by an older patient. An alternative approach is to intervene on a common factor contributing to multiple geriatric syndromes. Our preliminary data, as well as the published literature, strongly suggests that one common factor is polypharmacy. Polypharmacy and a variety of drug indices that quantify drug burden<sup>6,7</sup> are associated with the development of long-term cognitive impairment,<sup>8-10</sup> delirium,<sup>11,12</sup> falls,<sup>13-18</sup> frailty,<sup>18-20</sup> urinary incontinence,<sup>21-23</sup> and weight loss.<sup>24-26</sup> *The number of syndromes related to polypharmacy supports our hypothesis that polypharmacy is a common mechanistic cause of multiple geriatric syndromes.*

Although the published literature has strongly associated polypharmacy with geriatric syndromes, it is unknown if deprescribing, as defined by medication dose or number reductions, leads to improvements in geriatric syndromes. We prospectively collected data on 904 Medicare patients discharged to SNF and found that 98% met criteria for polypharmacy ( $\geq 5$  medications) with an average 14 and 15 medications at hospital and SNF discharge, respectively. A systematic review was then conducted by clinicians and pharmacists of all discharge medications for 156 of these patients using explicit review criteria to link medication side effects with geriatric syndromes. An average of 5.9 discharge medications per patient was determined to be associated with one or more geriatric syndromes in these patients. We also pilot-tested a patient-centered deprescribing intervention (“Shed-Meds”) wherein we successfully engaged patients and providers to reduce the number or dose of medications prior to hospital discharge. Based on these preliminary data, we propose a randomized, controlled trial to evaluate the effects of the Shed-Meds deprescribing intervention on polypharmacy, geriatric syndromes, and other outcomes during the care transitions from hospital to SNF to home. **Our overarching hypothesis is that reducing medications for older patients across the continuum of care will favorably impact geriatric syndromes.** The following Specific Aims will be addressed:

**Specific Aim 1:** Implement a patient-centered deprescribing intervention (Shed-Meds) that spans the continuum of hospital and post-acute care to reduce the total number of medications patients are prescribed in each care setting and at home after SNF discharge.

*Hypothesis 1a:* The Shed-Meds intervention will result in a significant increase in the total number of medications deprescribed, as defined by termination or dose reductions, at hospital discharge, SNF discharge and 90 days after SNF discharge.

*Hypothesis 1b:* Shed-Meds will result in a significant reduction in the number of potentially inappropriate medications (PIMs) and medications associated with geriatric syndromes at hospital discharge, SNF discharge and 90 days after SNF discharge.

*Hypothesis 1c:* Shed-Meds will result in a significant decrease in the anticholinergic and sedative drug burden of prescribed medications at hospital discharge, SNF discharge and 90 days after SNF discharge.

**Specific Aim 2:** Document the effects of the patient-centered deprescribing intervention (Shed-Meds) on geriatric syndromes, medication adherence, and health status.

*Hypothesis 2a:* Shed-Meds will result in a significantly lower prevalence and severity of geriatric syndromes 90 days after SNF discharge.

*Hypothesis 2b:* Shed-Meds will result in a significant improvement in medication adherence and self-rated health status after SNF discharge.

**Potential for Impact:** Our innovative Shed-Meds intervention, which spans the continuum of care, has significant potential to impact the health of a large population of older adults who are vulnerable to poor outcomes. It is during hospitalization and SNF care that older patients often acquire new geriatric syndromes and medications and, thus, when deprescribing actions should be initiated by care providers. In addition, the clinical oversight provided during the hospital and SNF stays allows the effects of medication changes to be more closely monitored for safety relative to when the patient is at home.

Shed MEDS Explainer Videos:

Below is the link for a set of videos that the Shed MEDS team developed to aide in recruitment. The study team shares the link to the videos with the patient's designated surrogates who are unable to meet the study team in person at the hospital. These videos provide the surrogate an introduction and overview to the study, so they can help the patient in the decision-making process and/ or enroll the patient via eConsent.

Link - <https://www.vumc.org/cqa/shed-meds>

Shed MEDS Measures and Data Collection Timeline Chart

Measures	Baseline Hospital	SNF *	Post SNF Discharge		
			7-Days Telephone	60-Days Telephone	90-Days In-Person
<i>Descriptives</i>					
Demographics and Length of Stay	X	X			
Charlson Comorbidity Index	X				
Adverse Drug Event Risk Score	X				
Patient Attitudes Toward Deprescribing (PATD)	X				
Walter Index (Life Expectancy)	X				
<i>Primary Outcome – Geriatric Syndromes</i>					
Cognitive Impairment (BIMS)	X	X	X		X
Delirium (BCAM)	X	X			X
Depression (PHQ-9)	X	X	X		X
Urinary Incontinence (ICIQ-UI SF)	X	X	X		X
Unintentional Weight Loss (DETERMINE)	X	X	X		X
Pain (Brief Pain Inventory, BPI-short form)	X	X	X		X
Falls	X	X	X	X	X
Pressure Ulcers	X	X			X
<i>Primary Outcome – Medications</i>					
Total number and type of Routine and PRN Medications, including PIMs	X	X	X	X	X
Drug Burden Index (DBI)	X	X	X	X	X
Medication Behavior (ARMS)	X			X	X
<i>Secondary Outcome – Health Status</i>					
Functional Health Status (VES-13)	X		X		X
<i>Secondary Outcomes – Safety &amp; Utilization</i>					
Unplanned Healthcare Utilization (hospitalizations, emergency room visits)		X	X	X	X
Adverse Drug Withdrawal Events & Adverse Drug Events	X	X	X	X	X
Status: Long-Term Care, Hospice, Death		X	X	X	X