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### Community Pressure Ulcer Occurrence: Description On Hospital Admission

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Community Pressure Ulcer Occurrence: Description on Hospital Admission

Submitted to the Faculty  
Yale University School of Nursing

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Nursing Practice

Lisa Quay Corbett

March 28, 2016

This capstone is accepted in partial fulfillment of the requirements for the degree Doctor of Nursing Practice.

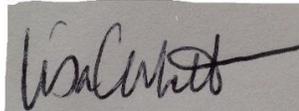
*Marjorie Funk*

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March 28, 2016

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A handwritten signature in black ink on a grey rectangular background. The signature appears to read "Lisa Quay Corbett" with a long horizontal stroke extending to the right.

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## Community Pressure Ulcer Occurrence: Description on Hospital Admission

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## **Community Pressure Ulcer Occurrence: Description on Hospital Admission**

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### **Abstract**

**Purpose:** To describe community-dwelling adults admitted to acute care with a present-on-admission (POA) pressure ulcer (PU). Specific aims: 1) Measure 1-year POA-PU prevalence, 2) Determine pre-hospital location of patients with POA-PU, 3) Describe demographics, PU characteristics, risk factors, and post-hospital outcome of community-dwelling adults admitted to hospital with a PU.

**Design:** Retrospective descriptive study.

**Subjects and Setting:** The sample included all adults, over age 18, admitted to an 800-bed urban academic medical center in New England over a 1-year period with a POA-PU.

**Methods:** Subjects were identified from a clinically validated PU registry. Data were extracted electronically from selected standardized electronic health record (EHR) fields.

**Results:** The prevalence of patients admitted to acute care with a POA-PU was 7.4%. For the majority (76.1%), the pre-hospital location was the community; the remainder came from a healthcare facility (23.9%). The community-dwelling subjects (N=1,022) had a mean age of  $72.7 \pm 15.4$ ; 52.4% were male, 80.3% white, 30.9% lived alone, 99.2% were insured, and 30.6% college educated. They presented with a mean of 1.46 pressure ulcers, of which 37.5% were full thickness. Over half (51.5%) were discharged to a healthcare facility, 33% to home, and 14% died or received hospice care. The 30-day readmission rate was 15.5%.

**Conclusion:** Clinically-validated surveillance data show a higher prevalence of POA-PU than reported with administrative data. Electronically-extracted EHR data provides population health

evidence of community PU occurrence that may be useful for risk stratification, prevention, and care coordination for integrated health systems.

**Key Words: Pressure ulcer, Community, Prevalence, Surveillance, Registry, Population Health**

## **Introduction**

Pressure ulcers (PUs) affect the health of over 7 million people worldwide with an estimated annual United States (US) burden of \$11 billion.<sup>1</sup> The development of a PU is considered a result of healthcare failure and a high profile marker of quality and safety, with value-based incentives for reduction.<sup>2,3</sup> Through adoption of evidence-based interventions<sup>4,5</sup> PUs are considered preventable, although efforts to attain zero incidence remain elusive.<sup>6,7</sup> US healthcare “Triple Aim” strategy – for effective, affordable care and improved population health - includes the prevention and elimination of patient harm, such as PU, across systems, episodes of care and lifespan.<sup>8</sup>

A systematic review of risk factors for PU development identified the predominant domains of mobility, perfusion and pre-existing skin status as interacting antecedents to injury rather than single factor causation.<sup>9</sup> Considering these risk factors, PUs disproportionately affect the elderly and immobile, a growing US demographic with preference for community dwelling as opposed to institutionalization.<sup>10</sup> In addition, as economic rebalancing efforts shift healthcare delivery to home and community-based care, families and non-professional caregivers assume more responsibility for PU care.<sup>11</sup> Historically a focus for hospitals and nursing homes, now PU prevention and management is a growing concern in the community setting. Defining the optimal PU risk assessment, prevention and strategic interventions for home safety begins with an accurate accounting of the community PU burden.

PU epidemiology is mostly understood by institutional rates with less information on community-acquired incidence and little understanding of the trajectory across settings.<sup>12</sup> Estimations of US community PU prevalence can be appreciated from a variety of sources: hospital “present-on-admission” (POA) PU studies, administrative databases, cohort studies of

primary care patients and home health care incidence studies (Table 1).<sup>13-19</sup> From the available literature, there is notable heterogeneity in methodology and PU stage inclusion criteria. Additional literature from other countries with national health systems portrays more evolved preventive community supports for nursing care, surveillance and standardized PU product formulary.<sup>20, 21</sup> None of the available reports show a consistent trend of POA-PU occurrence over time and few describe the pre-hospital location of the subjects.

Methodological issues involving PU occurrence remain challenging. Incidence, prevalence and worst-event statistics are erroneously compared as benchmarks; national PU adverse event comparisons are problematic due to states' regulatory inconsistency.<sup>22</sup> Administrative data have proven to correlate poorly with surveillance data, and staging inclusion criteria, accuracy and agreement among clinicians is variable.<sup>23</sup> Best practice guidance advocates the measurement of PU incidence density, although the success of real-time surveillance depends upon available personnel, resources and EHR analytics.<sup>5</sup> Some institutions have developed PU registries as a method for tracking real-time occurrences, assuring coding accuracy and measuring data-driven care improvements.<sup>24</sup> Our PU registry showed a consistent decline in hospital acquired pressure ulcer (HAPU) occurrence and a steady upward trend of POA-PU occurrence over the past 5 years (Figure 1). In this analysis, we controlled for bias, staging accuracy and subject selection by using a real-time PU registry, clinically validated surveillance, standardized staging definitions and electronic data extraction methodology.

## **Purpose**

Shifting trends in patient safety and healthcare delivery create the need to refocus the lens on PU occurrence to the community setting. Institutional surveillance data demonstrate a rise in the rate of patients arriving to a hospital with a PU. An accurate profile of community-dwelling

PU occurrence may provide important groundwork to support future population health study. The purpose of this project is to describe community-dwelling adults admitted to a hospital with an existing PU. Specific aims include: 1) measurement of 1-year POA-PU prevalence, 2) determination of pre-hospital location of patients with POA-PU, and 3) description of demographics, PU characteristics, risk factors and post-hospital outcome of community-dwelling adults admitted to hospital with a PU.

## **Methods**

We conducted a retrospective medical record review of all patients admitted to a hospital with existing PU over a 12-month period (November 15, 2013 through November 14, 2014, inclusive). The dates were selected to allow for a 1-year follow-up period. The study setting was an 800-bed tertiary academic medical center, part of an integrated health system, located in an urban setting in New England.

The sample was drawn from a hospital PU registry, designed for quality improvement and regulatory purposes, and maintained by the principal investigator (LQC) and hospital wound team. The registry methods included an electronic alert notification of all PU, HAPU and POA-PU, and subsequent clinical validation of all PU by board-certified wound ostomy continence (WOC) registered nurse (RN) or advanced practice registered nurse (APRN) within 24 hours of admission or occurrence. Inter-rater reliability of assessment team was assured by agreement on a set of standardized PU staging photographs. Second assessor review was used with all discrepancies. Best practice PU prevention protocols, supportive equipment and leadership strategies were well established at this institution.<sup>4,5</sup>

The subjects were all adults, over age 18, admitted to the hospital with an existing PU. Subjects were grouped according to pre-hospital location, and community-dwelling subjects

were then further characterized. “Community-dwelling” was defined as originating from home, group-home or assisted living. Pressure ulcer stages 1, 2, 3, 4, unstageable (UNST) and suspected deep tissue injury (sDTI) were defined according to the National Pressure Ulcer Advisory Panel (NPUAP) <sup>5</sup>, and defined as “Present on Admission” (POA) or “Hospital Acquired” (HA) according to CMS definitions.<sup>2</sup>

After dual institutional IRB approval (Hartford HealthCare and Yale University), data were electronically extracted from electronic medical records (EMR) from standardized admission assessment fields, laboratory values, unstructured free text fields and other electronic parameters selected by the principal investigator and validated by the analyst (GF). Data collection was restricted to the existing EMR and did not extend to other facilities or entities. Subjects were not contacted.

Descriptive statistics were analyzed using percentages for categorical variables, and mean with standard deviation or median with interquartile range for continuous variables. Data were analyzed using Excel 2010 (Microsoft; Redmond, WA 2010) and SPSS v.21 (IBM; Armonk, NY 2013).

## **Results**

### **Aim # 1. Measure 1-year POA-PU prevalence.**

Over the 1-year study period, there were 44,202 total hospital admissions. Of those, 2308 adults were admitted to the hospital with at least one PU. Limited to the first admission per person in the 1-year period, this yielded an index POA-PU population of 1435 adults (Figure 2). A denominator of 30,987 was calculated consisting of all adults admitted to the hospital over 1-year who were at potential risk for PU (e.g. exclusion of newborn, obstetric, and non-geriatric

psychiatric admissions). In this sample, the prevalence of all at-risk admissions presenting to the hospital with an existing PU was calculated as 7.4%.

**Aim # 2. Determine pre-hospital location of patients with POA-PU.**

Over the 1-year study period, there were 1435 indexed adult patients presenting to the hospital with a POA-PU. Subjects' pre-hospital location was categorized into 6 groups (Figure 2), including three institutional-dwelling locations (skilled nursing, long term acute care and other acute hospital transfer) and three community-dwelling locations (home, assisted living and group home). Pre-hospital locations were defined by the investigator and electronic data was sorted accordingly. The largest community-dwelling group (70.6%, 948 /1022) arrived from "home", which was defined as a house, condominium, apartment, trailer, public housing and included 4 who identified public shelters as their address. The largest institutional dwelling group arrived from skilled nursing facilities (23.5%, 315/ 321) and included both short and long term care rehabilitation facilities. Pre-hospital location data was missing on 6.4% (92/1435) of subjects.

**Aim #3. Describe demographics, PU characteristics, risk factors and post-hospital outcome of community-dwelling patients admitted to hospital with PU.**

The community-dwelling sample of adults arriving to a hospital with PUs (N = 1022) had a mean age of 72.7 years, was 52.4% male and 80.3% identified as white race (Table 2). Only eight subjects lacked health insurance, and the majority were covered under the Medicare program. RN Case Manager admission note fields validated that 21.4% of subjects were receiving home care services at the time of hospital admission. Nearly one-third of the sample was college educated and only 7.2% had less than a high school education. Cohabitation status was defined as current living arrangement and was captured from the RN Case Manager

admission note which identified that 30.9% of the sample lived alone and 41.5% lived with a spouse or partner.

Subjects presented with a mean of 1.46 PUs per person, a maximum of 8 was set by database entry limits (Table 3). Categorized as worst stage PU per subject, 62.5% of POA-PUs were partial thickness (Stage 1 or Stage 2) and 37.5% of POA-PUs were full thickness (sDTI, UNST, Stage 3 and Stage 4). A separate most severe PU acuity group was defined as subjects who arrived with three or more full thickness PUs, comprising 7.9% of the sample. The most common PU location was trunk/pelvis (79.6%) which included sacral coccygeal, ischial and trochanter sites.

Admission RN assessment of PU risk by the Braden tool identified the associated risk factor patterns in the community-dwelling POA-PU sample (Table 4). Although all subjects in the sample were admitted with an existing PU, only 77.1% of the sample was assessed as being at risk for PU. Braden sub-scores characterized the POA-PU community-dwelling sample with inadequate nutrition (56%), limited mobility (90.8%), bed or chair-fast (56%) and at least occasionally moist skin (56.6%) (Table 4).

Mean admission laboratory values for pre-albumin ( $10.95 \pm 5.3$ ) and hemoglobin ( $11.4 \pm 2.5$ ) reflected protein calorie malnutrition and anemia, respectively, in the community-dwelling POA-PU sample. Subjects had a mean of  $18.4 \pm SD 5.25$  co-morbid diagnoses with more than one-third of the sample with diagnoses reflecting congestive heart failure, atrial fibrillation, renal failure, diabetes and hypertension (Table 5).

After a median length of stay of 9 days (range 1-135), only 33% of the previously community dwelling subjects returned home after hospitalization (Table 6). The disposition for 14% of subjects was end-of-life (death or hospice), with 51.1% transferred to a skilled nursing

or rehabilitation facility. The 30-day readmission rate for community-dwelling dwelling POA-PU subjects was 15.5%. Approximately one-quarter of the subjects had at least one emergency department visit in the subsequent year and 43.4% had at least one hospitalization in the subsequent year.

## **Discussion**

In this study, 7.4% of all adult hospital admissions in 1-year arrived with a POA-PU. This is higher than the 2.3-5.8% rate previously described with administrative datasets<sup>18,19</sup> and also higher than the 6.6% prevalence reported by a comparative study using surveillance methodology.<sup>16</sup> We used surveillance data, which has been shown to reflect 10-fold higher PU occurrence than administrative data, due to the rules for claims data generation.<sup>23</sup> Prior POA-PU surveillance studies in hospital settings have included skin inspection by research nurses, but with a longer timeframe for initial assessment than in our study.<sup>16,17</sup> PU rates may also be affected by the type and business model of a hospital; one comparison study involved a military hospital with a large population of long distance transfers.<sup>17</sup> In our setting, the transformation toward system integration over the past 5 years has increased admission acuity. However, we did not see expected higher POA-PU populations from inter-hospital and acute rehabilitation transfers. The higher prevalence of POA-PU found with our methods has resource implications for healthcare systems. Adequate therapies, technology and a specialized wound workforce must continue to be available for PU care. As opposed to the prevailing ideology of zero PUs, a recognition that skin injury from pressure continues to occur in various settings may alter the social and scientific approach to understanding the condition.<sup>35</sup>

The majority of adults admitted with PUs arrived from community-dwelling locations instead of from institutions. Only one comparison study considered residence prior to admission

and found that patients admitted from nursing homes were more likely to have a POA-PU than those admitted from home,<sup>16</sup> although the data for that study were collected prior to healthcare reform.<sup>11</sup> Our POA-PU sample presented with multiple co-morbid diagnoses and more than one-third arrived with a full thickness PU, a state that might have required institutionalization two decades ago. The 21.4% of the sample currently followed by a home care agency, indicating “home-bound” status, is consistent with other estimates that 19.6% of surveyed elders are home-bound.<sup>25</sup> If development of a PU reflects increasing morbidity<sup>9</sup> our data reflects the inclination for this population to either “live-in-place” or “age-in-place” in the community setting.<sup>10</sup> The high prevalence of community-dwelling POA-PU found in this study is a trend that requires more attention. Future analyses to stratify the community-dwelling POA-PU population by age and acuity would clarify associations for meaningful impact on prevention and home health care service delivery.

Our profile of POA-PU subjects contrasted with demographics from other community samples. Comparatively, the mean (and median) age was lower<sup>13, 15</sup> and there was a higher percentage of males<sup>13,15,16</sup> and lower proportion of non-Whites in this sample<sup>16,17</sup> The age range of 22-102 is wider than that reported in other community POA samples, reflecting PU potential for the community-dwelling younger disabled population as well as the very old. When compared to our regional service population, this profile of community-dwelling POA-PU patients reflected a higher proportion of White and lower proportion of Hispanic populations.<sup>26</sup> Evidence supporting the relationships among race, gender and PU development in the community setting is limited.<sup>9</sup>

We found that community-dwelling POA-PU severity, as measured by worst stage presenting ulcer, was mostly partial thickness (62.5%) instead of full thickness (37.5%). This is a

smaller proportion of full thickness community-dwelling ulcers than reported by Keelaghan et al<sup>16</sup>, although double the proportion of new full thickness ulcers reported in a home care population.<sup>15</sup> Future analysis may clarify the assumption that support by home care services protects patients from developing more severe PU in the community. Hospital acquired PU severity, by contrast, has been described as approximately 75% partial thickness and 25% full thickness using the same definitions.<sup>19, 27</sup> In all settings, the predominant location of PU occurrence is sacral/coccygeal.<sup>14, 16, 17, 27</sup> Considering comparative proportions of known HAPU and community-dwelling PU occurrence, it appears that there is as much, or more, potential for full thickness PU to develop at home as in the hospital.

Hospital admission Braden scores, while intended to reflect current risk<sup>28</sup>, can also portray the prior functional status and caregiving needs of the POA-PU community-dwelling population. Other published reports have shown an association between lower Braden sub-scores for activity, mobility and moisture and the development of PU in the community,<sup>14, 17</sup> and this is consistent with our findings. Higher functional needs require caregiver assistance, and in our population, over 30% lived alone and 41.5% lived with a (potentially elderly) spouse or partner. Cohabitation status in relation to the development of community PU has not been well described in previous US reports. Studies from Australia and Italy have shown that, of older adults followed by home care services, proportionately more patients who live alone develop a PU.<sup>29, 30</sup> Living with others, instead of alone, is a protective factor for sustaining community living status in vulnerable adults.<sup>31</sup> The combination of patient functional deficits, potentially low caregiver support and high prevalence of PU portrayed in our profile has important home safety implications for healthcare systems. As one of the top adverse events occurring in the home environment, PU harm should be minimized through policy and practice changes.<sup>32</sup>

As a poor prognostic indicator, having a PU is associated with extended length of stay,<sup>33</sup> readmission,<sup>34</sup> cumulative adverse event occurrence,<sup>34</sup> and increased mortality.<sup>18</sup> Our data were consistent, showing a 15.5% 30-day readmission rate and 14% of the sample receiving end-of-life care. Future analyses could explore the association between community-dwelling PU and subsequent institutionalization since the majority of patients were not able to return directly to the home. The data also identified populations of POA-PU patients with frequent emergency department visits and hospitalizations. Further stratification of a population health profile like this might identify high utilizers and focus care coordination strategies to reduce risks for multiple hospitalizations. Lastly, this profile of patients with POA-PU presents with a scenario of accumulating risk that cannot be isolated from the impact on later downstream hospital-acquired conditions.

Population-level data, such as provided by this study, portrays opportunities to design interventions to meet patient and community needs. Notable strengths of the sample included the level of education and insurance coverage status, resources that are fertile ground for prevention. Many strategies can be designed based on the risks and strengths of this type of defined population. Examples of strategies include proactive PU risk assessment for primary care and senior center screenings (e.g., routine examination of sitting surface skin condition), expanded coverage of pressure reduction prevention technology (e.g., support surfaces), standardization of caregiver support (e.g., training and respite care), nutritional support (e.g., provision of supplements). These examples may be especially useful to integrated care systems with wound prevention and healing programs that span different care settings: home care, nursing homes, primary care, wound centers and hospitals.<sup>8</sup> Other PU stakeholders, such as insurance companies, pharmacies and medical equipment providers may find this population profile

instructive. Provider educational opportunities are also apparent from our study. For example, 23% of subjects with existing PUs were erroneously scored as “not as risk”, obscuring the value of the Braden score to protect patients from known additional ulcer risk.

### **Limitations**

The current study has several limitations. To eliminate bias, we extracted existing data from the EHR. Therefore, there were missing fields, particularly in nutritional labs and educational level. Our sample was confined to one hospital and, therefore, may represent the PU occurrence patterns of a single integrated health system. The snapshot of community-dwelling patients admitted to a hospital represents those in medical crisis and is not representative of the prevalence of PU in the community at large. Determination of the genesis of the PU was not made; some community-dwelling POA-PU may have begun as a hospital/facility acquired condition. There is a small chance that some patients may have been admitted and discharged within 24 hours and prior to assessment. We cannot eliminate the contribution of confounders and make inferences between risk factors and presentation of POA-PU. A prospective study with a matched sample of patients admitted without a PU would control for confounders in a multivariate analysis. Other comparisons between severity groups and non-PU groups could further clarify risk factors.

### **Conclusion**

In the past decade, much of the focus of PU measurement has been on creating data for public reporting comparisons and financial penalties and not on planning care for a population. An examination of POA-PU improves the understanding of community risk and adds to the estimation of disease burden. The strength of this study is the inclusion of all admitted adults and clinical assessment by expert nurses, a methodology that yielded a valid population profile.

The resulting higher observed prevalence of admission PU has many implications for accountable healthcare delivery. With the aging of the population and known association of PU to aging and comorbidity, healthcare systems should expect and prepare for increasing PU occurrence. Investment in best-practice standardization, quality technology and a specialized wound care workforce should address the needs of the evolving PU population.

## **Key Points**

1. In the US, PU occurrence is largely understood by institutional incidence and prevalence.
2. Shifting demographic and healthcare delivery trends create the need to refocus on PU occurrence to the community setting.
3. Acute-care POA-PU analysis shows the majority of adults admitted with PU arrive from community-dwelling locations.
4. A population health approach to PU occurrence depicts the opportunities for risk stratification, prevention, and care coordination for integrated health systems.

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Author/Year	Design	Sample	Setting	Stages	Method	Findings
Bergquist et al., 1999 <sup>14</sup>	Retrospective cohort	1,711 Adults ≥ 60	Home care	1-4	Chart review	6.3% incidence new PU after admission to home health agency
Williams et al., 2000 <sup>17</sup>	Prospective cohort	267 Adults NS, (medical/surgical)	Military hospital	1-4	Skin inspection ≤ 48 hours	12.8% prevalence POA-PU to hospital (includes transfers)
Keelaghan et al., 2008 <sup>16</sup>	Prospective cohort	3,230 Adults ≥ 65, (medical)	Urban hospital	1-4, UNST	Skin inspection on day 3	6.6% prevalence POA-PU to hospital 4.8% prevalence POA-PU subjects arriving to hospital from non-institutional settings
Takahashi et al., 2011 <sup>13</sup>	Retrospective cohort	12,650 Adults > 60	Community-dwelling primary care	NS	ICD-9 Administrative data	2.9% incident new PU rate at 40 months
Bergquist-Beringer et al., 2011 <sup>15</sup>	Retrospective cohort	5,395 Adults ≥ 60	Home care	1-4, N.O.	OASIS Administrative data	1.3% cumulative incidence new PU after admission to home health agency
Lyder et al., 2012 <sup>18</sup>	Retrospective	51,842 discharges, 2006-2007, Adults, Medicare	All US hospitals	NS	MPSMS Administrative data	5.8% prevalence POA-PU coded at discharge
Meddings et al., 2015 <sup>19</sup>	Retrospective	2.4 million discharges/year 2007 and 2009, Adults, All-payer	311 California hospitals	2-4, UNST	HCUP Administrative data	2007 = 2.3% POA-PU 2009 = 3.0% POA-PU coded at discharge

**Table1. Selected US literature reflecting community PU occurrence**

Abbreviations: CALNOC, Collaborative Alliance for Nursing Outcomes; HCUP, Healthcare Cost and Utilization Project; ICD, International Classification of Diseases; MPSMS, Medicare Patient Safety Monitoring System; NS, Not specified; N.O., Non-observable; OASIS, Outcome and Assessment Information Set; PU, Pressure ulcer; POA-PU, Present-on-admission pressure ulcer; UNST, Unstageable

<b>Sample = 1022</b>		
Age (in years)	Mean $\pm$ SD = 72.7 $\pm$ 15.4 Median = 74 (Range 22-102)	
	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	536	52.4
Female	486	47.6
<b>Race/Ethnicity</b>		
White	821	80.3
Hispanic	82	8.0
African American	64	6.3
Asian	3	0.3
Other	52	5.1
<b>Primary Insurance</b>		
Medicare	801	78.4
Commercial	118	11.5
Medicaid	87	8.5
Other	8	0.8
Self	8	0.8
<b>Home Care Services</b>		
Active on Admission	219	21.4
<b>Education (N=886)</b>		
< High School	64	7.2
High School	464	52.4
Tech School	87	8.5
College	207	23.4
Grad/ Professional	64	7.2
<b>Co-habitation (N=994)</b>		
Spouse/Partner	413	41.5
Alone	307	30.9
Children	140	14.1
Other Relative	87	8.7
Paid Caregiver	27	2.7
Other Non-Relative	20	2.1

**Table 2. Community-Dwelling Adults Admitted with Pressure Ulcers: Demographics**

<b>Sample = 1022</b>		
Number of PUs/Subject	Mean $\pm$ SD =1.46 $\pm$ 0.98 Median = 1 (Range 1-8)	
<b>Worst Stage PU/Subject</b>	<b>N</b>	<b>%</b>
Stage 1	157	15.4
Stage 2	481	47.1
(Total Partial Thickness PU)	(638)	(62.5)
sDTI	165	16.1
Unstageable	146	14.3
Stage 3	40	3.9
Stage 4	33	3.2
(Total Full Thickness PU)	(384)	(37.5)
<b>Worst Stage PU Location/Subject (N=1010)</b>		
Upper Extremity	16	1.6
Head	47	4.7
Lower Extremity	142	14.1
Trunk / Pelvis	805	79.6
<b>&gt;2 Full Thickness PU/Subject</b>		
Yes	81	7.9
No	941	92.1

**Table 3. Community-Dwelling Adults Admitted with Pressure Ulcers: Pressure Ulcer Characteristics**

Abbreviations: PU, pressure ulcer; sDTI, suspected deep tissue injury.

<b>Variable</b>	<b>N</b>	<b>%</b>
<b>Braden Score (N=1022)</b>		
Very High Risk $\leq 9$	20	2
High Risk (10-12)	141	13.8
Mod. Risk (13-14)	161	15.8
Risk (15-18)	465	45.5
No Risk ( $\geq 19$ )	235	23
<b>Braden Nutrition Sub-Score (N=1012)</b>		
Very Poor	346	34.2
Probably Inadequate	221	21.8
Adequate	387	38.2
Excellent	58	5.7
<b>Braden Mobility Sub-Score (N=1012)</b>		
Completely Immobile	56	5.5
Very Limited Mobility	328	32.4
Slightly Limited	535	52.9
No Limitations	93	9.2
<b>Braden Activity Sub-Score (N=1012)</b>		
Bedfast	346	34.2
Chairfast	221	21.8
Walks Occasionally	387	38.2
Walks Frequently	58	5.7
<b>Braden Moisture Sub-Score (N=1012)</b>		
Constantly Moist	9	0.9
Very Moist	65	6.4
Occasionally Moist	499	49.3
Rarely Moist	439	43.4

**Table 4. Community-Dwelling Adults Admitted with Pressure Ulcers: Risk Assessment**

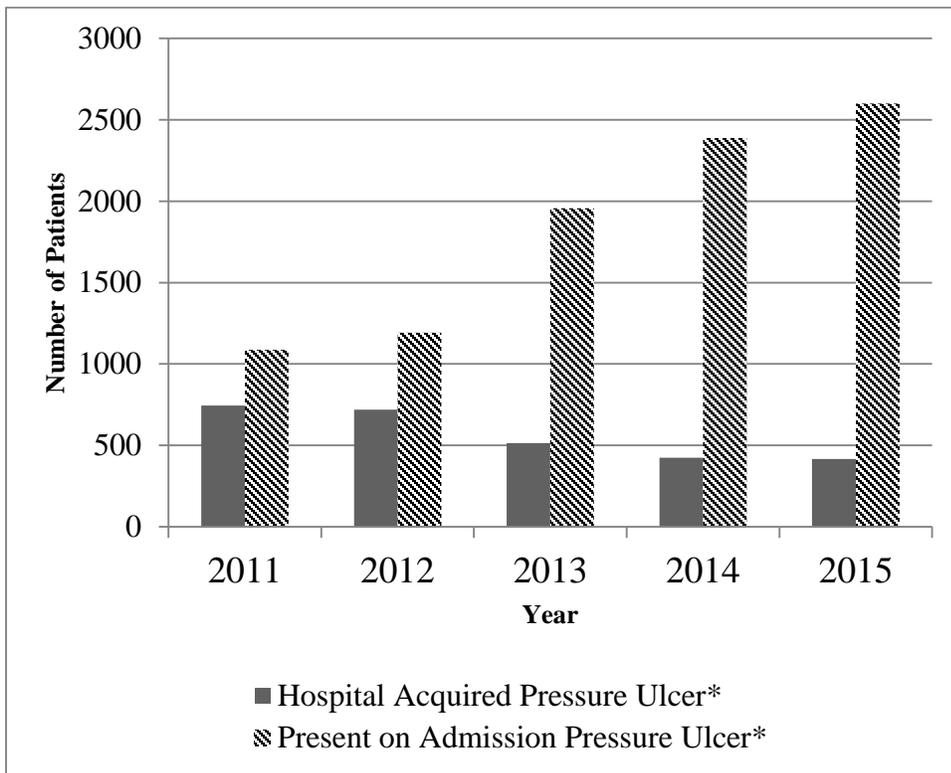
<b>Variable</b>		
Pre-Albumin (N=656) (Normal range 20-40 mg/dL)	Mean $\pm$ SD = 10.95 $\pm$ 5.31 Median = 10 (Range 3-33)	
Hemoglobin (N=1021) (Normal range 11.7-15.7 g/dL)	Mean $\pm$ SD = 11.36 $\pm$ 2.45 Median = 11.2 (Range 1.8-20.5)	
Number of Diagnoses / Subject (N=1022)	Mean $\pm$ SD = 18.4 $\pm$ 5.3 Median = 19 (Range 1-25)	
Comorbid Diagnoses (N=1022)	<b>N</b>	<b>%</b>
Hypertension	476	46.6
Diabetes	394	38.6
Renal Failure	358	35
Atrial Fibrillation	351	34.3
Congestive Heart Failure	338	33.1
Coronary Heart Disease	231	22.6
Cancer (current)	209	20.5
Chronic Obstructive Pulmonary Disease	200	19.6
Cancer (history)	152	14.9
Peripheral Vascular Disease	71	6.9

**Table 5. Community-Dwelling Adults Admitted with Pressure Ulcers: Comorbidities**

<b>Variable (N=1022)</b>		
Length of Stay (in days)	Mean $\pm$ SD = 13.22 + 14.3 Median = 9 (Range 1-135)	
	<b>N</b>	<b>%</b>
30-Day Readmission	158	15.5%
1-Year Emergency Department Visit* (Range 1-18)	259	25.3
1-Year Readmission* (Range 1-8)	444	43.4
<b>Disposition</b>		
Home Without Home Care Services	77	7.5
Home With Home Care Services	261	25.5
(Total Home)		(33)
Home With Hospice	13	1.3
Hospice	36	3.5
Death	94	9.2
(Total End of Life)		(14)
Skilled Nursing Facility	516	50.5
Long-Term Acute Care	12	1.2
(Total Facility)		(51.5)
Other	13	1.3

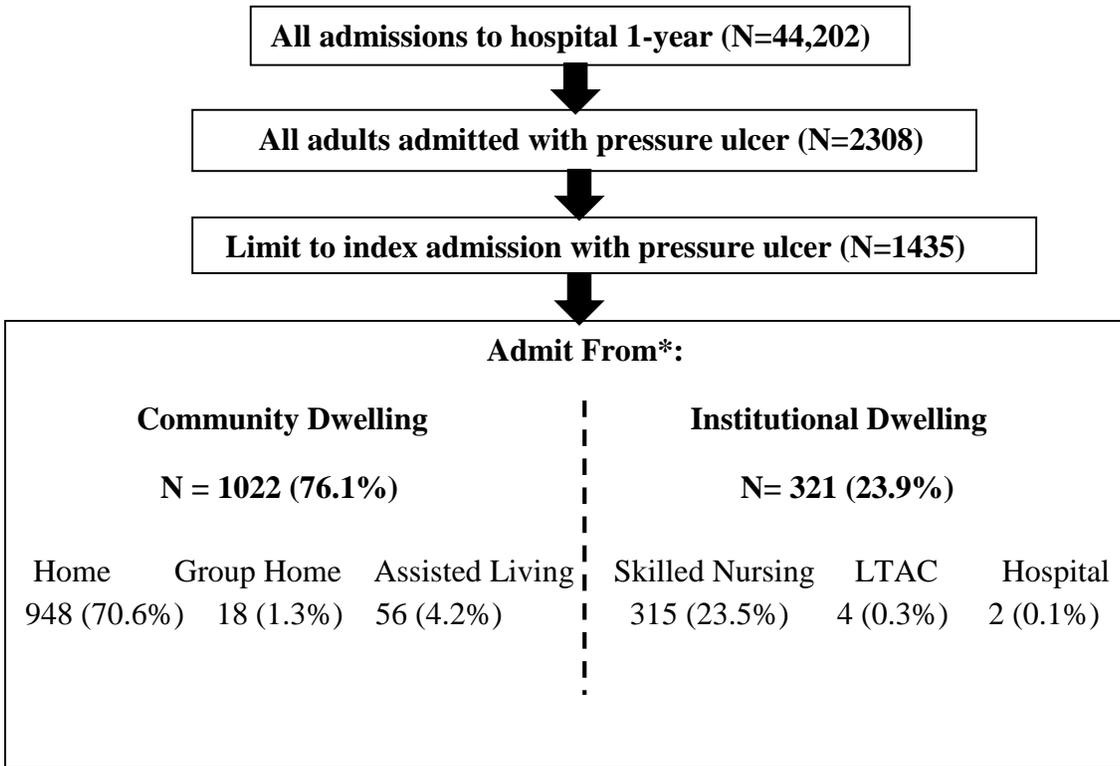
**Table 6. Community-Dwelling Adults Admitted with Pressure Ulcers: Outcomes**

Key:\* Measured as number of subjects with at least one episode in subsequent year



**Figure1. Pressure Ulcer Registry Surveillance Data 2011-2015**

\*Includes Stage I-IV, Suspected Deep Tissue Injury, Unstageable per NPUAP definitions<sup>5</sup>



**Figure 2. Participant Flow**

\*Missing “Admit From” data = 92 (6.4%)

Abbreviation: LTAC = Long Term Acute Care Facility