Development and Evaluation of Candidate Standardized Patient Assessment Data Elements: Findings from the National Beta Test (Volume 3: Sample Description)

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Preface

The Centers for Medicare & Medicaid Services (CMS) contracted with the RAND Corporation to identify and develop standardized patient assessment data elements (SPADEs) for use in the following post-acute care (PAC) patient assessment instruments: the Outcome and Assessment Information Set, used in home health agencies; the Inpatient Rehabilitation Facility Patient Assessment Instrument, used in inpatient rehabilitation facilities; the Long-Term Care Hospital Continuity Assessment Record and Evaluation Data Set, used in long-term care hospitals; and the Minimum Data Set, used in nursing homes and skilled nursing facilities. RAND was tasked with developing and testing data elements within five areas of focus that fall under the clinical categories delineated in the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014: (1) cognitive function and mental status; (2) special services, treatments, and interventions; (3) medical conditions and comorbidities; (4) impairments; and (5) other categories.

This eight-volume report presents background information and results of the National Beta Test, which assessed a set of data elements within the five categories under the IMPACT Act. The National Beta Test was conducted between November 2017 and August 2018. Volume 1 is an executive summary of the material presented in the subsequent volumes. Volume 2 covers the data elements tested; the design; the sampling plan; information on training, recruitment, and retention; information on the data collection process; and the analytic plan. Volume 3 provides a sample description and reports analyses that evaluate the generalizability of results from the National Beta Test sample, both in terms of the representativeness of the facility/agency-level sample to the national population of PAC facilities/agencies, as well as the patients and residents who participated in the National Beta Test relative to the national population of patients and residents receiving PAC in the United States. Volumes 4–8 present the quantitative and qualitative data gathered during testing, as well as interpretations of the results for SPADEs in the following clinical categories: cognitive function (Volume 4), mental status and pain (Volume 5), impairments and special services, treatments, and interventions (Volume 6), and data elements that fall into other clinical categories (care preferences, medication reconciliation, and global health; Volume 7). Volume 8 describes the results and recommendations for SPADEs developed specifically for patients and residents who are unable to communicate (staff assessments of mental status, mood, and pain).

Contents

Tables

Abbreviations

ADLs	activities of daily living
BIMS	Brief Interview for Mental Status
CARE	Continuity Assessment Record and Evaluation
CMS	Centers for Medicare & Medicaid Services
COPD	chronic obstructive pulmonary disease
HHA	home health agency
IMPACT	Improving Medicare Post-Acute Care Transformation
IRF	inpatient rehabilitation facility
IRF-PAI	Inpatient Rehabilitation Facility Patient Assessment Instrument
IV	intravenous
LCDS	Long-Term Care Hospital CARE Data Set
LTCH	long-term care hospital
MDS	Minimum Data Set
OASIS	Outcome and Assessment Information Set
PAC	post-acute care
PHQ	Patient Health Questionnaire
SNF	skilled nursing facility
SPADE	standardized patient assessment data element

1. Introduction

The Centers for Medicare & Medicaid Services (CMS) contracted with the RAND Corporation to evaluate candidate standardized patient assessment data elements (SPADEs) in a national field test titled the National Beta Test. The National Beta Test was conducted to evaluate the performance of candidate SPADEs in the clinical categories of (1) cognitive function and mental status; (2) special services, treatments, and interventions; (3) medical conditions and comorbidities; (4) impairments; and (5) other clinical categories, for use in four post-acute care (PAC) settings: home health agencies (HHAs), inpatient rehabilitation facilities (IRFs), long-term care hospitals (LTCHs), and skilled nursing facilities (SNFs).

This is Volume 3 of the final report on the National Beta Test. It details the evaluation of the facility/agency and patient/resident samples used to test candidate SPADEs. This chapter offers a high-level orientation of the goals, scope, and methods of the National Beta Test. Additionally, this chapter lists the analyses that will be presented for the evaluation of National Beta Test samples in later chapters of this volume.

Candidate SPADEs were identified for the National Beta Test following a series of activities that took place from October 2015 to August 2017, including two Alpha feasibility tests held in select CMS regions,[1] two technical expert panels (TEPs),[2] two subregulatory calls for public comment,[3] and one notice of proposed rulemaking for the fiscal year/calendar year 2018 proposed rules.[4] The results of these activities informed the content and design of the National Beta Test.

The National Beta Test included data collection within 143 PAC facilities/agencies across 14 markets in the United States (listed in Volume 2 of the final report[5]), from November 2017 to August 2018. The overarching goal of the National Beta Test was to evaluate the feasibility, reliability, and validity of candidate SPADEs to identify a subset of data elements for standardization across PAC settings. Candidate SPADEs were considered if they met the requirements of being feasible, clinically useful, and having the potential to improve quality. Trained research nurses and/or staff at participating PAC facilities/agencies administered all National Beta Test assessment protocols. A subset of National Beta Test assessments was completed by research nurse and facility/agency staff assessor pairs to allow for evaluation of

[1] Edelen et al., 2017, 2018.

[2] RAND Corporation, 2017a; RAND Corporation, 2017b.

[3] CMS, 2016; CMS, 2018.

[4] CMS, 2017a; CMS, 2017b; CMS, 2017c; CMS, 2017d.

[5] Edelen et al., 2019.

interrater reliability. Other National Beta Test design features allowed for comparison of different look-back time frames for chart review data elements (i.e., on admission [Day 1], and on Days 3, 5, and 7; Discharge Day and Discharge Day minus 2), as well as an evaluation of the assessment of a subset of interview data elements on Days 3, 5, and 7.

To further support the feasibility and clinical utility of the candidate SPADEs, we solicited the perspectives of research nurses and facility/agency staff assessors on the strengths and weaknesses of collecting the data elements in practice. This feedback was collected as part of the National Beta Test by means of an online survey and focus group discussions.

The remainder of this chapter provides an overview of the data sources and analyses used to evaluate the extent to which the sample selected for the National Beta Test is representative of the broader samples from which it was selected.

Data Sources

Markets

The National Beta Test included data collection within 143 PAC facilities/agencies across 14 markets in the United States, from November 2017 to August 2018, and approximately 25 to 30 patients/residents were sampled from each facility/agency. The 14 markets were randomly split into two groups (Market Groups A and B) to enable testing of alternate versions of particular data elements (e.g., two–data element versus three–data element versions of Expression and Understanding in the cognitive function domain). As such, the 14 different markets were randomly assigned to either market A or B and received corresponding versions of data elements.

Patient/Resident Populations

Patients/residents receiving care from one of the participating facilities/agencies were eligible for inclusion in the National Beta Test if they were Medicare beneficiaries covered under one of the PAC prospective payment systems. Candidate SPADEs were tested among two distinct patient/resident populations: communicative patients/residents and non-communicative patients/residents. The majority of SPADEs were tested among communicative patients/residents (who could make themselves understood through any means). All communicative patients/residents who were admitted to a participating provider site during the field period were eligible for the communicative admission assessment, and all those who completed an admission assessment and were discharged during the field period were eligible for the communicative discharge assessment. Two subsamples of the communicative admission sample were identified for (1) paired assessments for calculation of interrater reliability, and (2) repeat assessment on Days 3, 5, and 7. Volume 2 provides more detail about each of these subsamples.

The non-communicative sample consisted of patients/residents who were unable to make themselves understood (e.g., verbally, in writing, or by using another method) and were administered the non-communicative assessment protocol. This protocol was completed by the assessors for all non-communicative patients/residents receiving care in participating facilities/agencies *at any time* during the field period testing (i.e., not tied to an admission or discharge) based on medical record, communication with staff and other caregivers, and observation of the patient/resident.

Supporting Data

As part of our patient/resident tracking process, gender, date of birth, admission date, discharge date, length of stay (in days), and disposition at discharge (i.e., to another PAC setting, home, hospital, hospice, or other [e.g., group homes, transitional care unit, unknown]) information was collected for each patient/resident participant in the National Beta Test and stored in a separate tracking file to ensure patient/resident confidentiality. These records were used to generate a description of the National Beta Test sample and were subsequently deidentified and matched to the National Beta Test assessment data to enable evaluation of candidate SPADE performance according to patient/resident demographic characteristics. However, the demographic variable data fields were not as consistently completed correctly by assessors, thus the sample size for analyses involving patient/resident demographic characteristics was slightly smaller than the overall National Beta Test sample. Specifically, for the communicative patient/resident admission sample, we had valid information on gender for 96.3 percent, on age for 95.9 percent, on length of stay (which required nonmissing admission and discharge dates) for 84.3 percent, and on disposition at discharge for 94.2 percent. For the non-communicative patient/resident sample, we had valid information on gender for 98.4 percent, on age for 98.0 percent, on length of stay (which required nonmissing admission and discharge dates) on 51.1 percent, and on disposition at discharge for 95.1 percent.

To further characterize the sample and enable evaluation of candidate SPADE performance according to patient/resident clinical characteristics, National Beta Test assessment data were also merged with CMS routine admission assessment data in the OASIS, IRF-PAI, LCDS, and MDS. These assessment data were collected concurrently by the PAC facilities/agencies and submitted to CMS to fulfill PAC prospective payment system and quality reporting program requirements. From these data, we selected a set of variables reflecting presence of clinical conditions (i.e., sepsis, heart failure, and stroke), and two activities of daily living (ADLs; toileting [hygiene] and ability to transfer from lying to sitting [mobility]). These variables were selected because they are prevalent potentially debilitating illnesses/conditions with high relevance to patients/residents across all four PAC settings. In addition, and crucial for our ability to compare across PAC settings, these variables were consistently defined across the four PAC settings, although toileting was not available for HHA patients at the time of this study.

In addition to these clinical conditions and ADLs, which were used to evaluate the candidate SPADEs, we selected additional ADLs (eating ability, oral hygiene, sit to lying ability, lying to sitting at side of bed, sitting to standing, chair/bed to chair transfer, and toilet transfer [not available for HHA patients at the time of this study]) and clinical conditions that were most prevalent in each setting (HHA: aftercare for joint surgery, aftercare for other surgery, diabetes, fall risk, and chronic obstructive pulmonary disease (COPD); IRF: hip fracture; LTCH: acute onset respiratory condition, acute onset and chronic respiratory condition, bone and soft tissue infection; SNF: asthma/COPD/chronic lung disease, urinary tract infection, Alzheimer's disease) to evaluate the representativeness of the National Beta Test sample. For a list of items and diagnostic codes used to specify clinical conditions and ADLs across settings, see Tables A.1–A.5 in the appendix.

Similar to the patient/resident demographic characteristics, these clinical variables were not available for the entire National Beta Test sample. Availability varied according to our success in matching National Beta Test data to CMS routine admission assessment data. When a valid Medicare ID was not available for matching, we matched records using other patient characteristics (date of birth, gender, site of care) to allow for maximum possible match rates. For communicative National Beta Test admission assessments, a total of 73.9 percent were successfully matched to CMS routine admission assessment data (65.1 percent in HHAs, 74.4 percent in IRFs, 81.3 percent in LTCHs, 75.3 percent in SNFs). For non-communicative National Beta Test assessments, a total of 62.0 percent were successfully matched to CMS routine admission assessment data (34.4 percent in HHAs, 60.7 percent in IRFs, 79.5 percent in LTCHs, and 52.2 percent in SNFs).

Analyses Presented in This Volume

We compare and discuss demographic characteristics, health status, and functional ability as measured by CMS assessment data (i.e., from the OASIS, IRF-PAI, LCDS, and MDS) to evaluate the representativeness of the full National Beta Test sample and subsamples to the national population of patients/residents receiving PAC. Although generally such comparisons would be accompanied by test statistics, the most relevant test statistics (e.g., chi-square) are highly sensitive to sample size and would identify even the most trivial differences (e.g., changes in the second decimal place) as significant. That is, nearly all statistical tests would be misleadingly significant and thus not informative. As such, we do not report chi-square test statistics in comparisons involving the national population. Instead we discuss similarities and noteworthy differences. However, test statistics are reported for comparisons of patient/resident characteristics among National Beta Test subsamples (e.g., those with and without discharge data) as follows:

- Categorical associations were statistically evaluated using chi-square tests of independence and, in the case of ordinal data, Mantel-Haenszel chi-square.[6] Significant results from chi-square tests are reported in the following format: ($\chi^2_{(df)} = X.X$, $p < 0.05$), where *df* are degrees of freedom and *X*'s are numerical test statistic values. A significant chi-square value (i.e., $p < 0.05$, $p < 0.01$, $p < 0.001$) indicates a significant association between two variables (e.g., age group and inclusion in interrater reliability subsample versus not).
- Associations involving one continuous variable and one categorical variable were statistically evaluated using independent samples t-test to determine whether statistical differences emerged in the continuous variable (e.g., length of stay) as a function of a grouping variable (e.g., inclusion in interrater reliability subsample versus not). Significant results from t-test results are reported in the following formats: $t_{(df)} = X.X$, $p < 0.001$, where *df* are degrees of freedom and *X*'s are numerical test statistic values.

Organization of This Volume

The remainder of this volume is organized into four main results sections. Chapter 2 presents data to describe participating facilities/agencies and patient/resident assessment counts for the entire National Beta Test sample and subsamples (e.g., communicative), overall and by market and PAC setting type. Chapter 3 presents data to describe the representativeness of participating facilities/agencies by comparing the National Beta Test sample with all facilities/agencies from the 14 sampled markets, and all facilities/agencies nationally. Chapter 4 presents data comparing the National Beta Test sample with all comparable patients/residents admitted to a PAC facility nationally during the data collection period. Chapter 5 provides data that evaluates the representativeness of analytic subsamples within the National Beta Test communicative admission sample. Specifically, we compare characteristics of patients/residents (1) who contributed paired admission assessment data to the interrater reliability calculations versus those who did not (i.e., had a solo admission assessment), (2) who participated in the Day 3, 5, 7 repeat assessment sub-study versus those who did not, (3) for whom a discharge assessment was completed versus those without, and (4) who were included in Market Group A versus Market Group B. The last chapter, Chapter 6, summarizes the findings from the analyses presented in this volume and provides a conclusion regarding the sample representativeness.

[6] Mantel and Haenszel, 1959.

2. Sample Description

In this chapter, we present data on the distribution of the facilities/agencies participating in the National Beta Test, along with patient/resident assessment counts for the full National Beta Test sample and subsamples (i.e., communicative admission, interrater reliability, repeat assessment, discharge, and non-communicative admission), overall and by market and PAC setting type. More information about the sampling plan is available in Volume 2 of this report.

Number and Distribution of Facilities/Agencies

Table 2.1 shows the distribution of the 143 participating facilities/agencies for all markets and by market group, overall and by PAC setting. The National Beta Test was conducted in 14 randomly selected markets, and these 14 markets were randomly split into two groups as follows: Market Group A consisted of Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B consisted of Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. This random split of the 14 markets into two groups was done to test two versions of a subset of data elements (see Volume 2 for more detail) and resulted in an approximately even number of facilities/agencies in each group (73 in Market Group A, 70 in Market Group B), although IRFs were slightly underrepresented in Market Group B (9 versus 13 in Market Group A).

Although there was an attempt to recruit equal numbers of facilities/agencies in each market, the final counts varied somewhat: Boston, St. Louis, Fort Lauderdale, Durham, and Philadelphia contributed slightly higher proportions of facilities/agencies (each greater than ten), whereas San Diego contributed only six; there were between eight and ten participating facilities/agencies from each of the remaining eight markets. These trends, for the most part, align with the numbers of eligible facilities/agencies in each market. However, recruitment rates were particularly low in San Diego and Chicago despite concerted efforts to recruit in these markets. We believe that several factors contributed to this, including involvement in other initiatives, concerns about anticipated Joint Commission site visits, facility/agency closures, mergers, reorganizations, and management and nursing staff turnover. There was also an attempt to get a fairly even spread of setting types across markets, and eight of the 14 markets had at least one participating facility/agency of each setting type. The smaller total number of LTCHs and IRFs nationally and their tendency to cluster in certain regions (e.g., LTCHs in Texas) clearly influenced the distribution of these setting types in the National Beta Test. For example, the Houston, Kansas City, Los Angeles, and Nashville markets did not include any participating IRFs, and the Durham, Nashville, Phoenix, and San Diego markets did not include any participating LTCHs. Further, some of the markets had high concentrations of specific setting types: Nearly half of all

HHAs came from only three markets (Durham, Fort Lauderdale, and St. Louis), and nearly a quarter of all LTCHs came from only five markets (Houston, Dallas, Boston, Fort Lauderdale, and Harrisburg).

Table 2.1. Number of Participating National Beta Test Facilities/Agencies by Market Group and Market, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	3	3	3	7	16
Chicago	1	1	1	5	8
Dallas	1	2	4	2	9
Durham	6	1	0	5	12
Fort Lauderdale	6	1	3	3	13
Harrisburg	1	1	3	3	8
Houston	1	0	6	2	9
Kansas City	3	0	1	4	8
Los Angeles	0	3	2	4	9
Nashville	2	0	0	8	10
Philadelphia	3	3	1	5	12
Phoenix	2	3	0	5	10
St. Louis	5	1	2	5	13
San Diego	1	3	0	2	6
Market Group A	16	13	14	30	73
Market Group B	19	9	12	30	70
All Markets	35	22	26	60	143

NOTE: Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego.

Number of Patient/Resident Assessments

Many aspects of the National Beta Test design were implemented among subsamples of the total National Beta Test patient/resident sample. Specifically, the total sample consisted of both non-communicative and communicative patients/residents. Although all communicative patients/residents contributed to the chart review look-back evaluation, among the communicative subsample, further subsets contributed the following types of data: (1) paired assessment data for the evaluation of interrater reliability, (2) repeat assessment data collected on Days 3, 5, and 7 to evaluate different look-back periods, and (3) discharge assessment data to evaluate stability/change from admission to discharge.

As described in Volume 2, all assessments were conducted by trained research nurses and facility staff. In all, 37 research nurses and 239 facility staff assessors contributed one or more

assessments. Research nurses accounted for 47 percent of submitted assessments overall, but that percentage varied somewhat by setting, ranging from 40 percent in HHAs to 55 percent in SNFs.

Table 2.2 shows the number of patient/resident assessments for each of the National Beta Test subsamples (i.e., communicative admission; interrater reliability; Day 3, 5, 7 repeat assessment; discharge; and non-communicative), overall and by PAC setting type. Volume 2 provides more detail about each of the subsamples. In all, the National Beta Test included 3,669 patients/residents, 3,121 of whom made up the communicative admission sample and 548 of whom made up the non-communicative sample.

Table 2.2. Total and Average Facility/Agency Assessment Counts by National Beta Test Subsample, Overall and by PAC Setting Type

Subsample/Assessment Type	HHA	IRF	LTCH	SNF	Overall
Communicative admission	653 (19)	794 (36)	507 (20)	1,167 (20)	3,121 (22)
Interrater reliability	199 (6)	261 (12)	242 (9)	274 (5)	976 (7)
Day 3, 5, 7 repeat assessment	112 (3)	150 (7)	91 (4)	239 (4)	592 (4)
Discharge	148 (4)	350 (16)	90 (4)	235 (4)	823 (6)
Non-communicative	32 (1)	107 (5)	185 (7)	224 (4)	548 (4)
Total patients/residents assessed[a]	685 (20)	901 (41)	692 (27)	1,391 (23)	3,669 (26)

NOTE: Facility/agency averages are presented in parentheses.
[a] This row is the sum of the communicative admission and non-communicative rows. Interrater reliability; Day 3, 5, 7 repeat assessments; and discharge assessments were all conducted among subsets of patients/residents with a communicative admission assessment.

Across all settings, participating facilities/agencies contributed an average of 22 communicative admission assessments. However, HHAs, LTCHs, and SNFs contributed an average of approximately 20, whereas IRFs contributed substantially more on average (36). This trend of slightly higher average numbers of participating patients in IRFs is evident in all the communicative subsamples. The ability of IRFs to enroll more patients on average and especially IRFs' completion of discharge assessments may have been related to their larger average size (see Table 3.1 in this volume) and shorter lengths of stay (see Table 5.1 in this volume) relative to the other settings. As expected given the differences in patient populations by setting, LTCHs contributed a higher average number of non-communicative patients/residents than did the other three settings.

The next set of tables shows the distributions of patient/resident assessment counts for each of these five subsamples/assessment types (communicative admission; interrater reliability; Day 3, 5, and 7 repeat assessment; discharge; and non-communicative), for all markets and by market group, overall and by PAC setting type.

Communicative Admission Assessments

Communicative admission assessment counts, shown in Table 2.3 for all markets and market groups, overall and by PAC setting type, were approximately evenly split between both market groups. In both market groups and all markets combined, more communicative admission assessments were collected in SNFs than in other setting types, which is to be expected given the large number of participating SNFs relative to other setting types.

Overall, St. Louis, Boston, Fort Lauderdale, Durham, and Phoenix contributed the greatest number of communicative admission assessments, while Chicago, Nashville, and Philadelphia contributed the fewest both in terms of total counts and average assessments per facility/agency. Relative to other markets, St. Louis and Durham contributed more HHA assessments; Boston and Phoenix more IRF assessments; Dallas and Houston more LTCH assessments; and Phoenix, Durham, and St. Louis more SNF assessments.

Table 2.3. Total and Average Communicative Admission Assessment Counts by Market and Market Group, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	32 (11)	126 (42)	41 (14)	100 (14)	299 (19)
Chicago	23 (23)	18 (18)	2 (2)	64 (13)	107 (13)
Dallas	12 (12)	84 (42)	106 (27)	1 (1)	203 (23)
Durham	154 (26)	33 (33)	—	136 (27)	323 (27)
Fort Lauderdale	95 (16)	50 (50)	73 (24)	111 (37)	329 (25)
Harrisburg	63 (63)	28 (28)	45 (15)	52 (17)	188 (24)
Houston	2 (2)	—	171 (29)	46 (23)	219 (24)
Kansas City	64 (21)	—	17 (17)	97 (24)	178 (22)
Los Angeles	—	100 (33)	31 (16)	42 (11)	173 (19)
Nashville	26 (13)	—	—	82 (10)	108 (11)
Philadelphia	16 (5)	75 (25)	0 (0)	60 (12)	151 (13)
Phoenix	8 (4)	118 (39)	—	148 (30)	274 (27)
St. Louis	135 (27)	90 (90)	21 (11)	162 (32)	408 (31)
San Diego	23 (23)	72 (24)	—	66 (33)	161 (27)
Market Group A	234 (15)	496 (38)	270 (19)	563 (19)	1,563 (21)
Market Group B	419 (22)	298 (33)	237 (20)	604 (20)	1,558 (22)
All Markets	653 (19)	794 (36)	507 (20)	1,167 (19)	3,121 (22)

NOTES: Facility/agency averages are presented in parentheses. Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. Cells with "—" denote markets with no facilities/agencies of that type.

Paired Assessments for Interrater Reliability

Table 2.4 shows the paired assessment count distribution for the communicative interrater reliability subsample, for all markets and market groups, overall and by PAC setting type. Note that each paired assessment count represents two submitted assessments for the same patient/resident: one from facility/agency staff and one from a research nurse. Communicative interrater reliability assessment counts were approximately evenly split between market groups.

Overall and in Market Group B, slightly more communicative interrater reliability assessments were collected in SNFs, and more IRF assessments were collected in Market Group A. Overall, St. Louis, Fort Lauderdale, Houston, and Phoenix contributed the greatest number of communicative interrater reliability assessments, while Nashville, Kansas City, Chicago, and Los Angeles contributed the fewest.

Compared with other markets, St. Louis contributed more HHA assessments; Phoenix more IRF assessments; Dallas, Houston, Harrisburg and Fort Lauderdale more LTCH assessments; and Philadelphia and Durham more SNF assessments.

Table 2.4. Total and Average Interrater Reliability Paired Assessment Counts by Market and Market Group, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	5 (2)	29 (10)	18 (6)	23 (3)	75 (5)
Chicago	9 (9)	6 (6)	2 (2)	25 (5)	42 (5)
Dallas	8 (8)	21 (11)	37 (9)	1 (1)	67 (7)
Durham	32 (5)	10 (10)	—	45 (9)	87 (7)
Fort Lauderdale	20 (3)	24 (24)	36 (12)	15 (5)	95 (7)
Harrisburg	9 (9)	16 (16)	40 (13)	12 (4)	77 (10)
Houston	1 (1)	—	73 (12)	16 (8)	90 (10)
Kansas City	13 (4)	—	3 (3)	22 (6)	38 (5)
Los Angeles	—	18 (6)	19 (10)	8 (2)	45 (5)
Nashville	10 (5)	—	—	16 (2)	26 (3)
Philadelphia	4 (1)	26 (9)	0 (0)	37 (7)	67 (6)
Phoenix	2 (1)	63 (21)	—	22 (4)	87 (9)
St. Louis	70 (14)	19 (19)	14 (7)	27 (5)	130 (10)
San Diego	16 (16)	29 (10)	—	5 (3)	50 (8)
Market Group A	57 (4)	161 (12)	115 (8)	116 (4)	449 (6)
Market Group B	142 (7)	100 (11)	127 (11)	158 (5)	527 (8)
All Markets	199 (6)	261 (12)	242 (9)	274 (5)	976 (7)

NOTES: Facility/agency averages are presented in parentheses. Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. Cells with "—" denote markets with no facilities/agencies of that type.

Day 3, 5, 7 Repeat Assessments

Table 2.5 shows the Day 3, 5, 7 repeat assessment count distribution, for all markets and market groups, overall and by PAC setting type. Day 3, 5, 7 repeat assessment counts were approximately evenly split between market groups. Relatively more repeat assessments were made in SNFs than in other settings, overall and in both market groups.

Fort Lauderdale, Phoenix, Durham, St. Louis, Harrisburg, and Dallas contributed the greatest number of repeat assessments, while Kansas City and Philadelphia contributed the fewest.

Compared with other markets, Harrisburg, St. Louis, Durham, and Fort Lauderdale contributed the most HHA assessments; Phoenix, Fort Lauderdale, and Dallas more IRF assessments; Dallas, Fort Lauderdale, and Houston more LTCH assessments; and, Phoenix, Durham, San Diego, and Boston had the highest numbers of SNF assessments.

Table 2.5. Total and Average Day 3, 5, 7 Repeat Assessment Counts by Market and Market Group, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	1 (0)	13 (4)	4 (1)	26 (4)	44 (3)
Chicago	2 (2)	7 (7)	2 (2)	17 (3)	28 (4)
Dallas	0 (0)	24 (12)	27 (7)	0 (0)	51 (6)
Durham	30 (5)	7 (7)	—	30 (6)	67 (6)
Fort Lauderdale	17 (3)	23 (23)	20 (7)	22 (7)	82 (6)
Harrisburg	29 (29)	8 (8)	8 (3)	11 (4)	56 (7)
Houston	0 (0)	—	22 (4)	2 (1)	24 (3)
Kansas City	2 (1)	—	—	8 (2)	10 (1)
Los Angeles	—	17 (6)	6 (3)	3 (1)	26 (3)
Nashville	2 (1)	—	—	27 (3)	29 (3)
Philadelphia	0 (0)	1 (0)	0 (0)	7 (1)	8 (1)
Phoenix	1 (1)	25 (8)	—	44 (9)	70 (7)
St. Louis	27 (5)	13 (13)	2 (1)	17 (3)	59 (5)
San Diego	1 (1)	12 (4)	—	25 (13)	38 (6)
Market Group A	23 (1)	109 (8)	59 (4)	120 (4)	311 (4)
Market Group B	89 (5)	41 (5)	32 (3)	119 (4)	281 (4)
All Markets	112 (3)	150 (7)	91 (4)	239 (4)	592 (4)

NOTES: Facility/agency averages are presented in parentheses. Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. Cells with "—" denote markets with no facilities/agencies of that type.

Discharge Assessments

Table 2.6 shows the discharge assessment count distribution, for all markets and market groups, overall and by PAC setting type. All patients/residents who completed an admission

assessment were eligible for a discharge assessment, but discharge completion rates varied considerably based on differences in workflow, sufficient notice that a discharge was scheduled to occur, and availability of assessors. For the discharge sample, slightly more assessments came from Market Group A (60 percent) than Market Group B. Discharge assessments were completed at a higher rate among eligible IRF patients (350 of 794 eligible, or 44 percent) relative to the other settings (18 percent of LTCH patients, 20 percent of SNF residents, and 23 percent of HHA patients).

Boston, Fort Lauderdale, and Durham contributed the greatest number of discharge assessments, while Kansas City, Nashville, and San Diego contributed the fewest. Compared with other markets, St. Louis contributed more HHA assessments; Boston and Los Angeles more IRF assessments; Boston and Houston more LTCH assessments; and, Boston, Chicago, Durham, Fort Lauderdale, and Phoenix more SNF assessments.

Table 2.6. Total and Average Discharge Assessment Counts by Market and Market Group, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	12 (4)	60 (20)	25 (8)	38 (5)	135 (8)
Chicago	3 (3)	10 (10)	1 (1)	34 (7)	48 (6)
Dallas	4 (4)	23 (12)	13 (3)	0 (0)	40 (4)
Durham	23 (4)	27 (27)	—	41 (8)	91 (8)
Fort Lauderdale	16 (3)	33 (33)	6 (2)	35 (12)	90 (7)
Harrisburg	6 (6)	16 (16)	5 (2)	14 (5)	41 (5)
Houston	0 (0)	—	34 (6)	0 (0)	34 (4)
Kansas City	18 (6)	—	0 (0)	5 (1)	23 (3)
Los Angeles	—	61 (20)	2 (1)	10 (3)	73 (8)
Nashville	18 (9)	—	—	11 (1)	29 (3)
Philadelphia	7 (2)	44 (15)	0 (0)	9 (2)	60 (5)
Phoenix	2 (1)	48 (16)	—	27 (5)	77 (8)
St. Louis	39 (8)	17 (17)	4 (2)	3 (1)	63 (5)
San Diego	0 (0)	11 (4)	—	8 (4)	19 (3)
Market Group A	55 (3)	235 (18)	47 (3)	149 (5)	486 (7)
Market Group B	93 (5)	115 (13)	43 (4)	86 (3)	337 (5)
All Markets	148 (4)	350 (16)	90 (3)	235 (4)	823 (6)

NOTES: Facility/agency averages are presented in parentheses. Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. Cells with "—" denote markets with no facilities/agencies of that type.

Non-Communicative Assessments

Table 2.7 shows the non-communicative assessment count distribution for all markets and market groups, overall and by PAC setting type. All markets contributed patient/resident non-communicative assessments, but the range of completed non-communicative assessments across the 14 markets was wide, ranging from a low of six in Dallas to a high of 74 in Los Angeles. For the non-communicative subsample, slightly more assessments came from Market Group A (60 percent) than Market Group B.

There were more non-communicative assessments in SNFs, overall and in both market groups; however, the rate was equally high for LTCHs in Market Group B. Boston, Los Angeles, St. Louis, and Phoenix contributed the greatest number of non-communicative assessments, while Harrisburg, Dallas, and San Diego contributed the fewest. Compared with other markets, Fort Lauderdale and Nashville contributed more HHA assessments; Phoenix more IRF assessments; Houston, Los Angeles, and St. Louis more LTCH assessments; and Nashville and Chicago more SNF assessments.

Because of the differences in patient/resident populations among settings, non-communicative assessments were more difficult to collect in HHAs as is evidenced by the lack of non-communicative assessments from Chicago, Kansas City, Philadelphia, Phoenix, and San Diego, despite having at least one participating HHA in these markets.

Table 2.7. Total and Average Non-Communicative Assessment Counts by Market and Market Group, Overall and by PAC Setting Type

Market	HHA	IRF	LTCH	SNF	Overall
Boston	3 (1)	17 (6)	12 (4)	29 (4)	61 (4)
Chicago	0 (0)	6 (6)	10 (10)	33 (7)	49 (6)
Dallas	2 (2)	1 (1)	2 (1)	1 (1)	6 (1)
Durham	4 (1)	0 (0)	—	10 (2)	14 (1)
Fort Lauderdale	9 (2)	10 (10)	27 (9)	9 (3)	55 (4)
Harrisburg	1 (1)	1 (1)	5 (2)	1 (0)	8 (1)
Houston	1 (1)	—	51 (9)	2 (1)	54 (6)
Kansas City	0 (0)	—	3 (3)	14 (4)	17 (2)
Los Angeles	—	8 (3)	37 (19)	29 (7)	74 (8)
Nashville	7 (4)	—	—	34 (4)	41 (4)
Philadelphia	0 (0)	11 (4)	1 (1)	12 (2)	24 (2)
Phoenix	0 (0)	48 (16)	—	15 (3)	63 (6)
St. Louis	5 (1)	1 (1)	37 (19)	29 (6)	72 (6)
San Diego	0 (0)	4 (1)	—	6 (3)	10 (2)
Market Group A	14 (1)	90 (7)	91 (7)	130 (4)	325 (4)
Market Group B	18 (1)	17 (2)	94 (8)	94 (3)	223 (3)
All Markets	32 (1)	107 (5)	185 (7)	224 (4)	548 (4)

NOTES: Facility/agency averages are presented in parentheses. Market Group A includes Boston, Chicago, Harrisburg, Houston, Kansas City, Los Angeles, and St. Louis; Market Group B includes Dallas, Durham, Fort Lauderdale, Nashville, Philadelphia, Phoenix, and San Diego. Cells with "—" denote markets with no facilities/agencies of that type.

3. Representativeness of National Beta Test Facility/Agency Sample

In this chapter, we provide data for each PAC setting type, describing the representativeness of the National Beta test facility/agency sample. The facility/agency selection and recruitment process (described in further detail in Volume 2) involved a stepped approach that started with all facilities/agencies nationally with active records (the universe of possible National Beta Test facility/agency participants) based on the 2016 Provider of Services file. From this universe, 64 markets were deemed eligible for selection based on having sufficient numbers of facilities/agencies of each type. The 14 National Beta Test markets were randomly selected from the 64 eligible, and a final step reduced the list of facilities/agencies in the 14 selected markets to those eligible based on such criteria as size and driving distance from one another.

To describe the representativeness of the National Beta Test facility/agency sample for each setting type, the next series of tables uses data from the 2016 Provider of Services file (from which the National Beta test sample was drawn) to list characteristics for the facilities/agencies at each stage of the sampling process, including ownership and urbanicity for all setting types and average number of beds and nurse-to-bed ratio for IRFs, LTCHs, and SNFs (these latter two characteristics are not relevant for HHAs).

Specifically, the tables include characteristics of

1. facilities/agencies in the National Beta Test sample
2. eligible facilities/agencies in the 14 sampled market population (the sampling frame)
3. all facilities/agencies in the 14 sampled markets
4. all facilities/agencies in the 64 eligible markets
5. all facilities/agencies nationally with active records (the universe of possible National Beta Test facility/agency participants).

Because of the uneven spread of the 14 randomly selected markets geographically, and some observed lack of comparability in the National Beta Test sample relative to the national population on these facility/agency characteristics, the evaluation of the individual data elements (presented in Volumes 4–8) includes sensitivity analyses to determine the potential effect of this variation on data element performance.

Representativeness of HHAs in National Beta Test

Table 3.1 shows the characteristics of the National Beta Test sample of HHAs relative to agency samples in each step of the sample selection process. Just over 80 percent of HHAs nationally are for-profit, and that rate is somewhat higher among all agencies in the 64 eligible markets, all agencies in the 14 selected markets, and among eligible agencies in the 14 selected

markets. However, although all ownership statuses are adequately represented in the National Beta Test sample, the percentage of for-profit HHAs is somewhat lower compared with the larger agency samples in each step of the selection process. Further, the distribution of metropolitan and micropolitan HHAs in the National Beta Test sample is very similar to rates among HHAs nationally, although small-town agencies are somewhat overrepresented and there are no rural agencies in the National Beta Test sample.

Table 3.1. Characteristics of Sampled HHAs Compared with HHA Samples in Each Step of Selection Process

	National Beta Test Sampled HHAs in 14 Markets (*n* = 35)	Eligible HHAs in 14 Sampled Markets (*n* = 2,318)	All HHAs in 14 Sampled Markets (*n* = 2,586)	All HHAs in 64 Eligible Markets (*n* = 5,367)	All HHAs in the Nation (*n* = 11,489)
Ownership (percent)					
For-profit	57.1	91.3	91.9	86.0	80.3
Nonprofit	31.4	7.2	6.9	10.8	15.0
Government	11.4	1.5	1.2	3.2	4.7
Urbanicity (percent)					
Metropolitan	78.1	92.6	92.3	83.8	79.9
Micropolitan	9.4	4.2	4.4	8.7	9.5
Small town	12.5	2.1	2.1	5.3	6.9
Rural	0.0	1.2	1.3	2.2	3.7

Representativeness of IRFs in National Beta Test

As shown in Table 3.2, nearly 60 percent of IRFs nationally are nonprofit, but that rate is somewhat lower among the facility samples in each stage of the selection process; the rate of just over 50 percent nonprofit IRFs in the National Beta Test sample is slightly lower than the national rate. Further, the rate of metropolitan IRFs increases at each stage of the selection process, resulting in 100 percent of IRFs in the National Beta Test sample residing in metropolitan areas. Finally, IRFs in the National Beta Test sample are somewhat smaller than the IRFs in the national population based on median bed count (median bed count is 148 in the National Beta Test sample and 217 among IRFs nationally).

Table 3.2. Characteristics of Sampled IRFs Compared with IRF Samples in Each Step of Selection Process

	National Beta Test Sampled IRFs in 14 Markets (*n* = 23)	Eligible IRFs in 14 Markets (*n* = 145)	All IRFs in 14 Sampled Markets (*n* = 157)	All IRFs in 64 Eligible Markets (*n* = 434)	All IRFs in the Nation (*n* = 1,080)
Ownership (percent)					
For-profit	39.1	46.2	47.1	40.6	33.4
Nonprofit	52.1	49.0	47.7	53.9	59.8
Government	8.7	4.8	5.1	5.5	6.8
Urbanicity (percent)					
Metropolitan	100	89.9	87.3	82.1	80.1
Micropolitan	0.0	8.7	11.3	14.8	15.1
Small town	0.0	0.7	0.7	2.6	3.7
Rural	0.0	0.7	0.7	0.5	1.1
Number of beds (median)	148	227	225	191	217
Nurse-to-bed ratio (mean)	1.0	1.0	1.0	0.9	1.0

Representativeness of LTCHs in National Beta Test

Similar to ownership differences seen in National Beta Test IRFs relative to the national distribution, Table 3.3 shows that the rate of for-profit LTCHs increases slightly at each step of the selection process, resulting in a larger percentage of for-profit LTCHs in the National Beta Test sample (80 percent) relative to the LTCHs nationally (63.4 percent). Moreover, the National Beta Test sample does not include any government ownership facilities. The majority of LTCHs nationally are in metropolitan areas (91.5 percent), so it is not surprising to see that over 95 percent of LTCHs in the National Beta Test sample are metropolitan. Although there are no LTCHs in the National Beta Test sample from small-town or rural areas, there is a small proportion from micropolitan areas. The median number of beds in LTCH facilities increases with each step in the selection process, starting at a median of 44 beds nationally and ending with a median of 70 in the National Beta Test sample.

Table 3.3. Characteristics of Sampled LTCHs Compared with LTCH Samples in Each Step of Selection Process

	National Beta Test Sampled LTCHs in 14 Markets (*n* = 25)	Eligible LTCHs in 14 Markets (*n* = 59)	All LTCHs in 14 Sampled Markets (*n* = 61)	All LTCHs in 64 Eligible Markets (*n* = 177)	All LTCHs in the Nation (*n* = 322)
Ownership (percent)					
For-profit	80.0	76.3	77.1	69.5	63.4
Nonprofit	20.0	20.3	19.6	26.6	31.4
Government	0.0	3.4	3.3	4.0	5.3
Urbanicity (percent)					
Metropolitan	95.7	94.6	94.8	88.3	91.5
Micropolitan	4.3	5.4	5.2	9.9	7.2
Small town	0.0	0.0	0.0	1.2	1.0
Rural	0.0	0.0	0.0	0.6	0.3
Number of beds (median)	70	62	60	47	44
Nurse-to-bed ratio (mean)	0.5	0.5	0.5	0.5	0.5

Representativeness of SNFs in National Beta Test

The distribution of ownership status among the SNFs in the National Beta Test sample is fairly comparable to that of SNFs nationwide, with only slightly fewer government facilities and slightly more nonprofit SNFs in the National Beta Test sample. As with the other setting types, the rate of urban SNFs increases somewhat at each step in the selection process. However, unlike the other three settings, each urbanicity category is fairly well represented by the SNFs in the National Beta Test sample. In addition, the SNFs in the National Beta Test sample are larger based on median bed count (138 beds) relative to SNFs nationally (100 beds).

Table 3.4. Characteristics of Sampled SNFs Compared with SNF Samples in Each Step of Selection Process

	National Beta Test Sampled SNFs in 14 Markets (*n* = 60)	Eligible SNFs in 14 Markets (*n* = 1,744)	All SNFs in 14 Sampled Markets (*n* = 2,119)	All SNFs in 64 Eligible Markets (*n* = 5,957)	All SNFs in the Nation (*n* = 14,343)
Ownership (percent)					
For-profit	68.3	77.5	77.1	72.4	69.7
Nonprofit	28.3	20.1	201	21.7	24.0
Government	3.3	2.5	2.8	5.9	6.4
Urbanicity (percent)					
Metropolitan	83.0	79.7	75.9	67.2	62.1
Micropolitan	5.7	10.4	12.0	16.4	15.8
Small town	7.6	6.0	7.0	10.4	12.6
Rural	3.8	3.9	5.1	6.0	9.6
Number of beds (median)	138	120	114	108	100
Nurse-to-bed ratio (mean)	0.1	0.1	0.1	0.1	0.1

4. National Representativeness of National Beta Test Patient/Resident Sample

In this chapter, we describe the full National Beta Test patient/resident sample (communicative and non-communicative combined) and compare it with the national population of patients/residents who received PAC services in 2016/2017, overall and by PAC setting type.

The percentages presented in Tables 4.1–4.5 are based on admission assessment records from each setting's routine assessment instrument (OASIS, IRF-PAI, LCDS, MDS). For the national population comparison, we selected admission assessments for Medicare patients/residents who were admitted to one of the four PAC settings from acute care in 2016/2017. It should be noted that, because of our eligibility criteria for the non-communicative patients and residents (eligible if receiving care in one of the participating facilities or agencies at any time during the field period, not necessarily tied to an admission), the National Beta Test sample may include a slightly higher proportion of patients and residents who are non-communicative compared with the national population of admission assessments. However, the proportion of non-communicative patients and residents in the National Beta test sample is relatively small (15 percent of total National Beta Test sample) and not likely to have a significant impact on the comparison. Comparisons are discussed for demographics and clinical conditions commonly assessed across all PAC settings. These variables are compared in setting-specific analyses.

All Patients/Residents

Table 4.1 presents data for the National Beta Test sample and the national population.

Table 4.1. Demographic and Clinical Characteristics of Patients/Residents in the National Population and in the National Beta Test Sample

Characteristic	National Beta Test Sample (*n* = 2,307)	National Population (*n* = 5,033,820)
Gender (percent)		
Male	40.6	41.2
Female	59.4	58.8
Race/ethnicity (percent)		
White	81.7	80.4
Black	11.3	10.7
Hispanic	3.1	4.4
Asian	0.7	1.7
American Indian	0.7	0.4
Native Hawaiian	0.2	0.3
Missing	1.4	0.3
Age (percent)		
18–44	2.0	1.3
45–64	11.0	10.7
65–74	29.7	28.4
75–89	46.0	47.3
90+	10.8	12.4
Missing	0.6	0.0
Marital status (percent)		
Married	39.0	22.7
Widowed	26.5	23.4
Divorced	11.9	7.2
Separated	0.9	0.7
Never married	15.7	8.0
Missing	5.9	38.0
Clinical conditions (percent)		
Stroke	9.1	4.4
Heart failure	17.1	8.6
Sepsis	7.1	3.6

Demographics

Overall, the gender (male or female as documented by National Beta Test assessor) distribution for the National Beta Test sample is generally representative of the national population, with approximately 59 percent females in both. With regard to race/ethnicity, the distribution among the full National Beta Test sample is generally reflective of the distribution of

race/ethnicity in the national population: White was the predominant group (80–82 percent), followed by black (11–12 percent) and Hispanic (3–4 percent). The National Beta Test sample was also fairly representative of the national population with respect to age (as categorized into the ranges 18–44, 45–64, 65–74, 75–89, and 90 and over). In the National Beta Test sample, the largest proportion of patients/residents were in the 75–89 age group (47 percent), consistent with the national population of patients/residents who receive PAC services (46 percent). Moreover, the smallest age group for the full National Beta Test sample was the 18–44 age group (2 percent), once again consistent with the national population of PAC patients/residents (1.3 percent). The distribution of marital status (i.e., married, widowed, divorced, separated, never married) in the National Beta Test sample followed similar patterns to the national PAC population. Missing data rates were higher for marital status in the national PAC population (38 percent) compared with the National Beta Test sample (5.9 percent); however, similar to the national PAC population, most patients/residents in the National Beta Test sample were either married or widowed, with the smallest group being patients/residents who were separated.

Clinical Characteristics

We also compared clinical conditions that were common across all four PAC settings: stroke, heart failure, and sepsis. Rates for the National Beta Test sample were slightly higher than the national population of patients/residents receiving PAC services. For stroke, relative to the national PAC population (4 percent), rates were slightly higher in the National Beta Test sample (9 percent). For sepsis, relative to the national PAC population (4 percent), rates were slightly higher in the National Beta Test sample (7 percent). For heart failure, relative to national PAC population (9 percent), rates were higher in the National Beta Test sample (17 percent).

HHA Patients

Table 4.2 shows data for demographics, clinical conditions, and ADLs in HHAs for the National Beta Test sample and the national population of patients receiving HHA services. Marital status was not collected in the OASIS and so is not included in Table 4.2.

Table 4.2. Demographic and Clinical Characteristics of HHA Patients in the National Population and in the National Beta Test Sample

Characteristic	National Beta Test Sample (*n* = 425)	National HHA Population (*n* = 1,790,470)
Gender (percent)		
Male	34.9	42.1
Female	65.1	57.9
Race/ethnicity (percent)		
White	81.6	80.6
Black	12.2	11.4
Hispanic	2.5	5.4
Asian	0.0	2.1
American Indian	2.5	0.5
Native Hawaiian	0.0	0.3
Missing	1.2	0.0
Age (percent)		
18–44	0.2	1.8
45–64	8.7	12.4
65–74	26.9	33.8
75–89	52.4	42.9
90+	10.9	9.2
Missing	0.9	0.1
Clinical conditions (percent)		
Stroke	1.6	2.2
Heart failure	7.6	10.8
Sepsis	2.3	4.1
Aftercare for joint surgery	10.3	15.9
Aftercare for other non-joint surgery	7.1	9.2
Diabetes	31.0	27.4
Fall risk	26.9	20.8
COPD	15.2	13.2

Demographics

The distributions for gender, generally, showed that there were more females in HHAs, both nationally and in the National Beta Test sample. However, the rate was slightly higher in the National Beta Test sample (65 percent) compared with the national HHA population (58 percent). The National Beta Test sample distribution of race/ethnicity was generally representative of the national HHA population. Specifically, white was the predominant group (81–82 percent), followed by black (11–12 percent) and Hispanic (3–5 percent). However, it

should be noted that there were no Asians in the National Beta Test sample, whereas Asians account for 2 percent of the national HHA population. Patients/residents in the National Beta Test sample tended to be slightly older than the national HHA population. Specifically, a larger proportion of the National Beta Test sample were above 75 years of age compared with the national HHA population (63 versus 52 percent).

Clinical Characteristics

With regard to clinical conditions, the National Beta Test sample was generally representative of the national HHA population, with similar rates for stroke (2 percent), heart failure (7–11 percent), sepsis (2–4 percent), patients enrolled in HHAs to support aftercare for non-joint surgery (7–9 percent), diabetes (27–31 percent), and COPD (13–16 percent). Aftercare for joint surgery was slightly less prevalent in the National Beta Test sample compared with the national HHA population (10 versus 16 percent), and fall risk was slightly more prevalent in the National Beta Test sample compared with the national HHA population (27 versus 21 percent).

IRF Patients

Table 4.3 shows data for demographics and clinical conditions in IRFs for the National Beta Test sample and the national IRF population.

Demographics

The gender distribution in the National Beta Test sample of IRF patients (57 percent female) was generally reflective of the national IRF population of IRF patients (55 percent female). With regard to race/ethnicity, the distribution for the National Beta Test sample was generally representative of the national IRF population. Specifically, white was the predominant group (83 and 81 percent, respectively), followed by black (8 and 10 percent, respectively) and Hispanic (4 percent in both). The age distributions were also similar between the national IRF population and the National Beta Test sample, such that slightly under half of the National Beta Test sample (45 percent) and national IRF population (45 percent) was under 75 years of age. With regard to marital status, distributions were similar between the National Beta Test sample and the national IRF population. Specifically, patients/residents who report being married were the largest group (47 and 45 percent, respectively), followed by widowed (26 and 29 percent, respectively), with the smallest proportion indicating being separated (0.8 percent in both).

Clinical Characteristics

With regard to clinical conditions, the National Beta Test sample and the national IRF population had similar rates for stroke (22 and 19 percent, respectively), heart failure (21 and 22 percent, respectively), sepsis (4 and 3 percent, respectively), and hip fracture (6 and 5 percent, respectively).

Table 4.3. Demographic and Clinical Characteristics of IRF Patients in the National Population and in the National Beta Test Sample

Characteristic	National Beta Test Sample (*n* = 591)	National IRF Population (*n* = 625,273)
Gender (percent)		
Male	43.4	45.1
Female	56.6	54.9
Race/ethnicity (percent)		
White	83.4	81.0
Black	7.9	10.2
Hispanic	3.7	4.1
Asian	2.4	1.5
American Indian	1.1	0.4
Native Hawaiian	0.2	0.4
Missing	1.3	1.0
Age (percent)		
18–44	1.4	1.3
45–64	8.0	11.0
65–74	35.8	32.4
75–89	46.8	47.3
90+	7.8	8.0
Missing	0.3	0.0
Marital status (percent)		
Married	47.3	45.2
Widowed	25.6	29.0
Divorced	9.0	10.0
Separated	0.8	0.8
Never married	15.1	12.5
Missing	2.3	2.4
Clinical conditions (percent)		
Stroke	21.6	19.1
Heart failure	21.0	21.5
Sepsis	4.1	3.2
Hip fracture	5.9	4.8

LTCH Patients

Table 4.4 shows data for demographics and clinical conditions among patients in LTCH settings for the National Beta Test sample and the national population of LTCH patients.

Table 4.4. Demographic and Clinical Characteristics of LTCH Patients in the National Population and in the National Beta Test Sample

Characteristic	National Beta Test Sample (*n* = 412)	National LTCH Population (*n* = 117,694)
Gender (percent)		
Male	50.8	52.4
Female	49.2	47.6
Race/ethnicity (percent)		
White	65.7	68.2
Black	19.5	17.8
Hispanic	6.4	6.4
Asian	2.7	1.5
American Indian	0.4	0.6
Native Hawaiian	0.4	0.2
Missing	4.9	4.6
Age (percent)		
18–44	6.3	4.3
45–64	25.5	23.3
65–74	32.8	35.2
75–89	32.3	33.0
90+	2.9	4.2
Missing	0.2	0.0
Marital status (percent)		
Married	35.2	37.7
Widowed	15.4	17.7
Divorced	11.1	10.9
Separated	0.9	0.9
Never married	29.0	22.8
Missing	8.4	8.0
Clinical conditions (percent)		
Stroke	10.0	8.0
Heart failure	2.7	1.5
Sepsis	20.8	16.6
Acute onset respiratory condition	17.2	15.0
Acute onset and chronic respiratory condition	34.5	16.9
Bone and soft tissue infection	6.1	1.7

Demographics

The gender distributions were similar between the national LTCH population (48 percent female) and the National Beta Test sample (49 percent female). With regard to race/ethnicity, the

distributions were similar between the National Beta Test sample and the national LTCH population. Specifically, white was the predominant race/ethnicity group (66 and 68 percent, respectively), followed by black (20 and 18 percent, respectively) and Hispanic (6 percent in both). The age distributions were also similar in the national LTCH population and the National Beta Test sample, such that slightly over half of the national LTCH population (63 percent) and National Beta Test sample (65 percent) were under 75 years of age. With regard to marital status, distributions were similar between the National Beta Test sample and the national LTCH population. Specifically, patients who report being married made up the largest group (35 and 38 percent, respectively), followed by widowed (15 and 18 percent, respectively), with the smallest proportion indicating being separated (1 percent for both). However, the rate of never married patients is slightly higher in the National Beta Test sample (29 percent) compared with the national LTCH population (23 percent).

Clinical Characteristics

With regard to clinical conditions, the National Beta Test sample had similar rates to the national LTCH population for stroke (10 and 8 percent, respectively), heart failure (3 and 2 percent, respectively), and sepsis (21 and 17 percent, respectively). However, compared with national LTCH population rates for acute onset and chronic respiratory condition (17 percent) and bone and soft tissue infection (2 percent), rates were higher in the National Beta Test sample (35 and 6 percent, respectively). Rates for acute onset respiratory condition were similar between the national LTCH population (15 percent) and National Beta Test sample (17 percent).

SNF Residents

Table 4.5 shows data for demographics and clinical conditions in SNF residents in the National Beta Test sample and the national population of SNF residents.

Table 4.5. Demographic and Clinical Characteristics of SNF Residents in the National Population and in the National Beta Test Sample

Characteristic	National Beta Test Sample (*n* = 879)	National SNF Population (*n* = 2,500,383)
Gender (percent)		
Male	37.6	39.1
Female	62.4	60.9
Race/ethnicity (percent)		
White	80.3	80.7
Black	12.7	10.1
Hispanic	3.3	3.6
Asian	0.6	1.5
American Indian	0.2	0.4
Native Hawaiian	0.4	0.3
Missing	2.5	0.1
Age (percent)		
18–44	1.3	0.7
45–64	7.4	8.9
65–74	25.5	23.3
75–89	48.8	51.0
90+	16.4	16.1
Missing	0.8	0.0
Marital status (percent)		
Married	31.5	32.7
Widowed	34.8	39.0
Divorced	12.9	11.5
Separated	0.8	1.0
Never married	12.3	11.9
Missing	7.7	3.8
Clinical conditions (percent)		
Stroke	7.8	8.7
Heart failure	21.7	24.1
Sepsis	4.1	4.4
Asthma/COPD/chronic lung disease	18.6	25.7
Urinary tract infection	10.8	12.7
Alzheimer's disease	4.0	4.0

Demographics

The gender distributions were similar between the national SNF population (61 percent female) and the National Beta Test sample (62 percent). The distribution of race/ethnicity in the

National Beta Test sample was reflective of the national SNF population as well. Specifically, white was the predominant race/ethnicity group (80 and 81 percent, respectively), followed by black (13 and 10 percent, respectively) and Hispanic (3 and 4 percent, respectively). The age distributions were similar between the national SNF population and the National Beta Test sample, such that approximately a third of the national population (33 percent) and National Beta Test sample (34 percent) were under 75 years of age. With regard to marital status, distributions were similar between the National Beta Test sample and the national SNF population. Specifically, residents identifying as married made up the largest group (32 and 33 percent, respectively), followed by widowed (35 and 39 percent, respectively), with the smallest proportion indicating being separated (1 percent in both).

Clinical Characteristics

With regard to clinical conditions, the National Beta Test sample was largely reflective of the national SNF population, having similar rates for stroke (8 and 9 percent, respectively), heart failure (22 and 24 percent, respectively), sepsis (4 percent for both), urinary tract infections (11 and 13 percent, respectively), and Alzheimer's disease (4 percent for both). However, rates for asthma/COPD/chronic lung disease were lower in the National Beta Test sample (19 percent) compared with the national SNF population (26 percent).

5. Representativeness of National Beta Test Communicative Admission Subsamples

In this chapter, we start by describing the National Beta Test communicative sample according to demographic characteristics, length of stay, and responses to select data elements tested in the National Beta Test (e.g., Brief Interview for Mental Status [BIMS] categorization) and compare rates of these variables by PAC setting type. We then evaluate the representativeness of analytic subsamples within the National Beta Test communicative admission sample using the same demographic and National Beta Test data elements. Specifically, we compare characteristics of patients/residents (1) who contributed paired admission assessment data to the interrater reliability calculations versus those who did not (i.e., had a solo admission assessment); (2) for whom a discharge assessment was completed versus those without; (3) who participated in the Admission Day 3, 5, 7 repeat assessment sub-study to those who did not; and (4) who were included in Market Group A versus Market Group B.

The National Beta Test data elements included in these comparative analyses were selected to be representative of each of the primary assessment categories. Specifically, Cognitive Function is represented by BIMS categorization; Mental Status is represented by the Patient Health Questionnaire (PHQ)-2 screening result; the Special Services, Treatments, and Interventions category is represented by therapeutic diet (an element within Nutritional Approaches) and Intravenous (IV) Meds (an element within Special Treatments); the pain presence data element represents the Medical Conditions category; the bladder and bowel appliance use data elements represent the Impairments category; and the number of drug classes data element represents Other Clinical Categories.

Table 5.1 shows overall demographic characteristics, length of stay, and responses to select data elements tested in the National Beta Test by PAC setting. Table 5.2 presents data on the same demographics, length of stay, and data elements for patients/residents in and not in each of the National Beta Test communicative admission subsamples. Tables 5.3 to 5.6 present data on the same patient/resident characteristics, length of stay, and data elements by National Beta Test communicative admission subsample for each PAC setting type.

Characteristics of National Beta Test by PAC Setting

Table 5.1 shows distributions for demographic characteristics, length of stay, and responses to a select subset of data elements tested in the National Beta Test for patients/residents by PAC setting.

Table 5.1. Characteristics of National Beta Test Sample by PAC Setting

Characteristic	HHA (*n* = 653)	IRF (*n* = 794)	LTCH (*n* = 507)	SNF (*n* = 1,167)	Total (*n* = 3,121)
Gender**					
% female	63.7	57.1	48.5	60.7	58.5
Age group**					
% 18–24	0.0	0.1	0.2	0.0	0.1
% 25–44	0.6	0.8	4.8	0.8	1.4
% 45–64	9.7	7.8	25.1	6.7	10.6
% 65–74	28.1	38.9	34.8	26.2	31.2
% 75–89	49.9	45.0	32.1	50.1	45.9
% 90+	11.6	7.3	3.1	16.3	10.9
Length of stay**					
Mean (SD)	31.0 (15.7)	14.1 (5.1)	23.8 (11.2)	21.3 (12.3)	21.6 (12.8)
Cognitive impairment (BIMS)**					
% intact	79.7	82.2	73.4	71.9	76.5
% moderately impaired	16.8	14.7	19.4	21.6	18.4
% severely impaired	3.6	3.1	7.2	6.5	5.1
Any pain past 3/5 days					
% yes	75.9	79.1	77.5	77.7	77.7
Number of drug classes patient taking (%)**					
0	23.0	8.8	2.0	13.4	12.5
1	36.8	28.2	10.5	31.7	28.6
2	30.1	35.5	30.1	32.4	32.4
3	8.5	21.1	29.3	16.9	18.1
4	1.6	5.9	22.7	4.8	7.2
5	0.0	0.5	4.4	0.6	1.0
6	0.0	0.0	1.1	0.3	0.3
Eligible for PHQ-9 per PHQ-2**					
% yes	23.9	26.9	38.0	27.4	28.2
Any bladder appliance noted on any day**					
% yes	3.5	16.3	41.3	10.9	15.4
Any indwelling or external bowel appliance noted on any day**					
% yes	3.7	2.5	12.3	3.7	4.7
Therapeutic diet noted on any day**					
% yes	54.1	49.2	59.2	49.3	51.8
IV meds noted on any day**					
% yes	15.0	16.8	77.1	15.9	25.3

** Significant differences among settings at $p < 0.01$.

Demographics and Length of Stay

Gender was significantly associated with setting type ($\chi^2_{(3)} = 29.99$, $p < 0.01$) in the National Beta Test sample, such that LTCHs tended to have a lower percentage of female patients compared with the other settings. Age was also significantly associated with setting type ($\chi^2_{(15)} = 287.61$, $p < 0.01$). Specifically, in the LTCHs, there were fewer patients in the older age groups (75–89 [32 percent] and 90+ [3 percent]), compared with patients/residents in the other settings (50 and 12 percent in HHAs, 45 and 7 percent in IRFs, and 50 and 16 percent in SNFs, respectively).

Length of stay was significantly associated with setting type ($F_{(3,2629)} = 227.79$, $p < 0.01$), such that patients/residents in IRFs tended to have shorter stays (14 days) compared with the other settings, and patients/residents in HHAs tended to have longer stays (31 days) compared with the other settings.

Select Data Elements Tested in the National Beta Test

With the exception of pain presence, there were significant differences in the distributions of the National Beta Test data elements that were examined across the settings:

- Cognitive impairment categorization based on the BIMS was significantly associated with setting type ($\chi^2_{(6)} = 38.06$, $p < 0.01$), such that patients/residents in HHAs and IRFs tended to be more likely to have intact cognition (80 and 82 percent, respectively) compared with patients/residents in LTCHs and SNFs (73 and 72 percent, respectively).
- Number of drug classes taken was significantly associated with setting type ($\chi^2_{(18)} = 517.18$, $p < 0.01$). For example, patients/residents in LTCHs tended to be taking medications in a higher number of drug classes (87 percent taking medications in two or more classes) compared with patients in the other settings (40 percent in HHAs, 63 percent in IRFs, and 55 percent in SNFs taking medications in two or more classes).
- Positive screen on PHQ-2 was also significantly associated with setting type ($\chi^2_{(3)} = 29.34$, $p < 0.01$), such that patients/residents in LTCHs were more likely to screen positive on the PHQ-2 (38 percent) than were patients in the other settings (24 percent in HHAs, 27 percent in IRFs, and 27 percent in SNFs).
- Use of a bladder appliance ($\chi^2_{(3)} = 317.48$, $p < 0.01$) and use of a bowel device ($\chi^2_{(3)} = 70.01$, $p < 0.01$) were both significantly associated with setting type. Patients/residents in IRFs tended to be less likely to have bladder appliance use (4 percent) compared with the other settings, and patients/residents in LTCHs tended to be more likely to have bladder appliance use (41 percent) compared with the other settings. Patients/residents in LTCHs also tended to be more likely to use a bowel appliance (12 percent) compared with patients/residents in the other settings (4 percent in IRFs, 3 percent in HHAs, and 4 percent in SNFs).
- Therapeutic diet was also significantly associated with setting type ($\chi^2_{(3)} = 15.89$, $p < 0.01$), such that patients/residents in LTCHs tended to be more likely to have a therapeutic diet (59 percent) compared with patients/residents in the other settings.
- Finally, IV medications was significantly associated with setting type ($\chi^2_{(3)} = 748.01$, $p < 0.01$), such that patients/residents in LTCHs tended to be more likely to have IV

medications (77 percent) compared with patients/residents in the other settings (15 percent in HHAs, 17 percent in IRFs, and 16 percent in SNFs).

Representativeness of National Beta Test Subsamples Overall

Table 5.2 shows distributions by National Beta Test subsamples for demographic characteristics, length of stay, and responses to data elements for patients/residents by subsample.

Interrater Reliability Subsample

Among patients/residents in the communicative admission sample, those who were administered paired assessments and contributed to the evaluation of interrater reliability differed from those who did not (i.e., had a solo admission assessment) in that those in the interrater reliability subsample tended to be younger ($\chi^2_{(5)} = 14.79$, $p < 0.05$), took a higher number of drug classes on average ($\chi^2_{(6)} = 19.92$, $p < 0.05$), were more likely to use a bladder appliance ($\chi^2_{(1)} = 11.16$, $p < 0.05$), and were more likely to be on IV medications ($\chi^2_{(1)} = 9.9$, $p < 0.05$) relative to those not in the interrater reliability subsample.

Discharge Subsample

Among patients/residents in the communicative admission sample, those who also completed a discharge assessment differed from those who did not in that those with a discharge assessment tended to have a slightly shorter average length of stay ($t_{(1098)} = 3.18$, $p < 0.01$), were more likely to be cognitively intact ($\chi^2_{(2)} = 23.08$, $p < 0.05$), and were less likely to have screened positive on the PHQ-2 ($\chi^2_{(1)} = 5.72$, $p < 0.05$), be on a therapeutic diet ($\chi^2_{(1)} = 3.99$, $p < 0.05$), or be taking IV medications ($\chi^2_{(1)} = 12.80$, $p < 0.05$).

Repeat Assessment Subsample

Among patients/residents in the communicative admission sample, those who were assessed repeatedly on Days 3, 5, and 7 differed from those who were not in that those in the repeat assessment subsample were more likely to report pain presence ($\chi^2_{(1)} = 10.03$, $p < 0.05$).

Market Group Subsamples

Relative to those in Market Group B, patients/residents in Market Group A had a slightly shorter length of stay ($t_{(1989)} = 5.62$, $p < 0.01$), were less likely to report pain presence ($\chi^2_{(1)} = 12.48$, $p < 0.01$), took medications in more drug classes ($\chi^2_{(6)} = 15.58$, $p < 0.05$), and were less likely to screen positive on the PHQ-2 ($\chi^2_{(1)} = 8.36$, $p < 0.05$).

Table 5.2. Characteristics of National Beta Test Subsamples for All Settings Combined

	Interrater Reliability		Discharge		Repeat		Market Group	
Characteristic	**Not In (*n* = 2,145)**	**In (*n* = 976)**	**Not In (*n* = 2,298)**	**In (*n* = 823)**	**Not In (*n* = 2,772)**	**In (*n* = 349)**	**A (*n* = 1,563)**	**B (*n* = 1,558)**
Gender (percent)								
Female	58.7	58.0	58.8	57.6	58.0	62.4	59.9	57.1
Age (percent)								
18–44	1.8	2.3*	2.1	1.6	2.1	1.7	2.2	1.8
44-64	10.1	12.7	11.2	10.3	10.8	11.9	12.2	9.8
65–74	28.5	32.0	29.7	29.5	28.9	32.8	27.9	31.6
75–89	47.3	43.4	45.7	46.9	46.5	44.0	46.0	46.0
90+	11.5	9.3	10.8	10.5	11.2	9.1	11.1	10.4
Missing	0.7	0.4	0.4	1.2	0.7	0.4	0.7	0.5
Length of stay (mean, SD)	21.2 (12.7)	22.4 (12.9)	22.1 (13.2)	20.1 (11.7)**	21.7 (12.9)	20.5 (12.0)	19.9 (12.0)	23.3 (13.3)**
Cognitive impairment (BIMS)								
% intact	77.7	73.8	74.3	82.4*	76.0	79.7	76.6	76.3
% moderately impaired	17.4	20.6	19.8	14.5	18.6	16.9	19.0	17.9
% severely impaired	4.9	5.5	5.88	3.0	5.3	3.49	4.5	5.8
Any pain past 3/5 days								
% yes	77.0	79.1	78.3	76.0	76.8	84.4*	75.0	80.3**
Number of drug classes patient taking (%)								
0	13.5	10.3*	12.4	12.8	12.3	14.0	11.0	14.0*
1	29.6	26.5	28.1	28.8	28.9	26.3	27.0	30.2
2	31.9	33.4	31.6	34.5	32.4	32.6	33.5	31.2
3	17.5	19.6	18.4	17.4	17.9	19.6	19.4	16.8
4	6.6	8.4	7.6	5.9	7.3	6.3	8.0	6.3
5	0.9	1.2	0.9	1.2	1.0	1.3	0.9	1.2
6	0.1	0.7	0.3	0.1	0.3	0.0	0.2	0.3
Eligible for PHQ-9 per PHQ-2								
% yes	27.7	29.5	29.4	25.0*	27.8	31.9	25.9	30.6**
Any bladder appliance noted on any day								
% yes	13.9	18.7*	15.7	14.5	15.8	11.6	16.1	14.5
Any indwelling or external bowel appliance noted on any day								
% yes	4.5	5.0	4.8	4.3	4.6	5.3	4.56	4.8

Characteristic	Interrater Reliability		Discharge		Repeat		Market Group	
	Not In (*n* = 2,145)	In (*n* = 976)	Not In (*n* = 2,298)	In (*n* = 823)	Not In (*n* = 2,772)	In (*n* = 349)	A (*n* = 1,563)	B (*n* = 1,558)
Therapeutic diet noted on any day								
% yes	52.4	50.6	53.0	48.8*	51.8	51.8	51.6	52.0
IV meds noted on any day								
% yes	23.6	29.1*	27.1	20.7*	25.4	24.8	24.2	26.5

* Significant differences between subsamples at $p < 0.05$; ** significant differences between subsamples at $p < 0.01$.

HHA Patients

Table 5.3 shows distributions for demographic characteristics, length of stay, and responses to data elements for patients in and not in each of the National Beta Test subsamples for the HHA setting. Across all subsamples, gender and length of stay were not significantly associated with inclusion in any of the subsamples.

Interrater Reliability Subsample

Among HHA patients in the communicative admission sample, those who were administered paired assessments and contributed to the evaluation of interrater reliability differed from those who did not (i.e., had a solo admission assessment) in that those in the interrater reliability subsample were less likely to have a therapeutic diet noted ($\chi^2_{(1)} = 4.21$, $p < 0.05$).

Discharge Subsample

Among HHA patients in the communicative admission sample, those who also completed a discharge assessment differed from those who did not in that those with a discharge assessment were less likely to have a therapeutic diet noted ($\chi^2_{(1)} = 5.59$, $p < 0.05$).

Repeat Assessment Subsample

Among HHA patients in the communicative admission sample, those who were assessed repeatedly on Days 3, 5, and 7 differed from those who were not in that those in the repeat assessment subsample were more likely to report pain presence ($\chi^2_{(1)} = 6.28$, $p < 0.05$), have a therapeutic diet ($\chi^2_{(1)} = 4.00$, $p < 0.05$), and have IV medications ($\chi^2_{(1)} = 8.41$, $p < 0.01$).

Market Group Subsamples

Relative to those in Market Group B, patients/residents in Market Group A tended to be older ($\chi^2_{(5)} = 19.27$, $p < 0.01$), were less likely to report pain presence ($\chi^2_{(1)} = 11.87$, $p < 0.01$), and were less likely to screen positive on PHQ-2 ($\chi^2_{(1)} = 7.97$, $p < 0.01$).

Table 5.3. Characteristics of National Beta Test Subsamples for HHAs

Characteristic	Interrater Reliability		Discharge		Repeat		Market Group	
	Not In (*n* = 454)	In (*n* = 199)	Not In (*n* = 505)	In (*n* = 148)	Not In (*n* = 587)	In (*n* = 66)	A (*n* = 234)	B (*n* = 419)
Gender (percent)								
Female	64.0	64.3	65.3	58.2	63.8	61.8	64.7	63.1
Age (percent)								
18–44	0.4	0.0	0.3	0.0	0.3	0.0	0.6	0.0*
45–64	10.2	5.8	8.4	9.9	7.9	12.4	4.7	11.4
65–74	24.2	32.4	28.2	22.0	27.1	25.9	22.5	29.8
75–89	52.3	52.5	51.7	55.9	52.5	51.9	53.9	51.4
90+	11.9	8.6	10.8	11.0	11.1	9.9	17.2	6.7
Missing	1.1	0.7	0.6	2.2	1.2	0.0	1.2	0.8
Length of stay (mean, SD)	30.6 (15.8)	32.0 (15.4)	31.2 (15.8)	30.6 (15.4)	31.1 (15.7)	30.3 (15.5)	30.6 (15.2)	31.9 (16.5)
Cognitive impairment (BIMS)								
% intact	80.8	77.2	77.9	86.0	78.7	89.5	78.0	80.6
% moderately impaired	16.2	18.1	18.2	11.7	17.8	7.0	18.8	15.7
% severely impaired	3.0	4.7	3.9	2.2	3.6	3.5	3.2	3.7
Any pain past 3/5 days								
% yes	75.8	76.1	76.2	75.0	74.6	89.5**	68.1	80.2**
Number of drug classes patient taking (%)								
0	24.4	19.6	23.3	21.8	23.2	21.1	28.2	20.0
1	35.8	39.2	36.3	38.8	36.8	36.8	33.0	39.0
2	29.0	32.8	30.4	29.3	310.2	29.8	30.4	30.0
3	9.1	6.9	8.1	9.5	8.3	10.5	6.6	9.5
4	1.6	1.6	1.9	0.7	1.6	1.8	1.8	1.5
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eligible for PHQ-9 per PHQ-2								
% yes	22.6	27.0	24.8	21.1	23.7	26.3	17.5	27.5**
Any bladder appliance noted on any day								
% yes	3.0	4.7	4.2	1.4	3.5	3.5	2.2	4.3
Any indwelling or external bowel appliance noted on any day								
% yes	3.4	4.2	3.7	3.4	3.5	5.3	4.8	3.0
Therapeutic diet noted on any day								
% yes	56.8	47.9*	56.7	45.6*	52.8	66.7*	56.0	53.0
IV meds noted on any day								
% yes	16.7	11.1	15.0	15.0	13.7	28.1**	11.4	17.0

* Significant differences between subsamples at $p < 0.05$; ** significant differences between subsamples at $p < 0.01$.

IRF Patients

Table 5.4 shows distributions for demographic characteristics, length of stay, and responses to data elements for patients in and not in each of the National Beta Test subsamples for the IRF setting. Across all subsamples, age was not significantly associated with inclusion in any of the subsamples.

Interrater Reliability Subsample

Among IRF patients in the communicative admission sample, those who were administered paired assessments and contributed to the evaluation of interrater reliability differed from those who did not (i.e., had a solo admission assessment) in that those in the interrater reliability subsample were more likely to be female ($\chi^2_{(1)} = 4.91$, $p < 0.05$).

Discharge Subsample

Among IRF patients in the communicative admission sample, those who also completed a discharge assessment differed from those who did not in that those with a discharge assessment had a slightly longer length of stay ($t_{(573)} = 2.62$, $p < 0.01$) and were more likely to have a bowel appliance ($\chi^2_{(1)} = 4.02$, $p < 0.05$).

Repeat Assessment Subsample

There were no differences between IRF patients in the communicative admission sample who were assessed repeatedly on Days 3, 5, and 7 and those who were not for the variables examined here.

Market Group Subsamples

Relative to those in Market Group B, IRF patients in Market Group A were slightly younger ($\chi^2_{(5)} = 14.29$, $p < 0.05$) and more likely to report pain presence ($\chi^2_{(1)} = 4.64$, $p < 0.05$).

Table 5.4. Characteristics of National Beta Test Subsamples for IRFs

Characteristic	Interrater Reliability		Discharge		Repeat		Market Group	
	Not In (*n* = 533)	In (*n* = 261)	Not In (*n* = 444)	In (*n* = 350)	Not In (*n* = 717)	In (*n* = 77)	A (*n* = 496)	B (*n* = 298)
Gender (percent)								
Female	54.3	62.8*	55.9	58.6	57.7	50.8	59.4	53.1
Age (percent)								
18–44	1.6	1.0	0.9	2.0	1.3	1.6	1.3	1.5*
45–64	7.0	9.7	9.3	6.1	7.7	8.87	9.9	4.4
65–74	34.9	37.4	36.2	35.1	34.6	40.3	36.1	35.1
75–89	47.9	44.7	46.4	47.4	47.4	44.3	46.8	46.8
90+	8.3	6.8	6.7	9.4	8.6	4.8	6.0	11.2
Missing	0.3	0.5	0.6	0.0	0.4	0.0	0.0	1.0
Length of stay	14.1 (5.0)	14.0 (5.3)	13.6 (5.2)	14.6 (4.9)**	14.1 (5.2)	13.5 |(4.1)	14.4 (5.7)	13.9 (4.7)
Cognitive impairment (BIMS)								
% intact	83.0	80.7	80.6	84.4	82.2	82.6	81.6	83.2
% moderately impaired	13.7	16.5	16.0	13.0	14.7	14.5	15.9	12.7
% severely impaired	3.3	2.8	3.5	2.7	3.1	2.9	2.5	4.1
Any pain past 3/5 days								
% yes	79.2	79.0	78.5	79.9	78.8	82.6	81.6	75.1*
Number of drug classes patient taking (%)								
0	8.5	9.6	8.1	9.7	8.6	11.8	7.9	10.5
1	29.5	25.6	31.0	24.9	28.5	25.0	28.2	28.3
2	35.3	36.0	32.9	38.7	36.1	29.4	34.4	37.4
3	20.8	21.6	21.4	20.6	20.7	25.0	22.4	18.9
4	5.4	6.8	6.2	5.4	5.9	5.9	6.6	4.6
5	0.6	0.4	0.5	0.6	0.3	2.9	0.6	0.4
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eligible for PHQ-9 per PHQ-2								
% yes	27.5	25.9	28.1	25.5	26.6	30.9	26.8	27.2
Any bladder appliance noted on any day								
% yes	16.3	16.3	16.5	16.1	16.1	17.7	16.8	15.4
Any indwelling or external bowel appliance noted on any day								
% yes	2.3	2.9	1.5	3.7*	2.6	1.5	2.1	3.2
Therapeutic diet noted on any day								
% yes	50.4	46.7	49.5	48.9	48.8	53.7	48.8	49.8
IV meds noted on any day								
% yes	17.8	14.7	16.4	17.2	16.9	16.2	18.7	13.5

* Significant differences between subsamples at $p < 0.05$; ** significant differences between subsamples at $p < 0.01$

LTCH Patients

Table 5.5 shows distributions for demographic characteristics, length of stay, and responses to data elements for patients in and not in each of the National Beta Test subsamples for the LTCH setting. Across all subsamples, there were no significant differences associated with gender, age, or length of stay for LTCH patients in versus not in each of the subsamples.

Interrater Reliability Subsample

There were no differences between LTCH patients in the communicative admission sample who were administered paired assessments and contributed to the evaluation of interrater reliability and those who did not (i.e., had a solo admission assessment).

Discharge Subsample

Among LTCH patients in the communicative admission sample, those who also completed a discharge assessment differed from those who did not in that those with a discharge assessment were less likely to have IV medications ($\chi^2_{(1)} = 7.11$, $p < 0.01$).

Repeat Assessment Subsample

Among LTCH patients in the communicative admission sample, those who were assessed repeatedly on Days 3, 5, and 7 differed from those who were not in that those in the repeat assessment subsample were more likely to report pain presence ($\chi^2_{(1)} = 4.61$, $p < 0.05$).

Market Group Subsamples

Relative to those in Market Group B, LTCH patients in Market Group A were less likely to report pain presence ($\chi^2_{(1)} = 5.09$, $p < 0.05$).

Table 5.5. Characteristics of National Beta Test Subsamples for LTCHs

Characteristic	Interrater Reliability		Discharge		Repeat		Market Group	
	Not In (*n* = 265)	In (*n* = 242)	Not In (*n* = 417)	In (*n* = 90)	Not In (*n* = 471)	In (*n* = 36)	A (*n* = 270)	B (*n* = 237)
Gender (percent)								
Female	48.8	48.1	47.5	52.8	47.8	58.6	51.2	45.3
Age (percent)								
18–44	7.1	5.5	6.5	5.3	6.9	3.9	6.9	5.6
45–64	27.0	23.9	25.5	25.3	24.2	31.2	27.9	22.4
65–74	31.8	33.8	33.8	28.0	32.2	35.1	30.0	36.3
75–89	30.8	33.8	30.9	38.7	33.7	26.0	32.2	32.4
90+	2.8	3.0	3.3	1.3	2.7	3.9	2.6	3.4
Missing	0.5	0.0	0.0	1.3	0.3	0.0	0.4	0.0
Length of stay	24.0 (11.6)	23.4 (10.7)	24.3 (11.5)	21.9 (9.6)	23.7 (11.3)	24.3 (9.7)	24.5 (11.7)	24.0 (11.6)
Cognitive impairment (BIMS)								
% intact	75.7	71.0	72.8	76.1	72.8	83.3	71.3	75.8
% moderately impaired	17.3	21.7	19.2	20.5	20.1	10.0	21.1	17.5
% severely impaired	7.0	7.4	8.0	3.4	7.2	6.7	7.6	6.7
Any pain past 3/5 days								
% yes	76.8	78.2	78.4	73.3	76.4	93.3*	73.4	82.0*
Number of drug classes patient taking (%)								
0	2.9	0.9	2.2	1.2	1.6	6.7	2.1	1.8
1	11.9	8.9	9.4	15.1	10.3	13.3	12.6	8.2
2	30.7	29.4	29.6	32.6	30.4	26.7	31.0	29.2
3	27.1	31.8	30.9	22.1	29.0	33.3	31.0	27.4
4	22.5	22.9	22.6	23.3	22.9	20.0	20.9	24.7
5	4.5	4.2	4.0	5.8	4.7	0.0	2.1	6.9
6	0.4	1.9	1.3	0.0	1.2	0.0	0.4	1.8
Eligible for PHQ-9 per PHQ-2								
% yes	38.6	37.3	39.3	32.2	37.4	46.7	36.8	39.4
Any bladder appliance noted on any day								
% yes	39.1	43.9	42.0	38.4	41.4	40.0	42.9	39.6
Any indwelling or external bowel appliance noted on any day								
% yes	13.6	10.7	12.4	11.6	11.7	20.0	14.3	10.1
Therapeutic diet noted on any day								
% yes	58.7	59.8	57.5	66.3	59.1	60.0	59.8	58.5
IV meds noted on any day								
% yes	75.5	79.0	79.7	66.3**	76.4	86.7	73.8	80.7

* Significant differences between subsamples at $p < 0.05$; ** significant differences between subsamples at $p < 0.01$.

SNF Residents

Table 5.6 shows distributions for demographic characteristics, length of stay, and responses to data elements for those in and not in each of the National Beta Test subsamples for the SNF setting.

Interrater Reliability Subsample

Among SNF residents in the communicative admission sample, those who were administered paired assessments and contributed to the evaluation of interrater reliability differed from those who did not (i.e., had a solo admission assessment) in that those in the interrater reliability subsample tended to have longer lengths of stay ($t_{(306)} = 3.01$, $p < 0.01$) and were more likely to report pain ($\chi^2_{(1)} = 4.02$, $p < 0.05$).

Discharge Subsample

Among SNF residents in the communicative admission sample, those who also completed a discharge assessment differed from those who did not in that those with a discharge assessment were more likely to have intact cognition ($\chi^2_{(1)} = 9.26$, $p < 0.01$), less likely to report pain ($\chi^2_{(1)} = 6.42$, $p < 0.05$), and tended to be younger ($\chi^2_{(5)} = 11.61$, $p < 0.05$).

Repeat Assessment Subsample

Among SNF residents in the communicative admission sample, those who were assessed repeatedly on Days 3, 5, and 7 differed from those who were not in that those in the repeat assessment subsample were more likely to be female ($\chi^2_{(1)} = 4.92$, $p < 0.01$) and less likely to have a bladder appliance noted ($\chi^2_{(1)} = 3.92$, $p < 0.05$).

Market Group Subsamples

Relative to those in Market Group B, SNF residents in Market Group A tended to be older ($\chi^2_{(5)} = 11.49$, $p < 0.05$), tended to have longer lengths of stay ($t_{(753)} = 3.08$, $p < 0.01$), were less likely to report pain presence ($\chi^2_{(1)} = 15.15$, $p < 0.01$), were more likely to take medications in at least one class ($\chi^2_{(1)} = 16.84$, $p < 0.01$), were less likely to screen positive on the PHQ-2 ($\chi^2_{(1)} = 8.07$, $p < 0.01$), took medications in fewer drug classes ($\chi^2_{(6)} = 16.84$, $p < 0.01$), and were less likely to have a bowel appliance noted ($\chi^2_{(1)} = 4.47$, $p < 0.05$) or be taking IV medications ($\chi^2_{(1)} = 6.10$, $p < 0.05$).

Table 5.6. Characteristics of National Beta Test Subsamples for SNFs

Characteristic	Interrater Reliability		Discharge		Repeat		Market Group	
	Not In (*n* = 893)	In (*n* = 274)	Not In (*n* = 932)	In (*n* = 235)	Not In (*n* = 997)	In (*n* = 170)	A (*n* = 563)	B (*n* = 604)
Gender (percent)								
Female	61.8	57.4	61.6	57.4	59.6	68.7*	62.4	59.2
Age (percent)								
18–44	0.9	2.2	1.6	0.0*	1.1	1.7	1.0	1.5*
45–64	6.6	9.6	6.8	10.1	7.9	5.6	8.5	6.5
65–74	25.5	25.3	25.3	26.0	24.4	29.6	21.0	29.2
75–89	50.1	45.0	49.5	45.6	48.9	48.0	49.9	47.8
90+	16.0	17.5	16.5	16.0	17.0	14.0	18.5	14.6
Missing	0.9	0.4	0.4	2.4	0.7	1.1	1.3	0.4
Length of stay	20.7 (11.9)	23.4 (13.2)**	21.3 (12.3)	21.3 (12.4)	21.6 (12.5)	19.8 (11.1)	22.5 (12.4)	20.1 (12.0)**
Cognitive impairment (BIMS)								
% intact	73.4	67.2	69.8	79.8*	71.3	76.0	73.9	70.1
% moderately impaired	20.3	25.6	23.0	16.2	21.6	21.2	20.9	22.2
% severely impaired	6.3	7.3	7.2	4.0	7.1	2.7	5.3	7.7
Any pain past 3/5 days								
% yes	76.3	82.2*	79.3	71.6**	77.2	81.2	72.8	82.4**
Number of drug classes patient taking (%)								
0	13.9	11.8	12.7	16.1	13.4	13.7	10.5	16.2**
1	31.5	32.4	31.9	30.9	32.7	25.3	30.0	33.3
2	31.7	34.7	32.5	32.2	31.8	36.3	35.2	29.8
3	16.9	16.8	17.2	15.7	16.8	17.8	17.0	16.8
4	5.3	3.1	5.1	3.5	4.6	5.5	6.0	3.6
5	0.6	0.4	0.4	1.3	0.4	1.4	0.9	0.2
6	0.1	0.8	0.2	0.4	0.3	0.0	0.4	0.2
Eligible for PHQ-9 per PHQ-2								
% yes	27.3	27.9	28.3	24.0	26.8	31.5	23.5	31.1**
Any bladder appliance noted on any day								
% yes	10.7	11.2	10.6	11.7	11.6	6.1*	10.0	11.7
Any indwelling or external bowel appliance noted on any day								
% yes	3.9	3.1	3.9	3.0	3.6	4.1	2.4	4.9*
Therapeutic diet noted on any day								
% yes	49.4	48.8	50.6	44.4	50.2	43.5	48.6	49.9
IV meds noted on any day								
% yes	15.8	16.3	16.8	12.6	16.1	15.0	13.1	18.6**

* Significant differences between subsamples at $p < 0.05$; ** significant differences between subsamples at $p < 0.01$.

6. Conclusion

In this chapter, we summarize findings regarding the overall representativeness of the National Beta Test facility/agency sample and the patient/resident sample and subsamples. We summarize (1) the overall sample description of National Beta Test facilities/agencies and assessment counts by National Beta Test subsamples; (2) the representativeness of the population of facilities and agencies in the 14 sampled markets to the nation as a whole and the representativeness of the National Beta Test facility/agency sample to the population of facilities and agencies in the 14 sampled markets and in the nation as a whole; (3) the overall representativeness of the National Beta Test patient/resident sample to the national population on patient/resident demographics, clinical characteristics, and ADLs; and (4) the distribution of patient/resident demographics and select tested data elements for the National Beta Test communicative sample and the comparability of these rates for patients/residents included and not included in National Beta Test subsamples (e.g., included in interrater reliability subsample versus not included).

Description of National Beta Test Facilities/Agencies and Assessment Counts

The National Beta Test included a total of 143 PAC facilities/agencies from 14 markets. The setting totals align closely with recruitment targets (e.g., the National Beta Test included relatively more SNFs and HHAs but still included more than 20 IRFs and LTCHs each), and although there was some variability in number and type of participating facilities/agencies according to market, much of this variability reflected true variability in the population (e.g., more LTCHs in Texas markets). In general, there was a fairly even spread across the markets, with half of the 14 markets having at least one of each setting, and only one market (Nashville) contributing facilities/agencies across only two setting types (HHAs and SNFs). Assessment counts were fairly evenly distributed according to data collection targets, with the exceptions that IRFs, on average, tended to contribute more communicative assessments than the other three settings and that LTCHs tended to contribute more non-communicative patients.

Representativeness of National Beta Test Facility/Agency Sample to National Population of PAC Facilities/Agencies

Facility/agency comparisons presented in Chapter 3 confirm that the sampled facilities/agencies in the 14 National Beta Test markets were somewhat representative of the population in the 14 markets and nationally. In many cases, this lack of comparability could be

traced back to previous steps in the facility/agency selection process and were largely due to study design constraints. Nevertheless, the National Beta Test facility/agency sample had low rural representation, and larger facilities/agencies were somewhat overrepresented. The evaluation of candidate SPADEs in Volumes 4–8 include sensitivity analyses to determine the effects of these differences on SPADE performance. Furthermore, despite these differences in the facility/agency sample, the National Beta Test patient/resident sample aligns closely with the PAC patient/resident population (see below for summary).

Representativeness of National Beta Test Sample to National Population of PAC Patients/Residents on Patient/Resident Characteristics

The National Beta Test sample, overall, is generally representative of the national population on gender, age, race/ethnicity, marital status, and ADLs, with similar but slightly higher rates for stroke, heart failure, and sepsis. Similarly, within each PAC setting, the National Beta Test sample is representative of the national population on all variables examined, with few exceptions.

Comparability of Patient/Resident Characteristics by Inclusion in National Beta Test Subsamples

Differences according to setting in tested data elements align with general differences in patient/resident populations. Although there were some differences in characteristics according to subsample inclusion, these differences tended to be limited and relatively small. Although there was no discernable pattern across all subsamples and variables, some differences that were observed tended to reflect better patient/resident clinical status among those in the subsamples. This trend was expected, given the nonrandom nature of subsample inclusion. For example, to be included in the repeat assessment, patients/residents had to agree to participation and had to be healthy enough to participate in three assessments over five days. Nonetheless, despite this nonrandom inclusion, the subsamples were reasonably comparable to the larger National Beta Test communicative sample. This general comparability lends strength to the results and conclusions regarding candidate SPADE performance in this National Beta Test.

Appendix. Supplementary Tables

Supplementary Tables for Variables and Diagnostic Codes Used to Identify ADLs and Clinical Conditions Across Settings

Table A.1. Description of OASIS Variables and Diagnostic Codes Used to Form Clinical Condition Groups in HHAs

	Diagnostic Code	Label
Primary diagnosis (M1021)		
Stroke	I69398	Other sequelae of cerebral infarction
Heart failure	I509	Heart failure, unspecified
	I110	Hypertensive heart disease with heart failure
Sepsis	A4151	Sepsis due to Escherichia coli (E. coli)
Aftercare for joint replacement	Z471	Aftercare following joint replacement surgery
	Z4789	Aftercare following orthopedic surgery
Aftercare for other surgery	Z48812	Aftercare following surgery on the circulatory system
	Z48815	Aftercare following surgery on the digestive system
	Z483	Aftercare following surgery for cancer
Other diagnosis (M1023)		
Heart failure	I5020	Unspecified systolic (congestive) heart failure
	I5032	Chronic diastolic (congestive) heart failure
Diabetes	E119	Type 2 diabetes mellitus without complications
	E1122	Type 2 diabetes mellitus with diabetic chronic kidney disease
	E1142	Type 2 diabetes mellitus with diabetic polyneuropathy
	E1140	Type 2 diabetes mellitus with diabetic neuropathy, unspecified
	E1165	Type 2 diabetes mellitus with hyperglycemia
	E1151	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene
Fall risk	M6281	Muscle weakness (generalized)
	R2689	Other abnormalities of gait and mobility
	R2681	Unsteadiness on feet
	R296	Repeated falls
	R531	Weakness
COPD	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection
	J449	Chronic obstructive pulmonary disease, unspecified
	J441	Chronic obstructive pulmonary disease with (acute) exacerbation

Table A.2. Description of IRF-PAI Variables and Diagnostic Codes Used to Form Clinical Condition Groups in IRFs

Etiological Diagnosis (Question 22)	Diagnostic Code	Label
Stroke	I639	Cerebral infarction, unspecified
	I638	Other cerebral infarction
	I63511	Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery
	S065X0A	Traumatic subdural hemorrhage without loss of consciousness, initial encounter
	I63512	Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery
	I63412	Cerebral infarction due to embolism of left middle cerebral artery
	I619	Nontraumatic intracerebral hemorrhage, unspecified
	I6340	Cerebral infarction due to embolism of unspecified cerebral artery
	S065X9A	Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, initial encounter
Heart failure or shock	I5023	Acute on chronic systolic (congestive) heart failure
	I5021	Acute systolic (congestive) heart failure
Sepsis	A419	Sepsis, unspecified organism
Hip fracture	S72142A	Displaced intertrochanteric fracture of left femur, initial encounter for closed fracture
	S72001A	Fracture of unspecified part of neck of right femur, initial encounter for closed fracture
	S72002A	Fracture of unspecified part of neck of left femur, initial encounter for closed fracture
	S72141A	Displaced intertrochanteric fracture of right femur, initial encounter for closed fracture

Table A.3. Description of MDS 3.0 Variables and Diagnostic Codes Used to Form Clinical Condition Groups in SNFs

Active Diagnoses (Section I)	Item
Stroke	I4500
Heart failure or shock	I0600
Sepsis	I2100
Asthma, chronic obstructive pulmonary disease (COPD), or chronic lung disease	I6200
Urinary tract infection (last 30 days)	I2300
Alzheimer's disease	I4200

Table A.4. Description of LCDS Variables and Diagnostic Codes Used to Form Clinical Condition Groups in LTCHs

Primary Medical Condition (I0050)	Diagnostic/ Item Code	Label/Note
Acute onset respiratory condition	"1"	Item code entered
Acute onset and chronic respiratory conditions	"3"	Item code entered
Heart failure or shock	"4"	Item code entered
'Other' medical condition (I0050A)		
Bone and soft tissue infection	M868X8	Other osteomyelitis, other site
	M869	Osteomyelitis, unspecified
	L03115	Cellulitis of right lower limb
	L0390	Cellulitis, unspecified
	E1169	Type 2 diabetes mellitus with other specified complication
	L89159	Pressure ulcer of sacral region, unspecified stage
	L89309	Pressure ulcer of unspecified buttock, unspecified stage
	I96	Gangrene, not elsewhere classified
	L03119	Cellulitis of unspecified part of limb
	M8618	Other acute osteomyelitis, other site
	S91309A	Unspecified open wound, unspecified foot, initial encounter
	E11621	Type 2 diabetes mellitus with foot ulcer
	I872	Venous insufficiency (chronic) (peripheral)
	L89609	Pressure ulcer of unspecified heel, unspecified stage
	M4628	Osteomyelitis of vertebra, sacral and sacrococcygeal region
	M86169	Other acute osteomyelitis, unspecified tibia and fibula
	S31802A	Laceration with foreign body of unspecified buttock, initial encounter
	T148	Other injury of unspecified body region
	L03116	Cellulitis of left lower limb
	L0889	Other specified local infections of the skin and subcutaneous tissue
	L89154	Pressure ulcer of sacral region, stage 4
	L97509	Non-pressure chronic ulcer of other part of unspecified foot with unspecified severity
	M726	Necrotizing fasciitis
	M86171	Other acute osteomyelitis, right ankle and foot
	S31809A	Unspecified open wound of unspecified buttock, initial encounter
	E13628	Other specified diabetes mellitus with other skin complications
	I739	Peripheral vascular disease, unspecified
	L02415	Cutaneous abscess of right lower limb
	L02619	Cutaneous abscess of unspecified foot
	L02818	Cutaneous abscess of other sites

Primary Medical Condition (I0050)	Diagnostic/ Item Code	Label/Note
	L0291	Cutaneous abscess, unspecified
	L03031	Cellulitis of right toe
	L03319	Cellulitis of trunk, unspecified
	L89150	Pressure ulcer of sacral region, unstageable
	L89319	Pressure ulcer of right buttock, unspecified stage
	L89890	Pressure ulcer of other site, unstageable
	L89899	Pressure ulcer of other site, unspecified stage
	L8994	Pressure ulcer of unspecified site, stage 4
	L97901	Non-pressure chronic ulcer of unspecified part of unspecified lower leg limited to breakdown of skin
	M4626	Osteomyelitis of vertebra, lumbar region
	M8609	Acute hematogenous osteomyelitis, multiple sites
	M8660	Other chronic osteomyelitis, unspecified site
	M868X6	Other osteomyelitis, lower leg
	M868X7	Other osteomyelitis, ankle and foot
	S71009A	Unspecified open wound, unspecified hip, initial encounter
	S81009A	Unspecified open wound, unspecified knee, initial encounter
	T8450XA	Infection of joint prosthesis
	L03213	Periorbital cellulitis
	M86	Osteomyelitis
	T8450X	Infection of joint prosthesis
	T8453XA	Infection of right knee prosthesis
	T8743	Infection of amputation stump, right lower extremity
Co-existing conditions		
Stroke	I4501	
Sepsis	I2102	Septicemia, sepsis, systemic inflammatory response syndrome/shock

Table A.5. Description of Activities of Daily Living Variables from Setting-Specific Instruments

	HHA (OASIS)	IRF (IRF-PAI)	LTCH (LCDS)	SNF (MDS)
Functional abilities: Self-care				
Eating ability	–	GG0130A1	GG0130A1	GG0130A1
Oral hygiene	–	GG0130B1	GG0130B1	GG0130B1
Toileting hygiene	M1845	GG0130C1	GG0130C1	GG0130C1
Functional abilities: Mobility				
Sit to lying	–	GG0170B1	GG0170B1	GG0170B1
Lying to sit	–	GG0170C1	GG0170C1	GG0170C1
Sit to standing	–	GG0170D1	GG0170D1	GG0170D1
Chair/bed to chair transfer	–	GG0170E1	GG0170E1	GG0170E1
Toilet transfer	M1840	GG0170F1	GG0170F1	GG0170F1
Walk 50 feet	–	GG0170J1	GG0170J1	GG0170J1

NOTE: ADL variables were obtained from Section GG (Functional Abilities and Goals) in the IRF-PAI, LCDS, and MDS instruments. The OASIS “ADL/IADLs” section was used for HHA. (–) denotes ADLs not recorded by the OASIS.

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