



U.S. Department of Health and Human Services  
Assistant Secretary for Planning and Evaluation  
Office of Disability, Aging and Long-Term Care Policy



# **TAXONOMY OF HEALTH INFORMATION TECHNOLOGY FUNCTIONS IN HOME HEALTH AGENCIES**

**REPORT C: REVIEW BY  
REPRESENTATIVES FROM HOME HEALTH  
AGENCIES AND VENDORS**

August 2007

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This report was prepared under contract #HHS-100-03-0028 between HHS's ASPE/DALTCP and the University of Colorado. For additional information about this subject, you can visit the DALTCP home page at [http://aspe.hhs.gov/\\_/office\\_specific/daltcp.cfm](http://aspe.hhs.gov/_/office_specific/daltcp.cfm) or contact the ASPE Project Officer, Jennie Harvell, at HHS/ASPE/DALTCP, Room 424E, H.H. Humphrey Building, 200 Independence Avenue, S.W., Washington, D.C. 20201. Her e-mail address is: [Jennie.Harvell@hhs.gov](mailto:Jennie.Harvell@hhs.gov).

**TAXONOMY OF HEALTH INFORMATION  
TECHNOLOGY FUNCTIONS IN  
HOME HEALTH AGENCIES**  
**Report C: Review of Representatives from  
Home Health Agencies and Vendors**

University of Colorado at Denver  
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# **I. PURPOSE**

This is the third report in a series describing the findings from stakeholders. The background on the taxonomy development is described in more detail in Report A and it is the expectation of the authors that these reports would be read as a set. A group of home health agency (HHA) providers was invited to provide feedback on the draft taxonomy and information on which applications are currently in use (or planned for future implementation) and the extent to which they are used. This report provides a summary of the findings from this review.

# **II. METHODS**

*Taxonomy Adaptations:* Based on comments received from representatives from standards development organizations (SDOs) (see Report A), the taxonomy was revised. It was then disseminated to HHA and nursing home health information technology (HIT) vendors for their review and comments. The taxonomy was modified to reflect the vendor comments and revisions. The next step was to further modify the taxonomy to capture what HIT applications/features were being used in HHAs and for them to identify the extent of use. This version became known as the "home health provider taxonomy" and can be found in Attachment A. Columns noting related standards and other "frequently packaged with" applications that existed in earlier versions of the taxonomy (for SDOs and vendors) were replaced with the following columns to allow the providers to specify for each application:

1. the name of the supporting product;
2. the name(s) of other products supporting interfacing applications;
3. current or planned usage;
4. types of employees using the application; and
5. the extent to which the product had been implemented in the HHA.

Scales were developed for two of the columns. For current/planned usage (#3 above), the scale ranged from "1-We have this application and are currently using it," to "5-We do not have this application and have no desire to obtain it." For the extent of application implementation (#5 above), the scale ranged from "1-The application is fully implemented and all applicable staff are using it," to "5-This application has been purchased but we do not plan to use it at this time." A copy of the adapted taxonomy and answer key containing the scales can be found in Attachment A.

*HHA providers:* Potential HHA provider representatives were identified through: (a) software vendor recommendations; (b) posted materials from national conferences (e.g., PowerPoint handouts) or authors of journal articles on HIT in home health care; or (c) recommendations from project team members. Eight HHA provider representatives were invited to participate in one of two conference calls that provided information on

what was expected of them should they agree to provide us with information. The invited contact persons and affiliated health settings were:

1. Lucille Stufflebeam Eddy Visiting Nurse Association, Troy, NY
2. Dennie McColm Citizens Memorial Home Care, Bolivar, MO
3. Janet Puglisi Professional Home Health Care, Denver, CO
4. Andrea Devoti Neighborhood Health Agencies, Inc., Westchester, PA
5. Thomas Check Visiting Nurse Service of New York, New York, NY
6. Laurie Neander At Home Care, Inc., Oneota, NY
7. April Anthony Encompass Home Health, Dallas, TX
8. John Pipas Visiting Nurse Service of Indiana, Indianapolis, IN

Selected providers participated in conference calls according to their preferred dates and times. During the calls, the purpose of the project and the draft taxonomy were reviewed. Participants were asked to complete the columns in the adapted taxonomy and submit their input within one to two weeks.

### **III. RESULTS**

Five of the HHA providers completed the taxonomy review and submitted feedback on their use of HIT. HHAs indicate they use anywhere between three and eight disparate HIT solutions. Data on use of specific applications were synthesized and findings summarized by taxonomy domain.

*Administration:* All of the five responding agencies indicate that they use automated systems for the administrative functions. Four of the five noted that for all administrative functions listed in the taxonomy, products are fully implemented and in use by all appropriate staff. One HHA notes that for their application tracking Medicare/nonMedicare claims denials, less than 100% but more than 50% of appropriate staff are using it.

*Operations Management:* Table 1 summarizes HHA responses for this domain by noting the number of HHAs: (a) owning and using each of the applications; and (b) owning but not using the applications. All five HHAs report using registration applications. Two of the five are using online access for referrals, while two more have the functionality but have not yet implemented it, and one hopes to have this functionality at some future time. Staffing/scheduling and tracking of staff time/attendance are done using electronic technology at all five HHAs. Four HHAs use telephony to allow field care providers to enter limited patient information at the point-of-care (POC). The fifth HHA reports a desire to obtain this functionality at some point in the future. Personnel and workflow management are automated in all five HHAs, and all have the capability of generating user-defined financial management reports. All HHAs are using electronic tracking of medical doctor (MD) signatures on orders,

although one reports that state law has prevented them from accepting electronic signatures.

Four of the five HHAs currently have the ability to order patient supplies electronically from the field, while the fifth HHA would like to obtain this functionality at some point in the future. None of the HHAs are using pharmacy management or medications tracking/billing software, which is not unexpected as few HHAs own their own pharmacies. However, two HHAs note that they provide medications directly for hospice patients, and one of the two has some functionality that currently is being redesigned for use in their hospice program. Per Centers for Medicare and Medicaid Services (CMS) requirements, all HHAs electronically enter, check and correct, and transmit OASIS data to the federal repository.

<b>TABLE 1: Tally of HHA Responses for Operations Management Domain Applications</b>			
<b>Operations Management Domain Application Features</b>		<b>Own/Use</b>	<b>Own/Don't Use</b>
B.1	Registration	5/5	
B.2	Online access for referrals	2/5	2/5
B.3	Staffing/scheduling	5/5	
B.4	Staff time/attendance tracking	5/5	
B.5	Telephony	4/5	1/5
B.6	Personnel management	5/5	
B.7	Workflow management	5/5	
B.8	User-defined financial management reports	5/5	
B.9	Tracking of MD signature, including option of electronic signature	4/5	1/5
B.10	Patient supply ordering	4/5	
B.11	Pharmacy management		2/5
B.12	Medications tracking/billing		2/5
B.13	OASIS data management (i.e., entry, editing, transmission)	5/5	
B.14	Quality management activities and reporting	3/5	
B.14.a	Incident reporting	1/5	1/5
B.14.b	Tracking of adverse occurrences (e.g., falls, med errors)	4/5	
B.14.c	Tracking of infections	4/5	
B.14.d	Summary reports of clinical pathways variances reporting (e.g., if the HHA staff is unable to accomplish the "assigned" activities for a patient by a certain visit, then there is a variance from the clinical pathway)	3/5	1(2)/5
B.14.e	Calculation of outcomes from OASIS data (e.g., hospitalization)	4/5	
B.14.f	Risk audits for quality areas of concern for surveyors (e.g., wounds)	2/5	
B.14.g	"Dashboard Reports" of key quality indicators (e.g., hospitalizations, infections and falls)	5/5	
B.15	Reporting and population health management	4/5	
B.16	Electronic access to clinical guidance	4/5	
B.17	De-identified data request management	5/5	
B.18	Policy/procedure database	1/5	2/5

Some sophisticated quality management reports, listed separately on the taxonomy, are available in all five HHAs. One HHA is using an application for electronic incident reports, and four can track adverse events and infection reports. Three are currently generating summary reports of clinical pathway variances, and one HHA has the capability only for their telehealth data, as they are not using electronic clinical pathways for patients without telehealth applications. All five have software that can calculate OASIS outcome data. Two have risk auditing capabilities for areas of concern for surveyors, and all five can generate "dashboard reports" for key quality indicators.

Four of the five HHAs have electronic population health reporting mechanisms, although one HHA notes that their functionality is limited to the reporting of

immunizations. All but one HHA has electronic access to clinical guidance, and three HHAs provide that functionality for field clinicians (one only allows a clinical manager access to that application). All HHAs report that they could support de-identified data requests. Three HHAs currently have functionality allowing field clinicians electronic access to policies and procedures, although two of the three have not yet trained staff in its use.

<b>TABLE 2: Tally of HHA Responses for Electronic Health Record (EHR) Domain Applications</b>			
<b>EHR Application Features</b>		<b>Own/Use</b>	<b>Own/Don't Use</b>
C.1	Maintain patient record/health information capture, management, and review	5/5	
C.2	Patient consent, authorizations and directives	4/5	
C.3	Comprehensive initial and follow-up assessments and patient-originated data	5/5	
C.4	Summary reports	4/5	1/5
C.5	Clinical notes	4/5	
C.5.a	Physician	2/5	
C.5.b	Pharmacy/pharmacist	1/5	
C.5.c	Registered Nurse (RN)/Licensed Practical Nurse (LPN)	5/5	
C.5.d	Physical Therapist (PT)	5/5	
C.5.e	Occupational Therapist (OT)	4/5	
C.5.f	SLT	4/5	
C.5.g	Social Worker (SW)	4/5	
C.5.h	Dietician	2/5	
C.5.i	Clergy	3/5	
C.5.j	Aide/attendant	5/5	
C.5.k	Therapy aide	3/5	
C.5.l	Volunteers	-	-
C.6	Receive external clinical documents	1/5	1/5
C.6.a	Laboratory data	1/5	1/5
C.6.b	Radiology data	1/5	1/5
C.6.c	Patient consults	1/5	1/5
C.6.d	Patient history/EHR from other settings	1/5	1/5
C.7	Problem list	5/5	
C.8	Care planning/goal setting	5/5	
C.8.a	Single interdisciplinary plan of care	5/5	
C.8.b	Acute problem plan of care/single plan of care	3/5	1/5
C.8.c	Discipline-specific (e.g., therapy) plan of care	2/5	1/5
C.9	Decision-support	2/5	
C.9.a	Electronic clinical pathways/standardized care plans	4/5	
C.9.b	Disease management programs	3/5	1/5
C.9.c	Automated alerts for lab draws (when due)	1/5	1/5
C.9.d	Automated prompts for unusual events (e.g., medication errors, etc.)	1/5	
C.9.e	Automated prompts for preventive practices (e.g., immunizations)	1/5	
C.9.f	Decision-support for e-prescribing. May include dosing; drug selection; drug-to-drug interactions; drug-to-food interactions.	3/5	
C.9.g	Risk assessment tools (e.g., dehydration risk, contracture risk, falls risk, pressure ulcer risk, etc.)	4/5	
C.9.h	Results management	4/5	1/5
C.9.i	Alerts for SOM/G-tag compliance	1/5	
C.9.j	OASIS/485 consistency alerts	4/5	
C.10	Care plan monitoring	4/5	
C.11	Trending	4/5	1/5
C.12	Secure electronic messaging	3/5	1/5
C.12.a	Intra-agency	2/5	2/5
C.12.b	Extra-agency (with MD, pharmacy, pharmacy consultant, laboratory, etc.)	1/5	1/5
C.12.c	Health information exchange with patients and caregivers		2/5
C.13	Patient education	3/5	
C.14	Security/privacy	5/5	
C.15	Physician and/or pharmacist access to EHR	3/5	1/5
C.16	Computerized provider order entry (CPOE)	2/5	1/5

*Electronic Health Record:* All five responding HHAs are using an electronic health record (EHR) and report full implementation with all appropriate staff. Table 2 provides

a tally of responses for each application within this domain. Patient consent and authorizations are captured electronically in four HHAs, while the fifth reports that state regulations prevent them from accepting electronic signatures. All agencies have EHR systems capable of capturing patient assessment and history, and clinical notes for all or a subset of the services they provide (e.g., RN, PT). Four of the HHAs are able to aggregate assessment data to generate summary reports (e.g., discharge summaries), and one has this functionality available but is not using it.

HHAs report only limited or no ability to electronically capture clinical documents from other providers. One reports that they can receive e-mail versions of reports from other providers; another can capture laboratory and radiology data from their own hospital system, but not from other providers. They also note that while some patient history from their own hospital can be received electronically, some of those data must be manually re-entered into the home care EHR. Another HHA has some access to electronic data from wound expert and pharmacy (PharmD) consults. Two of the three HHAs without these information exchange functionalities indicate that they would like the ability to capture these data from other providers electronically.

Problem lists and care planning functionality are in use in all five HHAs, although all do not have, nor are they using, applications for acute problem or discipline-specific plans of care. The use of automated decision-support tools varied considerably across agencies. One setting uses none at all. Four use electronic clinical pathways or standardized care plans and disease management programs, although one of the four reported use by less than 50% of appropriate staff. Two HHAs have electronic alerts for lab draws, but one has not yet implemented it and one has prompts for unusual events (e.g., clinical findings exceeding parameters) and another has prompts for preventative practices (e.g., immunizations). Three HHAs report decision-support functionality for e-prescribing, however, only one reports having e-prescribing functionality (described under the Medications domain). It may be that there was some confusion about e-prescribing, as this functionality is used rarely in home care. Rather, physicians typically call or fax their prescriptions to the pharmacy and the patient or family member is responsible for picking the prescription(s) up. The medications are neither acquired nor distributed by HHA personnel; however HHA staff do review the medication list for side effects, interactions, duplicative drug therapy, etc. Four of the five HHAs have products supporting risk assessment tools and all have results management capabilities. None have alerts for potential noncompliance with specific regulations (e.g., regulatory “tags”), but four have alerts to inconsistencies between OASIS data and plan of care data. Four HHAs have the ability to monitor the effectiveness of care plans electronically. Four are using application features allowing trending of key clinical findings, such as vital signs or laboratory values.

Four responding HHAs have products supporting intra-agency communications via secure messaging for coordination of care and communication between field and office staff, although only two have fully implemented it. Only one is using the functionality that allows for secure messaging with external providers (e.g., physicians). Two have systems that support the electronic exchange of information with patients and

caregivers, but are not currently using the technology. Patient education materials that can be printed out and provided to the patient are in use in EHR systems for two HHAs.

All HHA providers have security and privacy applications, such as permissions settings and user authentication. Four HHAs have mechanisms allowing MD or pharmacy review of the home health EHR, although only three report that the applications are fully implemented. Two HHAs are using computerized provider order entry (CPOE) functionality and a third agency has the functionality but has not yet implemented it.

*Medications:* Typically home health patients self-administer medications. The home health clinician role is to review medication administration and side effects with the patient/family, provide education, determine if the patient/family can obtain and safely self-administer medications, assess the list of medications for adverse reactions and drug interactions, and observe the patient for symptoms of adverse reactions or side effects. Therefore, it is not surprising that only three HHAs report Medication Administration Record (MAR) functionality. All agencies, however, have products supporting medication lists and software for checking medications for potential side effects and adverse reactions, duplicative drug therapy, etc. Only one HHA reports e-prescribing functionality. Again, this is not surprising, as typically physicians send prescriptions directly to a pharmacy and the patient/family obtains the medications. Two HHAs have medication reminder systems for patients included as part of a telemonitoring product and another notes their intention to obtain such functionality.

*Telemedicine/telehealth:* Due to the potential for cost savings and improved clinical outcomes for home care patients (because of the improved ability of the HHA to monitor the home care patient), there has been great interest in the use of telemedicine applications in home health care. Three HHAs report using telemonitoring applications, while the remaining two hope to acquire this functionality at some point in the future. None of the agencies use electronic tracking systems, intended to monitor patients who may be confused and wander away from a safe environment. Typically, if these types of patients are receiving home care services, their whereabouts will be monitored by their families or caregivers. Wireless personal emergency response systems are in use by two HHAs and another HHA hopes to acquire a system in the future. Two HHAs have in-home messaging devices allowing a two-way dialog between patient and caregivers, one of which provides video and audio capabilities for “virtual visits.” The systems in those HHAs provide patient education materials that the patient or caregiver can access on the video monitor. One HHA has a secure e-mail system that allows communication with the patient/family but is not using the application at this time. Another HHA reports that this information exchange functionality is part of their telemonitoring application. Two HHAs have the capability to transmit still images to consulting providers, although one is not currently using it. None of the agencies currently are using still images captured by cellular telephones to document wound status or other clinical findings.

## **IV. DISCUSSION**

All participating HHAs report using all applications listed with the Administration domain. Likewise, many of the operations management functions are automated using a variety of products providing “back office” applications. While HHAs may see costs savings from automating functions not directly related to patient care, the authors believe that the focus of this project should be on applications that may result in more efficient and effective care delivery, particularly those in the EHR and telehealth domains.

Because selected providers were recommended to us from software vendors or identified through materials obtained from industry association materials, (e.g., abstracts or presentations posted for national conferences), all participating HHAs use some type of EHR, although the types of applications in use varied as did the sophistication of the EHR. Feedback indicates that for HHAs, most EHR products offer a basic set of applications including those for recording, storing and retrieving assessment data, problem lists, care plans, visit notes, and medication lists. It appears that most EHRs for home health also include the ability to aggregate data into summary reports, such as discharge summaries, although one respondent notes that they did not have summary reporting functionality. More sophisticated EHRs may contain decision-support tools, reporting tools, and some forms of health information exchange (e.g., a system allowing external providers or patients to access the EHR).

Certain EHR applications for HHAs are typically purchased as part of a basic system (with additional functionality purchased separately in the form of upgrades), which often includes initial set-up, training hours, product support, and regular system upgrades. There is an initial cost outlay, based on user licenses and annual maintenance fees. Thus, it may be difficult to identify the costs and benefits of some of the individual applications within a basic HHA EHR system. While it is likely that some of the costs and benefits may be identified for applications within a basic EHR product, many of them are likely calculated for implementation of the EHR package as a whole (e.g., initial purchase costs, time saved by other members of the care team by reading previous assessments, visit notes, and care plans onscreen from home versus traveling to the office to pick up paper copies). Therefore, we will likely need to focus our efforts during the site visits (Task 6) on evaluating costs and benefits of: (a) a circumscribed set of basic applications common to most HHA EHR products; and/or (b) more sophisticated applications that are purchased as system upgrades or stand-alone modules, or even from a separate vendor. For example, a product supporting the electronic receipt of hospital discharge data, such as e-discharge, may not be bundled with other applications and costs/benefits of that application can be measured directly.

For the site visits (Task 6), the project team is interested in selecting one or more HHAs with a basic EHR in use, including at least the ability to enter, store, retrieve, and view assessment data (including OASIS), clinical notes, medication lists, care plans, and produce summary reports (e.g., discharge summaries). In addition, we would like

to select HHAs with some of the more sophisticated EHR applications, particularly those related to decision-support, CPOE, and health information exchange with providers and/or patients. Because the literature contains some anecdotal information that HHAs are reporting direct cost savings by using telemonitoring and telehealth “virtual visits,” we recommend visiting at least one HHA using the technology, preferably an HHA that incorporates the clinical data from the telemonitor directly into an EHR. Three of the five HHA providing information on their products meet these criteria and should be considered candidates for site visits.

# ATTACHMENT A: DRAFT TAXONOMY OF HIT APPLICATION FEATURES FOR HOME HEALTH AGENCIES

*Please use this key when completing Columns 1 through 5 of the taxonomy.*

Column	Instructions / Key
<b>1</b>	<b>Product(s) that support this feature (1, 2, 3 from above list)</b>
<b>2</b>	<b>Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?</b>
<b>3</b>	<b>Current or Planned Usage</b>
<b>4</b>	<b>Types of Employees, Disciplines using this application</b>
<b>5</b>	<b>Extent of Use</b>

Please list the product(s) that support this feature of the taxonomy (using the products that you have listed at the top of each separate Domain page -- 1, 2, 3).

Please indicate what other products, if any, that this product interfaces with -- either inside your agency or outside of your agency.

- Please note for each application your current or planned use as follows:
- 1 - We have this application and are currently using it
  - 2 - We have this application but are not using it
  - 3 - We plan to purchase this application in the next 12-24 months
  - 4 - We do not have current plans to purchase this application, but would like to do so at some point in the future
  - 5 - We do not have this application and have no desire to obtain it

For each application that you are currently using or own but are not currently using (#1 or #2 in the previous column), please note the types of employees who are using the application (e.g., administrative staff, nurse, therapist, aide, pharmacist, etc.).

For each application that you are currently using or own but are not currently using, please note the extent of use in your nursing facility as follows:

- 1 - This application is fully implemented and all appropriate staff are using it
- 2 - This application has been partially implemented and in use by at least 50% of staff for whom the application is targeted
- 3 - This application has been partially implemented but in use by less than 50% of staff for whom the application is targeted
- 4 - This application has been purchased and staff training has been (or will be) scheduled
- 5 - This application has been purchased but we do not plan to use it at this time

Please list the product or products that you use in the Administration functions at your agency:

Product Name(s):

Year Implemented:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**A: ADMINISTRATION DOMAIN**

		1	2	3	4	5
Application Features	Definition	Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
A.1 Census Management	Admissions, discharges, transfers, bed holds, current list of patients, available beds, ability to generate lists of unduplicated admissions (HHA).					
A.2 General Ledger/Accounts Payable	A/P, cash flow, financial statements, bank reconciliation, budgeting.					
A.3 Verification of Insurance & Eligibility for Services	Allows online verification of insurance information and coverage for services. This can be facilitated electronically by the use of HIPAA x12 transaction code sets.					
A.4 Accounts Receivable/Billing	Calculates HHRG, Electronic generation & submission of UB-92 and CMS 1500 forms or other billing forms. Electronic billing is facilitated with the use of HIPAA x12 transaction code sets. Reference file of codes to support accurate coding to maximize reimbursement (including any agency-specific exceptions or alerts). Cash receipts, may include electronic transfer of funds, Credit/collections including account aging, delinquent account worksheet.					

**A: ADMINISTRATION DOMAIN**

		1	2	3	4	5
Application Features		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
A.5	Tracks Medicare/nonMedicare Claims Denials	Tracks denials through resubmission of claim. Electronic notification can be facilitated with the use of HIPAA x12 transaction code sets.				
A.6	Contracts Management	Tracks payer contact info, contractual agreements, negotiated payer rates, allows the evaluation of proposed contracts based on historical data, ability to bill according to contract terms and monitor for appropriate reimbursement.				
A.7	Payroll	Automated payroll, calculates deductions, manages accrued leave balances, check writing capabilities.				

Please list the product or products that you use in the Operations Management functions at your agency:

Product Name(s):

Year Implemented:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**B: OPERATIONS MANAGEMENT DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
B.1 Registration	Patient Intake, includes data on demographics, caregiver and emergency contact, next of kin, physicians, initial orders, diagnoses, payers, resident-selected providers such as pharmacy, pharmacy plans, funeral home, hospital, etc. Generation of face sheet. May allow electronic receipt of admissions data from another facility.					
B.2 Online Access for Referrals	Interfaces for hospitals or physician offices to refer patients, may include interfaces for receipt of electronic discharge information (e.g., ECIN or E-Discharge).					
B.3 Staffing/Scheduling	Allows coordination of staff shift assignments and home visits (HHA), tracks employee availability.					
B.4 Staff Time/Attendance Tracking	Capability to capture time clock data, record detailed hours worked, links with staffing/scheduling and payroll.					
B.5 Telephony	Allows care providers to use the phone to record visit information (time in/time out).					

## B: OPERATIONS MANAGEMENT DOMAIN

		1	2	3	4	5
Application Features	Definition	Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
B.6 Personnel Management	Tracks eligibility, licenses, captures performance review dates and evaluation results, captures disciplinary actions, staff development activities and clinical in-services, OSHA reports for employee injuries/illnesses.					
B.7 Workflow Management	Assigns and prioritizes tasks for care providers, allows timelines and due dates to be set, issues reminders for due dates, may also include reporting capabilities for staff productivity and resource utilization.					
B.8 User-defined Financial Management Reports	Generates reports to monitor financial factors such as costs, pro forma profits, staffing ratios vs. costs, resource utilization category (RUG) days/month, etc.					
B.9 Tracking of MD Signature, Including Option of Electronic Signature	Tracks if primary care provider has signed the HHA plan of care or updated orders. Tracking of physician services also required for ancillary services including therapy, durable medical supply, enterals and parenterals.					
B.10 Patient Supply Ordering	Allows home care supplies to be ordered electronically.					
B.11 Pharmacy Management	Pharmacy online adjudication to third-party payers (using National Council for Prescription Drug Programs (NCPDP) 5.1 for claim transactions and NCPDP Formulary and Benefit Standard for formulary and benefit notification), pharmacy cycle fill period, fill list, integrated with formularies and provides list of alternate drugs, accommodates ordering of floor stock pharmacy items, inventory control for narcotics, return medication credits/adjustments.					
B.12 Medications Tracking/Billing	Allows for tracking of costs and coverage of patient medications, interfaces with billing system.					

**B: OPERATIONS MANAGEMENT DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
B.13 OASIS Data Management (i.e., entry, editing, transmission)	<p>Allows OASIS data collected via paper, scan sheets, or other devices at the POC (e.g. PDA) to be data entered (or scanned), edit checks run, allows for data correction, and export of data to the state repository. Includes HAVEN, RAVEN, and other commercial products. May generate triggers/guidelines to assist in the preparation of the care plan. Calculates RUG category to electronically feed to billing.</p> <p>This is the manual collection of data that are then entered into some other software. Devices that interface directly with the EHR/electronic medical record (EMR) are noted in C.3.</p>					
B.14 Quality Management Activities & Reporting	Allows the aggregation of data and reporting for program quality assessment and management purposes. The next few indented rows describe various quality management reports and activities available for HHA.					
B.14.a Incident Reporting						
B.14.b Tracking of Adverse Occurrences (e.g., falls, med errors)						
B.14.c Tracking of Infections						

**B: OPERATIONS MANAGEMENT DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
B.14.d Summary Reports of Clinical Pathways Variances Reporting (e.g., if the HHA staff is unable the accomplish the "assigned" activities for a patient by a certain visit, then there is a variance from the clinical pathway)						
B.14.e Calculation of Outcomes from OASIS Data (e.g., hospitalization)						
B.14.f Risk Audits for Quality Areas of Concern for Surveyors (e.g., wounds)						
B.14.g "Dashboard Reports" of Key Quality Indicators (e.g., hospitalizations, infections and falls)						
B.15 Reporting & Population Health Management	Allows electronic reporting for federal, state, local (and accrediting agency) required information on patient safety and quality for tracking population health status including prevalence, incidence and aggregate health status measure. Includes the ability to notify appropriate public health agencies for certain reportable conditions (e.g., tuberculosis, etc.) or transmit specific required information to registries (e.g., immunizations).					
B.16 Electronic Access to Clinical Guidance	Allows care provider online access to information for use in clinical decisions or care planning (e.g., online access to health libraries offering clinical journals).					

**B: OPERATIONS MANAGEMENT DOMAIN**

		1	2	3	4	5
Application Features	Definition	Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
B.17 De-identified Data Request Management	Provide data in a manner that meets federal, state and local requirements for de-identification.					
B.18 Policy/Procedure Database	Allows care provider to access policies procedures online.					

Please list the product or products that you use in the EHR/EMR functions at your agency:

	Product Name(s):	Year Implemented:
1.	_____	_____
2.	_____	_____
3.	_____	_____

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.1 Maintain Patient Record/Health Information Capture, Management, & Review	Identify and maintain a single patient record for each patient. This includes capturing data using standardized code sets or nomenclature, or unstructured data. Details of who entered the data and when they were captured are tracked.					
C.2 Patient Consent, Authorizations & Directives	Allow for the capture and maintenance of information regarding patient consent (including psychopharmacological medication use consent), participation in or attendance at care plan meetings, specific authorizations, and advance directives. Patient consents, authorizations and directives can be captured via a scanned document, indication of signature on file or an electronic signature. Provide alerts or notifications at time of episodic event.					

<sup>1</sup> EHR Systems are defined in the HL7 EHR FM DSTU as: (1) a longitudinal collection of electronic health information for and about persons, where health information is defined as information pertaining to the health of the individual or health care provided to an individual; (2) immediate electronic access to person and population-level information by authorized, and only authorized, users; (3) provision of knowledge and decision-support that enhance the quality, safety, and efficiency of patient care; and (4) support of efficient processes for health care delivery. HIMMS defines an EHR as a “computer-based longitudinal records of patient health information generated by one or more encounters in any care delivery setting.” The EHR is intended primarily for use by health care providers. For the purposes of this taxonomy, we consider that an EHR is an integrated record containing information crossing provider settings and is compliant with (or is becoming compliant with) existing interoperability standards. We consider EMRs to be a subset of EHRs and are used and maintained by a single provider setting.

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

		1	2	3	4	5
Application Features	Definition	Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.3 Comprehensive Initial & Follow-up Assessments & Patient-originated Data	<p>Manage, create, and maintain required or other assessment data via POC software (e.g., laptops, PDAs, etc.) upon admission to HHA and at prescribed time points.</p> <p>Note: In HHA, this means the completion of OASIS at start of care, 60 day FU, transfers, and discharge.</p> <p>The OASIS and other assessment data are integrated with the EHR. Assessment information includes data on patient history, allergies/sensitivities, patient preferences, and other relevant patient information.</p>					
C.4 Summary Reports	<p>Allows aggregation of EMR data to generate brief, clinically relevant assessment summaries, discharge summaries, transfer summaries, and other summary reports (e.g., 60-day summaries in home health care). Functionality for electronic transmission of reports is listed under Secure Electronic Messaging.</p>					
C.5 Clinical Notes	<p>Create, addend, correct, authenticate, and close clinical visit data (including assessments/clinical measurements, interventions, communications, etc.) in structured or nonstructured (i.e., text) format. Data may be captured via direct data entry at POC through laptops, hand-held devices such as PDAs, kiosks located outside patient rooms, computers located at bedside, or voice-activated dictaphones for later transcription. May or may not maintain separate notes by discipline.</p>					
C.5.a Physician						
C.5.b Pharmacy/Pharmacist						

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.5.c RN/LPN						
C.5.d PT						
C.5.e OT						
C.5.f SLT						
C.5.g SW						
C.5.h Dietician						
C.5.i Clergy						
C.5.j Aide/Attendant						
C.5.k Therapy Aide						
C.5.l Volunteers						
C.6 Receive External Clinical Documents	Electronic receipt of external facilities/agencies, laboratory data, radiology data, medical devices, patient history, patient consults, pharmacy/ consultant pharmacist reports, etc. May capture import of paper documents by scanning and include with other EHR data.					
C.6.a Laboratory Data						
C.6.b Radiology Data						
C.6.c Patient Consults						
C.6.d Patient History/EMR from Other Settings						
C.7 Problem List	A list of all active patient problems; may be included in functionality supporting the plan of care. May typically be considered part of the care planning functionality (C.8).					

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

		1	2	3	4	5
Application Features	Definition	Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.8 Care Planning/Goal Setting	Electronic POC data collection and availability of data for generation of the plan of care (formerly the CMS-485 for HH) and goal setting. May allow for plans of care required by CMS or others. May be limited to an overall Plan of Care, or may allow for discipline-specific plans of care (e.g., therapy plans of care and nursing plans of care). Care Planning/Goal Setting is an outgrowth of the assessments. Electronic facilitation of selected goals for a resident should be prompted from the assessment process.					
C.8.a Single Interdisciplinary Plan of Care						
C.8.b Acute Problem Plan of Care/Single Plan of Care						
C.8.c Discipline-Specific (e.g., therapy) Plan of Care						
C.9 Decision-Support	Clinical support tools providing best practice suggestions for care plans and interventions, based on clinical problems/diagnoses, may include alerts or reminders for specific interventions, tools for assessing risk of various conditions frequently seen in elderly patients using PAC. May be user-defined.  Indented examples below are applications found in the review of long-term care software available today.					
C.9.a Electronic Clinical Pathways/Standardized Care Plans	Includes both automated pathways and documentation/alerts for patient-level variances (i.e., instances when a patient's care deviates from the prescribed pathway).					

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.9.b Disease Management Programs						
C.9.c Automated Alerts for Lab Draws (when due)						
C.9.d Automated Prompts for Unusual Events (e.g., medication errors, etc.)						
C.9.e Automated Prompts for Preventive Practices (e.g., immunizations)						
C.9.f Decision-Support for e-prescribing. May Include Dosing; Drug Selection; Drug-to-drug Interactions; Drug-to-food Interactions						
C.9.g Risk Assessment Tools (e.g., dehydration risk, contracture risk, falls risk, pressure ulcer risk, etc.)						
C.9.h Results Management	Manage current and historical test results with the ability to filter and compare results.					
C.9.i Alerts for SOM/G-tag Compliance						
C.9.j OASIS/485 Consistency Alerts						
C.10 Care Plan Monitoring	Allows monitoring of the effectiveness of care plans or clinical interventions.					

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.11 Trending	Provides graphical and/or tabular displays for trending and analysis of information such as vital signs, weight, lab results including blood sugar levels, intake and output, etc. May include queries to analyze for unusual findings.					
C.12 Secure Electronic Messaging	Allows intra-agency communications to facilitate health information exchange and coordination among care providers. Extra-agency communications provide methods for communicating with clinicians or other health settings.					
C.12.a Intra-agency						
C.12.b Extra-agency (with MD, pharmacy, pharmacy consultant, laboratory, etc.)						
C.12.c Health Information Exchange with Patients & Caregivers	<p>Allows for the two-way exchange of information between a patient health record and the EHR/EMR. Also allows for clinical information to be shared with home health patients and their caregivers assisting in their care. This includes electronic communication with the next of kin should they need to know if/when there is an incident with the patient.</p> <p>Closely related to telehealth correspondences between physicians/nurses and patients (E.9 ) -- Communication with patient/family for access to relevant patient information (e.g., labs, visit schedules, patient updates).</p>					

**C: ELECTRONIC HEALTH RECORD (EHR)/ELECTRONIC MEDICAL RECORD (EMR)<sup>1</sup> DOMAIN**

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
C.13 Patient Education	Generation of patient education materials or electronic access to standardized patient education materials that can be printed out for patient teaching activities. (Systems that provide automated patient teaching programs are listed under the telehealth/telemedicine domain).					
C.14 Security/Privacy	Permissions setting, user authentication, reports on access of EMR, disaster recovery plans. Includes patient access to record. Also includes archiving data and auditing of data.					
C.15 Physician &/or Pharmacist Access to EMR	Provides mechanism (e.g., portal) for remote access to the EMR by attending, admitting, consulting, & covering physicians and pharmacists.					
C.16 Computerized Provider Order Entry (CPOE)	Allows provider orders for diagnostic and treatment services to be entered electronically by a prescriber, nurse, or pharmacist (as allowed by agency policy, state laws and other regulations), with or without computerized medication ordering (D.4) CPOE can be implemented with or without an e-MAR (D.1). Transaction could occur via the use of a portal or electronic transmission.					

Please list the product or products that you use in the Medications functions at your agency:

Product Name(s):

Year Implemented:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**D: MEDICATIONS DOMAIN** [While many of the applications within this domain fall under the EHR/EMR domain, but with the emphasis of the potential cost savings and increase in quality of care of electronic applications related to medications]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
D.1 Medication Administration Record (MAR)	All medications administered to patients are recorded into the MAR (which can be mediated by a kiosk, PDA, or bar code reader). Generated from the medication list. May also allow provider to view recent lab results and patient allergies. Interfaces with pharmacy system, computerized order entry system, and patient tracking (admission-discharge-transfer) system. Medication inventory tracking including receipt and disposition of medications.					
D.2 Medication List	Allows creation of a list of all medications at admission and amendments as medications are changed or updated. In HHAs, this list is typically used for medication tracking and reconciliation, as opposed to a MAR used to document medication administration (i.e., HHA providers frequently do not administer medications, but simply check to ensure the patient understands which medications are needed, when, and is able to administer them independently). May contain orders from multiple health care providers.					

**D: MEDICATIONS DOMAIN** [While many of the applications within this domain fall under the EHR/EMR domain, but with the emphasis of the potential cost savings and increase in quality of care of electronic applications related to medications]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
D.3 Medication Checking	Allows medications to be checked by nonphysicians for side effects, potential adverse events, duplicate drug therapy, medication precautions, storage, missed dose, and overdose (e.g., medication regimen review). May include decision-support and printable patient education forms. An EHR could have this application without having CPOE.					
D.4 Electronic Prescribing Between Practitioner & Pharmacies (two-way functionality) (home health)	Electronic transmission of prescription information between health care providers and pharmacies. Transmission of prescriptions using stand developed by the NCPDP may or may not be in use. Typically involves ordering of medications using a PDA or computer, may also include decision-support. Two-way functionality may be more common in HHAs, where the patient gets prescriptions from the pharmacy.					
D.5 Medication Reminder Systems	Provide reminders to take or administer medication at predetermined times. May take the form of software installed on PDAs, PCs, or mobile phones to. Other devices used are specialized watches, pagers, pocket devices, and medication bottle caps programmed to remind the user to take medications at predetermined times. Alerts come in the form of audible alerts, vibration, and some will provide text messages. These systems are for patients capable of self-administering medications.					

Please list the product or products that you use in the Telemedicine/Telehealth functions at your agency:

	Product Name(s):	Year Implemented:
1.	_____	_____
2.	_____	_____
3.	_____	_____

**E: TELEMEDICINE / TELEHEALTH DOMAIN** [Telehealth uses a wide range of information and communications technologies to provide specialist referral services, patient consultations, remote patient monitoring, medical education, and consumer medical and health information through networked programs, private connections, primary and specialty care to the home, and a growing range of Web-based e-patient services (American Telemedicine Association, <http://www.atmeda.org/>.)]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
E.1 Telemonitoring of Vital Signs, Weights, EKG Findings	Electronic devices to measure and transmit information to a home health or other provider. Data can include blood pressure, pulse, weight, blood glucose, EKGs, pulse oximetry, Peak Expiratory Flow, and Forced Expiratory Volume, etc. Examples are "smart toilets," Internet-enabled weight scales, electrocardiograms, or devices that can be placed on a television cable box, telephonic stethoscopes for auscultating heart, lung and bowel sounds.					

**E: TELEMEDICINE / TELEHEALTH DOMAIN** [Telehealth uses a wide range of information and communications technologies to provide specialist referral services, patient consultations, remote patient monitoring, medical education, and consumer medical and health information through networked programs, private connections, primary and specialty care to the home, and a growing range of Web-based e-patient services (American Telemedicine Association, <http://www.atmeda.org/>.)]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
E.2 Tracking Systems	Tracking systems are used to locate a resident who has left the facility or home, using radio frequency (RF) signals or Global Positioning System (GPS) technology. Tracking systems that use RF technology usually consist of a transmitter worn by the resident and a handheld tracking device used by the caregiver to locate the resident. Tracking systems using GPS technology combine the use of GPS satellites, digital wireless networks, and the Internet to locate a wandering resident anywhere that digital wireless network service is available. The resident must wear a signaling device (i.e., watch, a pager sized clip-on device, or a box-like device that can be placed in a fanny pack or rucksack). The care provider can use the Internet to locate a resident via a computer, mobile phone, or PDA or by calling a central monitoring station via telephone. In addition to locating a lost resident, many of these systems have the ability to alert a caregiver when the resident has left a predetermined area and when the resident has fallen. Systems may track residents within the home, and may include a wander guard system to prevent wandering (e.g., sprinkler system).					
E.3 Wireless Personal Emergency Response Systems	Automated dialing system that can transmit coded messages to a remote monitoring station when activated by user or sensor.					
E.4 Medication Reminders (see Medication domain)						

**E: TELEMEDICINE / TELEHEALTH DOMAIN** [Telehealth uses a wide range of information and communications technologies to provide specialist referral services, patient consultations, remote patient monitoring, medical education, and consumer medical and health information through networked programs, private connections, primary and specialty care to the home, and a growing range of Web-based e-patient services (American Telemedicine Association, <http://www.atmeda.org/>).]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
E.5 In-home Messaging Device	Video screen connected to a patient's home telephone line (POTS) allowing patients to view questions and reminders from the provider. Provide two-way dialog by allowing patients to respond to questions by pressing buttons on the device.					
E.6 Virtual Visits	Video monitors with audio capability, can be POTS or IP systems. Allow the care provider and patient (or other care provider) to view one another and have a two-way audio dialogue for the virtual visit.					
E.7 Patient Education Materials	Custom designed software for patient education, typically installed on PCs or PDAs in the home for telemonitoring, virtual visits, or messaging. May be stand-alone or web-based.					
E.8 Health Chat Lines	Patient may log into a private Internet site from their home computer for private synchronous communication with provider. May have the capability to log time spent by provider for billing.					
E.9 Communication with Patient/Family for Access to Relevant Patient Information (e.g., labs, visit schedules, patient updates).	Typically via secure web connections.  Closely related to EHR/EMR (C.12.C) -- Health Information Exchange with patients and caregivers.					
E.10 Teleimage Transmission	Transmission of X-ray and other still images (store and forward) to consulting specialists or primary care providers.					

**E: TELEMEDICINE / TELEHEALTH DOMAIN** [Telehealth uses a wide range of information and communications technologies to provide specialist referral services, patient consultations, remote patient monitoring, medical education, and consumer medical and health information through networked programs, private connections, primary and specialty care to the home, and a growing range of Web-based e-patient services (American Telemedicine Association, <http://www.atmeda.org/>.)]

Application Features	Definition	1	2	3	4	5
		Product(s) that support this feature (1, 2, 3 from above list)	Does this product interface with other products in or outside of your agency? (Y/N) If Yes, what?	Current or Planned Usage (see Key)	Types of Employees, Disciplines using this application	Extent of Use (see Key)
E.11 Cellular Phones with Photo Capabilities	Used to take photographs to supplement clinical documentation or to forward to physician. Especially used to photograph wounds.					