

# National Nurse Executive Council Summary Analysis

## Initial Requirements Analysis



## Revision History

<b>Date</b>	<b>Revision</b>	<b>Description</b>	<b>Author</b>
10/28/02	1.0	Initiated Description of Work	Pam Montelongo, Anne Glenn
11/06/02	1.1	Description of Work and Requirements initiated	Anne Glenn, Pam Montelongo
11/13/02	1.2	Description of Work	Anne Glenn, Pam Montelongo
11/27/02	1.3	Requesting Information, Requirements	Pam Montelongo, Anne Glenn
12/04/02	1.4	Requirements	Pam Montelongo, Anne Glenn
12/11/02	1.5	Requirements	Anne Glenn, Pam Montelongo
12/18/02	1.6	Requirements	Pam Montelongo, Anne Glenn
01/08/03	1.7	Requirements	Pam Montelongo, Anne Glenn
01/15/03	1.8	Requirements	Anne Glenn, Pam Montelongo
01/22/03	1.9	Requirements	Pam Montelongo, Anne Glenn
02/15/03	2.0	Revised format and edits following analyst meeting	Pam Montelongo, Anne Glenn, Sue Gohlinghorst, Dwyla Mosher ; Barb Lang
02/20/03	2.1	Revised Requirements following analyst meeting	Pam Montelongo, Anne Glenn, Sue Gohlinghorst, Dwyla Mosher ; Barb Lang, Dan Petit, Andrey Andriyefskiy
02/26/03	3.0	Revised format and Requirements following the general & analyst meetings	Sue Gohlinghorst
02/28/03	3.1	Edited	Pam Montelongo, Anne Glenn, Dwyla Mosher
03/03/03	3.2	General editing	Dwyla Mosher, Pam Montelongo
03/04/03	3.3	General editing	Anne Glenn, Pam Montelongo
03/06/03	3.4	Formatting and editing	Anne Glenn, Pam Montelongo
03/12/03	3.5	Editing	Anne Glenn, Sue Gohlinghorst, Dwyla Mosher, Jerilyn Roberts,

			Pam Montelongo
03/14/03	3.6	Edits, Appendix A	Anne Glenn, Pam Montelongo
03/17/03	3.7	Additional Dependencies	Sue Gohlinghorst, Pam Montelongo
03/18/03	3.8	Edits	Dwyla Mosher, Pam Montelongo
03/19/03	3.9	Edits	Barb Lang, Bonnie Leibel, Pam Montelongo
03/20/03	3.10	Additions to Appendix A	Pam Montelongo
03/25/03	3.11	Edits	Barb Lang, Dan Petit, Pam Montelongo
03/26/03	4.0	Reformatted	Linda Hebert
03/26/03	4.1	Edits	Anne Glenn, Sue Gohlinghorst, Dwyla Mosher, Pam Montelongo
03/26/03	4.2	Function Point Estimate Appendix B	Sue Gohlinghorst, Pam Montelongo, David Thompson
03/27/03	4.3	Final draft revisions Update Function Point Estimate	Linda Hebert, Pam Montelongo, Anne Glenn, David Thompson
03/28/03	4.4	Final Function Point Estimate Update	Anne Glenn, Pam Montelongo, David Thompson

## National Nurse Executive Council Summary Analysis March 2003

### Description of Work

Barbara Leibel, RN, MPH, Clinical Program Manager with Office of Nursing Services (ONS) has requested that staff from System Design & Development (SD&D) meet with the Veterans Health Administration (VHA) Nursing OI Technical Advisory Group (TAG), a subcommittee of the National Nurse Executive Council (NNEC), to define requirements for new nursing software. Cathy Rick, RN, Chief Nursing Officer, ONS has endorsed this request. To that end a group of analysts from Provider Systems (PS), Health Data Systems (HDS) and Planning and Analysis (PAS) was formed to work with the TAG to document the requirements for the new development project.

Health care corporations throughout the nation are beginning to recognize and address the increasing problems associated with the worsening nursing shortage. The ONS tasked the Future Nursing Workforce Planning Group in August 2000, to critically review significant aspects of the national nursing shortage and formulate strategies to ensure the ability to attract and maintain qualified nursing staff to VHA. The ONS instituted 6 strategic goals as part of their future strategic plan. One of these goals was Technology and System Development. This goal forms the basis of this document and focuses on the development and enhancement of systems and technology to support nursing's role in healthcare delivery models. Further analysis of this goal by the NNEC identified five primary areas of focus for a nursing software system. They are:

- A standardized user interface linking vital signs, pain assessment, intake and output (I&O), and Bar Code Medication Administration (BCMA) with the Computerized Patient Record System (CPRS);
- Nursing treatment order sheets;
- Shift reports and Nursing Kardexes;
- Multi-user and multi-entry flow sheets;
- Interdisciplinary patient assessments.

The task of the analysis group was to review the many areas of nursing documentation and recommend more efficient processes that will take advantage of future technologies and form an integrated nursing software system that reduces redundant nursing tasks documented in multiple, disparate systems. The group saw a major opportunity to describe a new nursing software system, referred to here as the Nursing Integrated Information System (NIIS), which will reuse patient information entered in multiple areas of the paper and electronic record to decrease duplication of effort. There was also opportunity to develop a system that will increase patient safety by creating reminders that tell the nurse when a treatment or medication has been missed; warn the nurse of allergies; assist in ensuring the patients are prepped for procedures in a timely fashion, remind nurses of treatments and appointments; and assist in the accurate and timely documentation of care delivery. There was also opportunity to improve compliance with regulatory agencies, such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). JCAHO requires that patient assessments and patient treatment care plans be

interdisciplinary. The clinical record must be able to communicate the interdisciplinary therapy/care given to patients through multiple episodes and throughout the total continuum of care. Development of these two applications will need input from the other disciplines that use them. This effort, therefore, could delineate only those requirements for these systems as they pertain to Nursing.

## Requesting Information

- Endorser: Cathy Rick, RN  
Chief Nursing Officer  
Office of Nursing Services  
Phone (202) 565-7206
- Requesting Party Barbara Leibel, R.N., M.P.H.  
Clinical Program Manager  
Office of Nursing Services  
Phone: 202.565.4029
- Reference Information: Office of Nursing Service  
<http://www.va.gov/nursing/>  
<http://vista.med.va.gov/pas/ViewTrackingRecord.asp?RequestID=20020904>
- Point of Contact: Barbara Lang, RN  
Project Manager, Provider Systems Service  
708-786-5911  
[Barb.Lang@med.va.gov](mailto:Barb.Lang@med.va.gov)

## Project Team:

- Project Manager: Barbara Lang, Provider Systems Service

## Functionality

This section has been organized to present the user requirements as an iterative development project that can deliver usable software modules to Nursing in phases. The TAG has prioritized these modules as follows<sup>1</sup>:

1. Patient Assessment
2. Treatment Record
3. Flow Sheets
4. Interdisciplinary Plan of Care
5. Shift Report, Kardex and Staff Assignments

---

<sup>1</sup> Depending on other concurrent development, it may prove necessary to alter the order of module development, if so, the TAG would be informed.

The following is a list of general user requirements applicable to all of the modules specified in this document:

- Accommodate 8, 10, and 12 hour shifts and cross over days for 7pm-7am shifts;
  - Provide point of care data entry and retrieval;
  - Provide a portal to the NIIS through HealthVet-VistA (CPRS);
  - Print reports on-demand, as well as on a scheduled basis;
  - Sort/print for a single patient, group of patients, ward, specialty, team or clinic;
  - Maintain a longitudinal (over time) patient record;
  - Alert nurses of out-of-bounds data;
  - Include free text capability for comments;
  - Allow the configuration of functions by facility, division, service, location, individual, team;
  - Ensure that all functionality is 508 compliant - To this end, the NIIS will follow the accessibility guidelines published by the VA, as well as the section 508 guidelines created by the CPRS Reengineering project (i.e., HealthVet Desktop Framework) to the understanding of the organization and within the confines of existing technology;
  - Not require extensive computer expertise to use the system effectively;
  - Provides power and flexibility to support advanced users; “customizability” and “extensibility” are important;
  - Deliver a rapid response time;
  - Incorporate a standardized Nursing Taxonomy such as Nursing Intervention Classification;
  - Provide a common interface for all data entry and retrieval independent of setting, i.e. inpatient, outpatient;
  - Provide outpatient nurses with the same level of access and functionality as inpatient nurses;
  - Create real time updating of information in all applicable modules, where available, using a refresh button to get real time updates according to user needs. This parameter should be configurable by site and location;
  - Make documents user configurable, such as flow sheets, shift report, Kardex, based on the unique needs of each level of nursing staff.
  - Interface the NIIS with current commercial off-the-shelf (COTS) products and future purchases including, but not limited to, patient education materials, pharmacy references, and clinical resources (Medline Plus, Up-to-Date, National Formulary, Micromedex).
1. **Nursing Kardex** - The Nursing Kardex is a document that displays general patient information and a summary of patient care needs and activities. The following patient information will display on the Nursing Kardex:
    - 1.1. Demographic and administrative information;
    - 1.2. Admitting diagnosis;
    - 1.3. Patient location;
    - 1.4. Do-not-resuscitate (DNR) status;
    - 1.5. Active and unverified orders (selectable for display from CPRS Orders Tab);

- 1.6. Medication list from BCMA (refresh button); will include all medications or just PRN (this will be site configurable);
  - 1.7. Passes;
  - 1.8. Appointments;
  - 1.9. Scheduled procedures and preps with times and dates;
  - 1.10. Lab specimens to be collected;
  - 1.11. Crisis Notes, Warning Notes, Allergies and Directives (CWAD);
  - 1.12. Overdue actions/orders moved to treatment or flow sheet;
  - 1.13. Assessment by type and date;
  - 1.14. Comments (this will be the only data entry field on the Kardex);
  - 1.15. Vitals/Measurement;
  - 1.16. Patient Classification;
  - 1.17. Nursing Interventions;
  - 1.18. Nursing Treatments.
2. **Shift Report** - The Shift report is a document that keeps track of the patient care needed and given during a specified timeframe including the patient responses to interventions. Its primary use is to provide a method of communication between nurses at change of shift and to relay information to administration.
- 2.1. The electronic Shift Report will include the following:
    - 2.1.1. A display of a “to do” list made up of patient needs for the designated timeframe;
    - 2.1.2. Room and bed number;
    - 2.1.3. Text orders;
    - 2.1.4. IVs including what is left to credit and next to hang;
    - 2.1.5. Missing dose;
    - 2.1.6. PRN effectiveness;
    - 2.1.7. All treatments and missed treatments;
    - 2.1.8. Restraints, sitters, suicide precautions;
    - 2.1.9. Isolation status;
    - 2.1.10. DNR status;
    - 2.1.11. Orders carried over from previous shifts and new orders for the current shift with an indicator showing that an order is new;
    - 2.1.12. Interventions/treatments and tasks to be carried out by oncoming shift;
    - 2.1.13. Historical comments, as user defined;
    - 2.1.14. Display response to nursing interventions;
    - 2.1.15. Most recent vital signs;
    - 2.1.16. IV’s being administered;
    - 2.1.17. I&O;
    - 2.1.18. Lab tests, specimens, and recent lab results as defined;
    - 2.1.19. Pending radiology and other ancillary procedures and tests;
    - 2.1.20. Provide the ability for nurses to customize a patient list according to their assignment.
  - 2.2. Automatically update patient list through refresh button, for example, discharge, pass, Leave Against Medical Advice (AMA).
  - 2.3. Ability to identify key events for inclusion on the 24 hour administrative report.

3. **Clinical Flow Sheet** - a Clinical Flow Sheet can be designed in a variety of ways, all for the purpose of collecting patient information. For example, 24 hour I&O collection or a restraints observation record.
  - 3.1. The flow sheet will be designed and configured, including timeframes, by the user.
  - 3.2. The user will be able to add patient specific data headings.
  - 3.3. The flow sheet will be capable of multi-user and multi-data entries, therefore the flow sheet will be capable of design by one person and shared for use by multiple staff.
  - 3.4. Each entry to the flow sheet can be electronically signed.
  - 3.5. The flow sheet will be able to receive and send data to and from:
    - 3.5.1. Vitals/Measurement;
    - 3.5.2. I&O;
    - 3.5.3. Treatment record;
    - 3.5.4. Order Entry/Results Reporting (OE/RR) (receive only);
    - 3.5.5. Progress Notes;
    - 3.5.6. Nursing Kardex – to list appointments;
    - 3.5.7. BCMA – to send finger stick results.
  
4. **Treatment Record** - The Treatment Record provides a means to enter, display and edit patient treatments given by nursing and other allied health personnel. Treatment orders generated by doctors, nurses or hospital policy will be configurable at the local level and will be included on the Treatment Record.
  - 4.1. Nurses will have the ability to add, renew, edit and complete treatments.
  - 4.2. The Treatment Record will include:
    - 4.2.1. Treatment orders with start and stop dates/times;
    - 4.2.2. Treatment order status (complete, discontinue, renew);
    - 4.2.3. Comments;
    - 4.2.4. Treatment instructions.
  - 4.3. Documentation of treatment completion will be consistent with medication administration documentation.
  - 4.4. Display will be user configurable.
  - 4.5. Trend data according to user configured timeframe.
  - 4.6. Treatment reports will include:
    - 4.6.1. Treatments due;
    - 4.6.2. Missed treatments;
    - 4.6.3. User-defined queries;
    - 4.6.4. Null reports “No treatments found for this patient.”
  - 4.7. Treatments with stop dates will automatically default to discontinued.
  - 4.8. Allow users to send CPT and ICD outpatient encounters codes to Patient Care Encounter (PCE) for treatments documented on the treatment record for outpatients.
  - 4.9. Identify interventions by status, i.e. Active, Suspended, Resolved.
  - 4.10. Provide the ability to add interventions based on reassessment.
  
5. **Interdisciplinary Patient Assessment (IDPA)** – Interdisciplinary Patient Assessments involve multiple disciplines responsible for assessing the patient from their perspective and expertise. These assessments are required to be accessible in one integrated location. The following requirements apply to the Nursing Patient Assessment section

and will not necessarily be appropriate for other clinicians involved in the patient assessment:

- 5.1. Allow local configuration/design of patient assessments types (such as Admission, Clinic visit, Shift, Pain, Discharge) through selection of predetermined categories of assessment data (e.g., system-based such as respiratory, circulatory, or by other categories identified by the TAG);
  - 5.2. Include ability to set required fields;
  - 5.3. Provide a link for nurse to add new nursing orders and /or nursing consults from identified problems in the patient assessment module;
  - 5.4. Display previous assessments;
  - 5.5. Include a diagram of body for charting of scars, pressures sores, pain location, and surgical sites;
  - 5.6. Allow assessment by multiple users and allow multiple signatures;
  - 5.7. Create treatment orders in the IDPA that will populate the Treatment Record;
  - 5.8. Identify interventions in the IDPA that will populate the Interdisciplinary Plan of Care;
  - 5.9. Provide notification when an unsigned/incomplete assessment exists for a patient;
  - 5.10. Following reassessment, provide the ability to add additional interventions to the Interdisciplinary Plan of Care.
6. **Interdisciplinary Plan of Care (IDPC)** - The IDPC will be created to accommodate entry of treatment plans by multiple disciplines to meet JCAHO requirements. The IDPC is developed for each patient and is based on patient assessment, problem identification, and intervention. The nursing section of the IDPC will:
- 6.1. Allow local configuration/design of plan of care (such as Admission, Clinic visit, Shift, Pain, Discharge) through selection of predetermined categories.
  - 6.2. Include ability to set required fields.
  - 6.3. Display previous plans of care.
  - 6.4. Include diagram of body for charting of scars, pressures sores, pain location, surgical sites.
  - 6.5. Allow creation of a plan of care by multiple users and allow multiple signatures.
  - 6.6. Create treatment orders in the IDPC that will populate the Treatment Record.
  - 6.7. Provide notification when an unsigned/incomplete plan of care exists for a patient.
  - 6.8. Link active interventions to a staffing methodology (see section on administration);
  - 6.9. Retire current nursing plans of care from HealthVet-Vista.
7. **Vitals/Measurement (V/M)** - Modifications to the V/M V5 application will include:
- 7.1. A common user interface as the single point of entry from other applications to V/M;
  - 7.2. Placing a data entry point within BCMA to V/M, including all qualifiers;
  - 7.3. Linkages so that V/M entered into one application will be displayed in identified applications;
  - 7.4. The ability to correct “Vitals entered in error” from HealthVet-Vista. The “Vital entered in error” and the corrected version will automatically display in all identified applications. (Maintain audit trail);
  - 7.5. Modify V/M entry to accept all V/M qualifiers at the point of data entry;
  - 7.6. Make pain scores consistent with pain management guidelines;

- 7.7. Enable trending and graphing based on user configuration;
  - 7.8. Incorporate pain management qualifiers;
  - 7.9. Enable user to configurable pain management reports.
  - 7.10. Display data from BCMA including:
    - 7.10.1. Response to PRN pain meds;
    - 7.10.2. Pain score;
    - 7.10.3. Ordered medications which require V/M prior to administration.
  - 7.11. Create bi-directional interfaces from automated measurement devices, i.e. blood pressure monitors, CareView Monitors and etc. See Appendix A for automated measurement devices requiring interfaces with the NIIS.
8. **Intake and Output (I&O)** – Enhancements to the Intake and Output application to include:
- 8.1. User configurable data fields;
  - 8.2. Reporting of I&O totals by type of body fluid and summary amounts over a user configurable timeframe;
  - 8.3. Storage and display of all fluid recordings from flow sheets (drains, emesis, etc.);
  - 8.4. Activate I&O for a given patient based upon Physician’s Order, Unit Protocol or Nursing Order;
  - 8.5. Provide a single point of entry for I&O from the HealthVet-VistA;
  - 8.6. Create bi-directional interfaces from infusion devices or other COTS applications to upload intake totals;
  - 8.7. Entry of intake totals from BCMA for administered IV’s.
9. **Administration Module** - Administrative functions are used in the management of nursing personnel. The administrative modules have yet to be analyzed by the NNEC. At a minimum, the following functionality will be required:
- 9.1. Communication to Administration Module should be automated whenever possible;
  - 9.2. Use nursing documentation of specified procedures or interventions to calculate the acuity of a patient in a workload/staffing methodology;
  - 9.3. Automatic notification to Administration from the clinical ward setting of user configured patient events, i.e., letters of AMA, on pass, Absent Sick In Hospital (ASIH).
  - 9.4. Enhance the current Staff Assignment Sheets to include:
    - 9.4.1. Patient assignment;
    - 9.4.2. Identification of patients added and removed during the shift
    - 9.4.3. Meal/Break Assignment;
    - 9.4.4. Editable by RNs only;
    - 9.4.5. Audit capabilities;
    - 9.4.6. Ability to purge or archive.
  - 9.5. Procure a staffing schedule package that could be linked to the staffing methodology/Acuity (Classification) system.
  - 9.6. Track information on nursing personnel and reports on their:
    - 9.6.1. Demographic/personal data;
    - 9.6.2. Previous professional experience;
    - 9.6.3. Work assignments;
    - 9.6.4. Grade;

- 9.6.5. Licensure;
- 9.6.6. Certification;
- 9.6.7. Professional education;
- 9.6.8. Professional experience;
- 9.6.9. National certification.
- 9.7. Enhance the Position Control file to monitor:
  - 9.7.1. Past, current, and future nursing position;
  - 9.7.2. Future vacancies;
  - 9.7.3. Reason for vacancy;
  - 9.7.4. Start/stop dates for the position;
  - 9.7.5. The level of the employee filling the position;
- 9.8. Automatic update to the professional experience in the staff record when a registered nurse's assignment is changed.
- 9.9. Generation of management reports on ward/service FTEE statistics as well as ward and bed section workload/variance reports. The option that prints current workload reports can generate data on both the current and next tours of duty.
- 9.10. Accumulation of daily statistics on the number of patients treated in the following sections:
  - 9.10.1. Hemodialysis patients;
  - 9.10.2. Drug/Alcohol patients;
  - 9.10.3. Recovery Room;
  - 9.10.4. Domiciliary;
  - 9.10.5. Medical/Surgical;
  - 9.10.6. Critical Care;
  - 9.10.7. Extended Care;
  - 9.10.8. Spinal Cord Injury.
- 9.11. Generate daily, monthly, quarterly, and yearly management reports:
  - 9.11.1. FTEE Budgeted/Actual;
  - 9.11.2. Patient Classification;
  - 9.11.3. Manhours;
- 9.12. Provide workload statistics based on the above management data;
- 9.13. Provide telephone list of employees by service or nursing location;
- 9.14. Provide miscellaneous patient acuity report;
- 9.15. Provide a mechanism to track the outcomes of patient classification validation activities.
- 9.16. Education functionality that:
  - 9.16.1. Tracks employee continuing education data;
  - 9.16.2. Prints an AA/Funding Requests Report which indicates money authorized for C.E. attendance by specific year;
  - 9.16.3. Tracks mandatory in-service information for multiple years. Information on program attendance can be provided by last attendance date or for three full fiscal years. Deficiency reports are available for the current or past three years.

### **Additional Development Considerations**

- An agreed upon Nursing Taxonomy will be entertained for incorporation into the recommendations for development

- Standard Nursing Intervention ABC Codes will be incorporated into the development to ensure capturing billable nursing charges.
- A COTS staffing methodology package, to include patient acuity/classification, will be purchased as one of the modules of the NIIS.
- Support for JCAHO standards.
- Nurses in outpatient areas will need access to BCMA for documentation of medications and retrieval of medication administration history.
- A new ordering group called Nursing will need to be created in CPRS to allow nurses to determine specific behaviors of nursing orders.
- See Appendix A for list of COTS software products required to interface with the NIIS.

## **Description of Changes**

For the purposes of this document, this section should be called “Description of New Development.”

The following is a list of technological assumptions that are anticipated as being available to all of the modules specified in this document at the time development begins.

- All Nursing sponsored applications (i.e., Nursing package, V/M, I&O) will be re-engineered and re-hosted.
- All modules will interact in a consistent and predictable way regardless of platform. In this way users will not be confused by inconsistent module behavior.
- The system will be built upon an extensible framework.
- The system will be developed as integrated, independent modules. Appendix B depicts a schematic of the module interrelationships.
- There will be single sign-on capability.
- It will use role-based security for access to functions.
- It will use a role-based perspective to determine the type of reports that would be displayed to staff based on their role. In other words, displays and entry screens will be presented with different degrees of detail based on the level of staff (Registered Nurse (RN), Graduate Nurse Technician (GNT), Licensed Practical or Vocational Nurse (LPN/LVN), Nursing Assistant (NA), Certified Nursing Assistant (CNA), ward clerk, etc.)

### **1. Nursing Kardex**

1.1. The Nursing Kardex will require the following data entry screens:

- 1.1.1. Isolation Type;
- 1.1.2. Comments.

1.2. The Nursing Kardex will send and receive data from the following files:

- 1.2.1. Audit File (new);
- 1.2.2. 90 day history file (new);
- 1.2.3. Current Kardex Display (new);
- 1.2.4. NIIS Isolation Types file (new);
- 1.2.5. Nurse Preference (new);
- 1.2.6. Patient File (#2);

- 1.2.7. IDPA database (new);
  - 1.2.8. IDPC data base (new);
  - 1.2.9. ICD Diagnosis (#80);
  - 1.2.10. Patient Allergies (#120.8);
  - 1.2.11. Diet. Patient-Diet (#115\*);
  - 1.2.12. Orders (OE/RR) (#100);
  - 1.2.13. Specialty (#42.4);
  - 1.2.14. New Person File (#200);
  - 1.2.15. Type of Patient (#391);
  - 1.2.16. Patient Movement (#405);
  - 1.2.17. GMRV Vital Measurement (#120.5);
  - 1.2.18. GMRV Orders - Vitals (#120.55);
  - 1.2.19. Appointment Status (#409.63);
  - 1.2.20. Ambulatory Procedure (#409.71);
  - 1.2.21. ICD Operation Procedure (#80.1);
  - 1.2.22. Drug-General Drug (#50\*3000);
  - 1.2.23. Drug Classification (#50.5);
  - 1.2.24. Prescription-Entire RX (#52\*3000);
  - 1.2.25. IV Additive (#52.6);
  - 1.2.26. Pharmacy Patient-IV (#55\*3000);
  - 1.2.27. TIU Document Definition (#8925.1).
- 1.3. It will produce the following reports:
- 1.3.1. Nursing Kardex;
  - 1.3.2. Audit.

## 2. **Shift Report**

- 2.1. Shift report will require data entry screens for:
  - 2.1.1. Comments;
  - 2.1.2. Configuration;
  - 2.1.3. Preferences;
  - 2.1.4. To Do List.
- 2.2. It will send and receive data from the following files:
  - 2.2.1. Nursing to do list;
  - 2.2.2. Nurse Preferences;
  - 2.2.3. Patient list;
  - 2.2.4. Shift Report Configuration;
  - 2.2.5. IDPA database (new);
  - 2.2.6. IDPC database (new);
  - 2.2.7. BCMA Report Request (#53.69);
  - 2.2.8. Beneficiary Travel Claim (#392);
  - 2.2.9. Treatments file (new);
  - 2.2.10. 24 Hour Administrative Report.
- 2.3. It will produce the following reports:
  - 2.3.1. Shift Report – timeframe configurable;
  - 2.3.2. Configuration;
  - 2.3.3. Preferences.

### **3. Clinical Flow Sheet**

- 3.1. The Clinical Flow Sheet will require data entry screens for:
  - 3.1.1. Configuration;
  - 3.1.2. V/M;
  - 3.1.3. I&O;
  - 3.1.4. Treatment Record.
- 3.2. It will send and receive data from the following files:
  - 3.2.1. Patient Education (New File);
  - 3.2.2. Data from blood glucose machine (New Database);
  - 3.2.3. BCMA;
  - 3.2.4. Role based access Configuration;
  - 3.2.5. Orders (OE/RR), including text orders (#100);
  - 3.2.6. V/M;
  - 3.2.7. I&O;
  - 3.2.8. Appointment Management.
- 3.3. It will produce the following reports:
  - 3.3.1. Specialized flow sheet;
  - 3.3.2. Patient Education.

### **4. Treatment Record**

- 4.1. The Treatment Record will require data entry screens for:
  - 4.1.1. Enter/Edit/Renew a treatment;
  - 4.1.2. Nurse Preferences;
  - 4.1.3. Configuration.
- 4.2. It will send and receive data from the following files:
  - 4.2.1. Treatment Record Configuration;
  - 4.2.2. Nurse Preferences;
  - 4.2.3. Missed Treatment List;
  - 4.2.4. Treatment Due list;
  - 4.2.5. Treatment Bar Code;
  - 4.2.6. Role based access Configuration;
  - 4.2.7. Shift Report;
  - 4.2.8. Flow Sheet;
  - 4.2.9. Kardex;
  - 4.2.10. IDPC;
  - 4.2.11. IDPA;
  - 4.2.12. Outpatient Encounter.
- 4.3. It will produce the following reports:
  - 4.3.1. Treatment Record;
  - 4.3.2. Configuration;
  - 4.3.3. Preferences.

### **5. Interdisciplinary Patient Assessment (IDPA)**

- 5.1. The IDPA will require data entry screens for:
  - 5.1.1. Patient Assessment;
  - 5.1.2. Treatment Orders;
  - 5.1.3. Interventions;
  - 5.1.4. Consults;

- 5.1.5. Problem List;
- 5.1.6. Configuration.
- 5.2. It will send and receive data from the following files:
  - 5.2.1. IDPA database;
  - 5.2.2. IDPC database;
  - 5.2.3. IDPA Configuration;
  - 5.2.4. IDPA Preferences;
  - 5.2.5. Incomplete Assessments;
  - 5.2.6. Patient Teaching Templates;
  - 5.2.7. National Nursing Assessment Standards;
  - 5.2.8. System-based Patient Assessment Templates;
  - 5.2.9. Standard Tools of Assessment;
  - 5.2.10. Body back and front;
  - 5.2.11. Problem List;
  - 5.2.12. Treatment Record;
  - 5.2.13. Kardex;
  - 5.2.14. BCMA.
- 5.3. It will produce the following reports:
  - 5.3.1. Patient Assessment;
  - 5.3.2. Incomplete Assessment.

## **6. Interdisciplinary Plan of Care (IDPC)**

- 6.1. The IDPC will require data entry screens for:
  - 6.1.1. Plan of Care;
  - 6.1.2. Treatment Orders;
  - 6.1.3. Interventions;
  - 6.1.4. Consults;
  - 6.1.5. Problem List;
  - 6.1.6. Configuration.
- 6.2. It will send and receive data from the following files:
  - 6.2.1. IDPA database;
  - 6.2.2. IDPC database;
  - 6.2.3. Intervention status;
  - 6.2.4. IDPC Configuration;
  - 6.2.5. IDPC Preferences;
  - 6.2.6. Problem List;
  - 6.2.7. Treatment Record;
  - 6.2.8. Kardex;
  - 6.2.9. BCMA.
- 6.3. It will produce the following reports:
  - 6.3.1. IDPC;
  - 6.3.2. Incomplete Care Plan.
- 6.4. It will require the retirement of the Text Generator.

## **7. Vitals/Measurement (V/M)**

- 7.1. The V/M will require data entry screens for:
  - 7.1.1. Common user interface for V/M;
  - 7.1.2. Vitals Entered in Error;

- 7.1.3. Configuration;
- 7.1.4. Preferences.
- 7.2. It will send and receive data from the following files:
  - 7.2.1. V/M;
  - 7.2.2. Standalone measurement devices.
- 7.3. It will produce the following reports:
  - 7.3.1. V/M.

8. **Intake and Output (I&O)** – the I&O module is on the PS sequencing plan for development to begin 10-01-03. Therefore, the changes required for this module have not been included in the function point count.

- 8.1. I&O will require data entry screens for:
  - 8.1.1. I&O;
  - 8.1.2. Configuration;
  - 8.1.3. Preferences.
- 8.2. It will send and receive data from the following files:
  - 8.2.1. I&O;
  - 8.2.2. Standalone infusion devices.
- 8.3. It will produce the following reports:
  - 8.3.1. I&O.

9. **Administration Module** - The requirements and enhancements to the Administrative Module were not fully developed in this IRA. Therefore, the changes required for this module have not been included in the function point count.

## Data Quality Issues

- Current data issues include incomplete and fragmented documentation, inconsistent format and quality along with variable requirements. Enhanced software functionality will increase the likelihood of quality documentation of care in addition to improving the patient safety, efficiency of nursing.
- Areas that do not have required fields will be vulnerable for incomplete data.
- Monitoring of data quality rests at the local facility level.

## Dependencies

Nursing software will rely on the HealthVet Desktop framework for:

- Single sign on;
- Context Management through Clinical Context Object Workgroup (CCOW);
- Security;
- Data access;
- Integrated help;
- Integrated printing;
- Access to common Nursing Terminology.

Increased Provider Systems staffing will be required to meet the requirement for re-hosting and re-engineering of the V/M, I&O, and Nursing packages. Additional HDS staffing will be required to support interfacing with HealthVet Desktop framework.

### **Training Issues**

For the development team, developers will need to learn Java, Oracle, Extensible Markup Language (XML), Vitria, CCOW and other additional infrastructure utilities and applications used to support HealthVet Desktop framework. The CPRS-R team will provide a walkthrough and guidelines on how to develop modules to run within the HealthVet Desktop.

For the end users, it is not possible to determine specific training requirements for a national deployment at this time, yet an extensive training and implementation plan will be required. Future training issues may change from what will be seen as current training needs based on the implementation of new frameworks and platforms.

Training will need to be coordinated through System Implementation and the Employee Education System.

### **Hardware Issues**

In order to use the functionality described in this request, each facility and clinic will need to evaluate its hardware's ability to implement the increased functionality this package contains based on the results of the ASSESS evaluation. Each facility will bear the responsibility for upgrading their hardware as needed. Cost of hardware will vary depending on current status and modality of nursing and staffing levels at point of care areas. Minimum hardware standards will need to be established since the software is expected to exceed current capabilities. Hardware to support HealthVet Desktop framework will need to be met within this requirement. To take advantage of the increased functionality and to enter data at point of care requires wireless devices.

### **Change Management**

Implementation of a new, re-engineered NIIS will create significant changes to the business process. The NNEC will need to review the system specifications and evaluate the impact of the changes to the business process across the VA. Changes to business processes will have to be communicated to the facilities across the nation. Physicians and ancillary departments within facilities and clinics will need to be made aware of the changes as the NIIS will impact where and how they reference nursing information in the Patient Record.

## Capacity Issues

The time standard for systems response will be researched. Facilities will need to upgrade their systems to comply with an identified response standard. The standard response time for web-based applications is 3 to 5 seconds. This will be a major issue for most facilities.

The ASSESS Preliminary Scoring Criteria Form for the NIIS has been submitted to Capacity Management of their analysis. Results pending as of 03/20/03.

## Job Size/Effort Estimate

Job Size/Effort Estimate	PS	Total
Data Function Size (ILFs, EIFs)	515	515
Transactional Function Size (EIs, EOs, EQs)	731	731
Unadjusted Project Size (the raw, unweighted project size)	1246	1246
Adjusted FP Count (the current project size)	1415	1415
Expanded Adjusted FP Count (The estimated size upon release. Enter this value in TSPR)	2209	2209
Estimated Total Project Work Hours (based on 30 hrs/EAFP)	66270	66270
Estimated Total Project Duration in months	33	33

\*

\*This does not include re-engineering/re-hosting of I&O or the Nursing Administration module.

## Impacts

The development team(s) will be impacted by work that is yet to be defined. Such work has the potential of severely taxing the team(s) in the future. This includes, but is not limited to:

- Health Insurance Portability and Accountability Act (HIPAA);
- HealthVet Desktop framework;
- Pharmacy Re-Engineering Initiative;
- Lab Re-Engineering Initiative;
- Billing Awareness;
- VistA Blood Establishment Computer Software (VBECS);
- HealthPeople;
- Interagency Information Sharing;
- BCMA;
- Congressional legislative changes.

## Alternatives

Because of the uniqueness of this project, it will be more efficient and cost effective to use the internal resources that have been dedicated to this project for several years. Management of the NIIS project initiative using iterative development lifecycle (IDL) will produce a quality product acceptable to nursing users, decrease development and maintenance costs, expedite integration with the HealthVet Desktop framework, and reduce overrun costs due to unplanned congressional initiatives. Outsourcing and contracting-in resources to accomplish the work are not considered appropriate alternatives.

Where a COTS product has been identified for its administrative features, a Request For Proposal (RFP) will be generated for procurement, then the appropriate interfaces will be developed.

<b>Recommendation</b>
The schedule indicated in the sequencing plan targets 10/01/2003 for re-engineering and rehosting of the Intake and Output package. Therefore, this initiative should begin on 10/01/2003 pending acquisition of appropriate Provider System resources.

**I. Automated measurement devices**

- A. Blood pressure monitors
  - 1. IVAC model 4200
  - 2. IVAC Alaris model 4415
  - 3. Dinamap - J&J Medical Model 9340
  - 4. Datascope
- B. Intravenous Flow Control devices
  - 1. IVAC Alaris model 4415
  - 2. IVAC model 4200
  - 3. ALARIS Signature Gold infusion pumps, model 7230B
  - 4. Baxter 1 Pump for PCA
  - 5. Epidural Pumps
  - 6. IMED Pumps
  - 7. Sarns 3M-Perfusion Pump
- C. Critical care monitors
  - 1. Philips Medical Care Vue
  - 2. Philips Medical Cardiac Monitors
  - 3. Passport 2 (Datascope)
  - 4. GE Marquette
  - 5. SpaceLabs
  - 6. MUSE
  - 7. Phillips Medical Model M1176A central station ICU monitor
  - 8. Datex Monitors for Operating Rooms
- D. Hemodialysis equipment
  - 1. Fresenius
  - 2. Braun
  - 3. Seiman's
  - 4. Gambro Prisma CRRT
- E. Pulse Oximetry devices
  - 1. Nellcor Puritan Bennett nbp-40
- F. Fingerstick blood glucose devices
  - 1. AccuCheck by Roche
  - 2. LifeScan by Boehringer-Mannheim
  - 3. MediSense by Abbott
  - 4. Sure Step Flex by LifeScan
  - 5. Precision PCx-Glucometer
- G. Respirators/Ventilators
  - 1. Puritan Bennett 7200
  - 2. Puritan Bennet 840
  - 3. Bear 1000
  - 4. Adult Star
  - 5. Draeger
  - 6. BiPap/Vision
  - 7. Respiroics
  - 8. Servo Ventilator
- H. Miscellaneous
  - 1. Retinal Camera (EENT Clinic)
  - 2. Datascope IABP device

3. Ohmeda-Anesthesia machines
4. Urometers (Urology Clinic)

## II. COTS products

- A. Resident Assessment Instrument/Minimum Data Set (RAI/MDS) software by ACCUMAX
- B. Vitalnet data analysis software from Expert Health Data Programming, Inc. This is a solution for linking, analyzing and disseminating data. It provides the data analysis / data dissemination infrastructure for a national, state, city, agency or corporate data center
- C. Vitalchek software for the remote ordering of birth certificates and other vital records
- D. Interqual/McKesson CareEnhance software solutions. InterQual clinical decision support tools; products and services for case, disease, and utilization management and nurse triage; and software tools and applications that support health information, referral, workflow, analysis, and reporting processes
- E. Rals-G: a total glucose data management solution that obtains data from a point-of-care device, transfers it to the network, and directs it to the laboratory database
- F. Pices Chart – documentation software
- G. CareFusion – software solution, supported by their handheld device, for BCMA and likely CPRS after interface (in progress with BCMA developers)
- H. Reference Software
  1. Micromedex
  2. UpToDate – online clinical reference
  3. National Formulary
  4. Med Line Plus
  5. Ebsco Subscription Service
  6. Stat!Ref Electronic Medical Library
  7. Online MDConsult – Harriet Lane Handbook
  8. Harrison's Online - Harrison's Principles of Internal Medicine
  9. InfoPOEMS Clinical Awareness System
  10. EXELCARE Nursing documentation software
  11. Mosby's Nursing Diagnoses, Outcomes and Evaluations (AKA NIC\_NOC)
  12. ProQuest
  13. Ovid

