

Medsphere Systems Corporation

From VistA to OpenVista

***Enhancing a Clinically
Proven Health IT Platform***



Medsphere[®]
Transforming Healthcare

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Medsphere Enhances VA VistA for Advanced Care in Non-Federal Hospitals

As the last major industry to deal with the enterprise-wide information technology question—to embrace or not to embrace—healthcare proceeds daily through the provision of care with electronic health records (EHR) as a constant companion. For some providers, the EHR is a ubiquitous tool that facilitates clinical and other functions. For others, it is the promise and challenges the EHR represents, both in terms of culture and finance, which looms large.

Though it persists, the complex dance with information technology is not necessarily new to healthcare. Beginning in the early 1970s, the U.S. Department of Veterans Affairs (VA) started the lengthy and fitful process of making many clinical support functions electronic, culminating in system-wide adoption of the VistA EHR in the mid-1990s.

VistA is a comprehensive integrated support tool that reduces medical errors, facilitates preventive care, compiles patient records in one location for the benefit of clinicians, and simplifies the statistical tracking of various indicators through the use of a single database. VistA has been the primary tool in a revolutionary reordering of reality at the VA, yielding a cost-efficient and clinically sound agency that now bests the private sector in many quality indicators and serves as a prime example of how IT can improve healthcare.

Giving VistA a Modern Face

For all its positive features, VistA still requires upgrades and enhancements, as would any IT system of even moderate age.

Enter Medsphere Systems Corporation.

Since inception in 2002, Medsphere's goal has been to develop the VistA system for use by the commercial healthcare market. In OpenVista®, Medsphere's commercial version of VistA, the company extends indefinitely the lifecycle of a highly functional tool by leveraging both the billions of federal dollars invested in the system, and targeted venture capital focused on applying modern programming languages and methods. Medsphere has also infused the project with open-source philosophy and tools, giving clients the flexibility to choose among alternative EHR architectures.

A Comprehensive Tool with Contemporary Functionality

OpenVista meets commercial healthcare's automation, patient safety, performance and functionality needs while remaining a cost and clinically effective tool that delivers value well into the future.

OpenVista represents a single solution that can be leveraged across the continuum of acute, ambulatory and long-term care environments as well as in multi-facility, multi-specialty healthcare organizations. The high degree of integration across the enterprise has significant advantages in increasing clinical performance, reducing costs and improving healthcare outcomes. It also facilitates the collection of data for the extended care team and such nonclinical care uses as billing, quality management, outcomes reporting and resource planning.

Detailing the Enhancements

The focus of this document is on detailing the considerable changes Medsphere has made and continues to make to the VistA EHR in creating OpenVista, as well as enhancements in the works and planned for the near future.

For the sake of organization, the completed enhancements are divided into Functional and Technological changes, in that order. The reader should not interpret one type as more valuable than the other—each will appear more relevant to a particular group of OpenVista users. Changes listed below should be viewed as simply initial enhancements in a process that will see Medsphere make continued improvements to an already highly functional, proven clinical solution.

Functional Enhancements

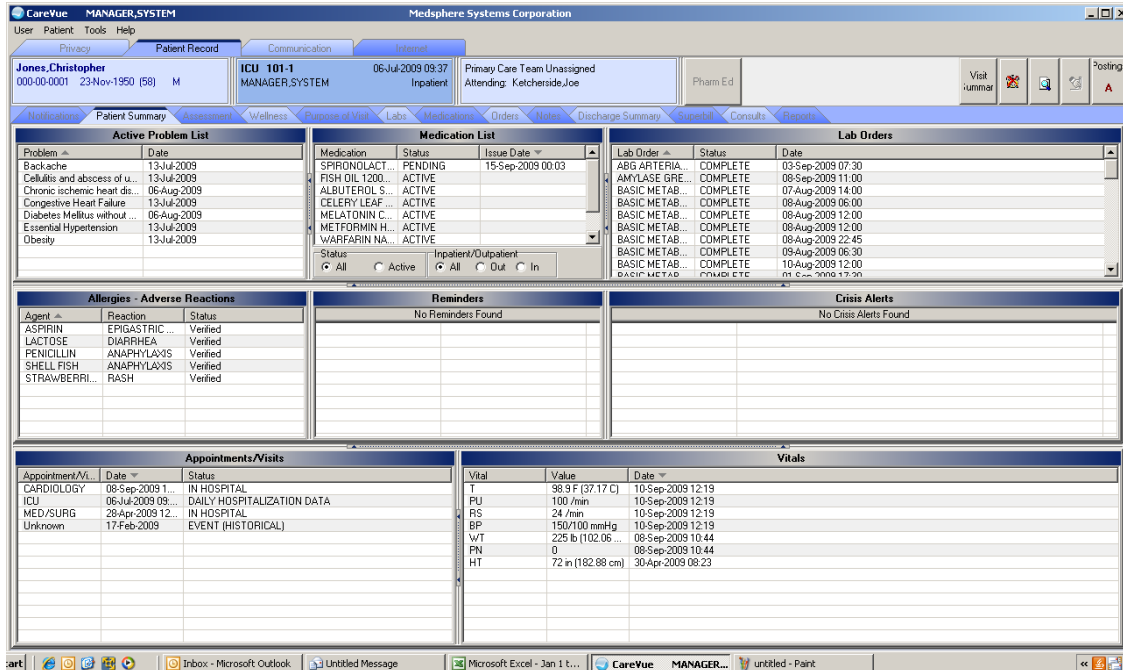
At the user interface level, Medsphere has made significant changes to the way in which users interact with the system and how OpenVista facilitates better and more efficient job performance. Medsphere has expanded the functionality found in VistA and the Computerized Patient Record System (CPRS) in creating OpenVista CareVue, Medsphere's core electronic medical record (EMR).

Beyond CareVue, Medsphere has incorporated additional functionality, user interfaces and applications into the overall OpenVista solution to meet the needs of commercial healthcare environments. All of the enhancements listed in this section are currently available unless otherwise explained.

OpenVista CareVue

At the core of OpenVista is CareVue, a comprehensive EMR that provides clinicians with a single interface for all patient information. In developing CareVue, Medsphere's version of CPRS, we have made a number of functional improvements:

- Patient photo attached to the electronic record
- eSignature added/updated directly within the CareVue application
- Unlimited tests allowed on Laboratory worksheet
- Expiring medication orders highlighted to show attention is required
- Viewing of all unsigned notes
- Home medication orders can be moved to inpatient or outpatient medication orders
- Enhanced clinical note template fields (Float, Time, Provider listing)
- Vital Signs Application embedded in CareVue
- Outpatient prescriptions can be printed for filling at external pharmacy
- Pharmacokinetic dosing calculated for support during ordering process
- Infant weights displayed in pounds/kilos to two decimal places
- Method of weight calculation matched from server to client for precise display
- Pediatric growth chart supported within Vitals use and display
- Enhanced display and sorting of orders chart tab
- Improved overall usability to support commercial clinical workflow
- Patient banner improved to include additional data such as MRN, account number, DOB
- Clinician assigned to each patient
- Photos of wounds, signed documents and other images uploaded to the patient record



Active Problem List

Problem	Date
Backache	13-Jul-2009
Celulitis and abscess of u...	13-Jul-2009
Chronic ischemic heart dis...	06-Aug-2009
Congestive Heart Failure	13-Jul-2009
Diabetes Mellitus without ...	06-Aug-2009
Essential Hypertension	13-Jul-2009
Obesity	13-Jul-2009

Medication List

Medication	Status	Issue Date
SPIRONOLACT...	PENDING	15-Sep-2009 00:03
FISH OIL 1200...	ACTIVE	
ALBUTEROL S...	ACTIVE	
CELERY LEAF ...	ACTIVE	
MELATONIN C...	ACTIVE	
METFORMIN H...	ACTIVE	
WARFARIN NA...	ACTIVE	

Lab Orders

Lab Order	Status	Date
ABG ARTERIA...	COMPLETE	03-Sep-2009 07:30
AMYLASE GRE...	COMPLETE	08-Sep-2009 11:00
BASIC METAB...	COMPLETE	07-Aug-2009 14:00
BASIC METAB...	COMPLETE	08-Aug-2009 06:00
BASIC METAB...	COMPLETE	08-Aug-2009 12:00
BASIC METAB...	COMPLETE	08-Aug-2009 12:00
BASIC METAB...	COMPLETE	08-Aug-2009 22:45
BASIC METAB...	COMPLETE	09-Aug-2009 06:30
BASIC METAB...	COMPLETE	10-Aug-2009 12:00
BASIC METAB...	COMPLETE	10-Aug-2009 13:30

Allergies - Adverse Reactions

Agent	Reaction	Status
ASPIRIN	EPIGASTRIC ...	Verified
LACTOSE	DIARRHEA	Verified
PENICILLIN	ANAPHYLAXIS	Verified
SHELL FISH	ANAPHYLAXIS	Verified
STRAWBERRI...	RASH	Verified

Reminders
No Reminders Found

Crisis Alerts
No Crisis Alerts Found

Appointments/Visits

Appointment/Vi...	Date	Status
CARDIOLOGY	08-Sep-2009 1...	IN HOSPITAL
ICU	06-Jul-2009 09...	DAILY HOSPITALIZATION DATA
MED/SURG	26-Apr-2009 12...	IN HOSPITAL
Unknown	17-Feb-2009	EVENT (HISTORICAL)

Vitals

Vital	Value	Date
T	98.9 F (37.17 C)	10-Sep-2009 12:19
FU	100 /mm	10-Sep-2009 12:19
RS	24 /min	10-Sep-2009 12:19
BP	150/100 mmHg	10-Sep-2009 12:19
WT	225 lb (102.06...	08-Sep-2009 10:44
FN	0	08-Sep-2009 10:44
HT	72 in (182.88 cm)	30-Apr-2009 08:23

Figure A: Enhanced Clinical View – OpenVista CareVue

Medsphere's development efforts are also accommodating the healthcare market outside the English-speaking world by internationalizing CareVue to work with other languages. OpenVista is capable of right to left display, making it amenable to the protocols of many other languages. Medsphere has beta tested CareVue and is in the process of rolling it out to new and existing customers.

Clinical Flowsheets

Clinical flowsheets enable users to document and correlate patient data (vital signs, intake and output, medications, assessments, clinical findings) and tailor the information to meet the unique needs of the nursing unit, care area or department. The flowsheets support multi-disciplinary data views and charting, and are designed to import validated data directly from the patient monitor and ventilator.

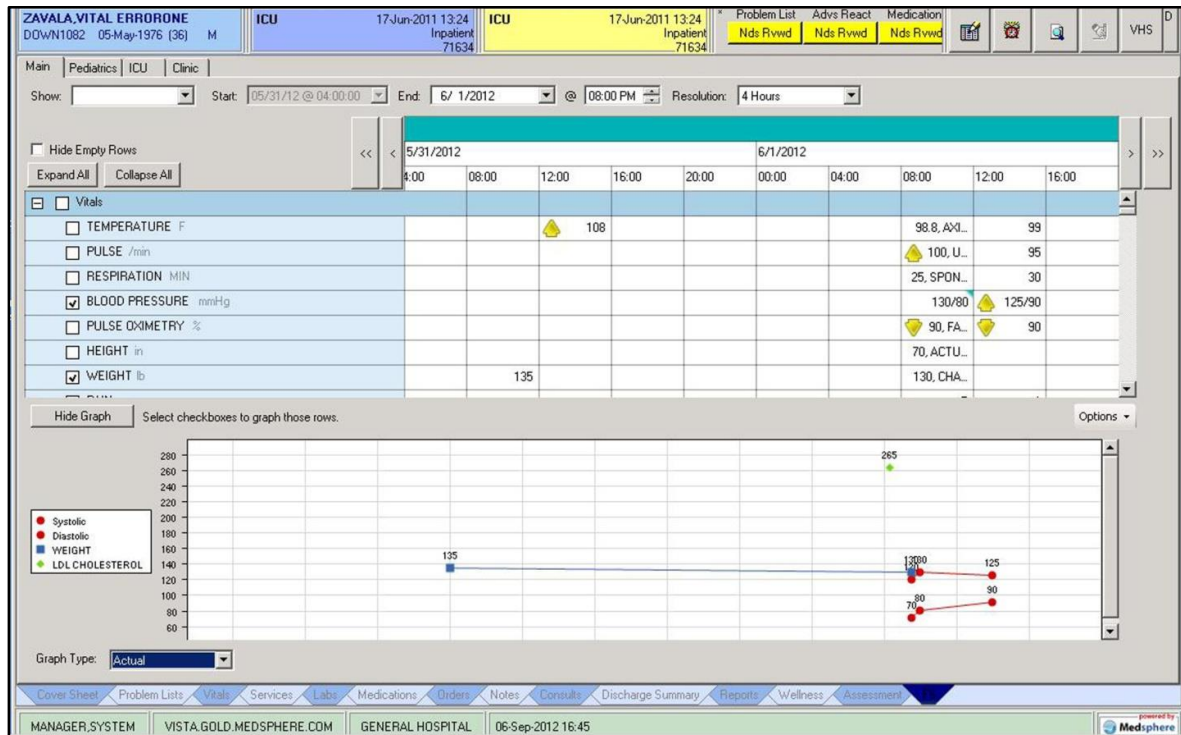


Figure B: OpenVista Clinical Flowsheets

Multi-disciplinary Treatment Plan

Designed in close collaboration with clinicians at Medsphere customer Silver Hill Hospital, the OpenVista Multidisciplinary Treatment Plan (MDTP) coordinates mental health care across members of the care team and supports patient progress management, eliminating the need to scour and cross-reference a library of paper records. The first integrated treatment planning module built on the OpenVista platform, MDTP fits seamlessly into clinical workflows and enables clinicians and other care team members to plan, coordinate, and document individual components of the care plan and track progress toward overarching goals; MDTP also uses plan update prompts and notifications to support treatment team compliance with regulatory requirements.

OpenVista Group Notes functionality assists providers in documenting group therapy sessions and events such as immunization clinics, enabling the easy assembly of patient groups based on clinic, specialty, ward, team or provider. Group Notes permits the note author to specify parts of a note and encounter data that apply to the entire group, and parts that apply to individuals. After note and encounter information are complete, the module accepts a single signature for the entire group.

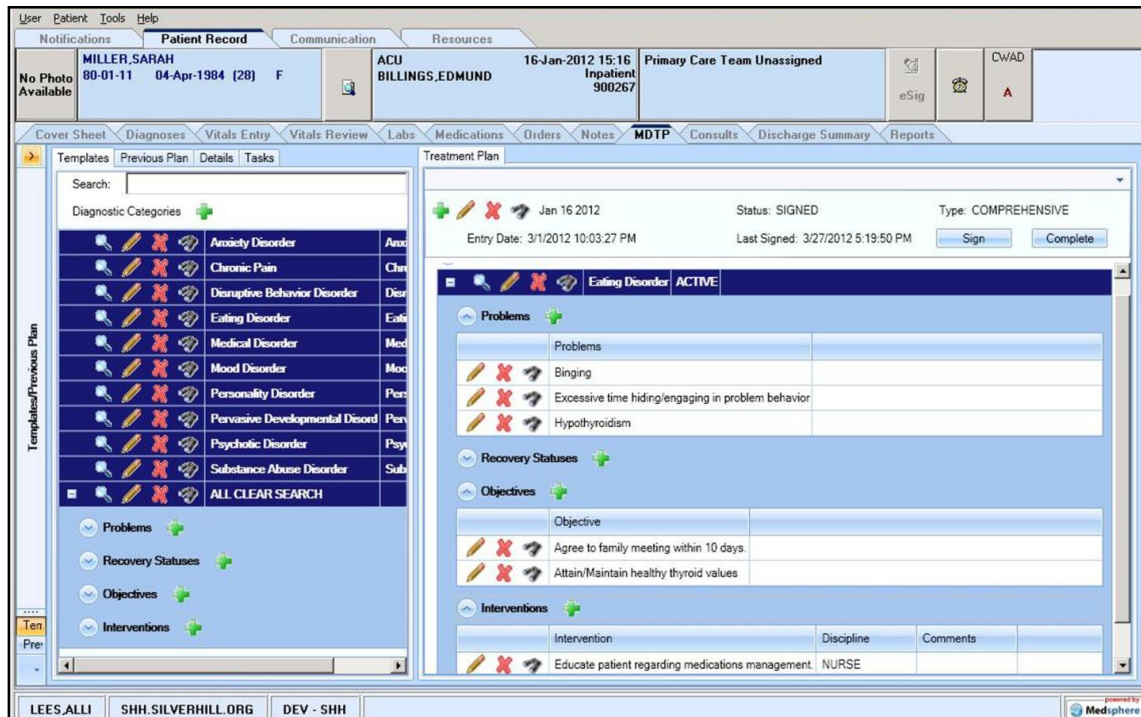


Figure C: The OpenVista Multi-disciplinary Treatment Plan

Surgery Scheduling / OR Patient Tracking Board

Surgeons, surgical residents, anesthesiologists, operating room nurses and other surgical staff use the OpenVista Surgery Scheduling application to schedule surgical cases and track clinical patient data using a variety of administrative and clinical reports.

The OpenVista Operating Room (OR) Patient Tracking Board is an electronic display status board that displays patient surgery information for a hospital staff on a dedicated monitor.

The OR Patient Tracking Board application includes both a view-only monitoring board and an editable component accessible only to users with the appropriate security keys

The view-only monitoring board displays encrypted patient information on monitors located in specific clinical and non-clinical areas of the hospital, e.g., pharmacy, laboratory, radiology, cafeteria and waiting areas. The application tracks patient times and milestones from check-in through the operative encounter to discharge from the surgical area.

Separate applications, the Surgery Scheduling and OR Patient Tracking Board tools readily exchange information to provide clinicians with relevant real-time data in a wide variety of hospital locales.

Meaningful Use

OpenVista is fully certified for 2014 Stage 1 and Stage 2 MU for both eligible hospitals and eligible providers. This certified version is being used by our clients today as they attest for MU payments.

Specifically, our OpenVista CareVue electronic health record, version 1.7, received complete EHR certification from InfoGard for inpatient settings (certificate number IG-2449-14-0012) on April 8, 2014, and for ambulatory environments (certificate number IG-2449-14-0019) on June 25, 2014.

Click [here](#) [or visit <http://tinyurl.com/nszdrtg>] to access the specific clinical quality measures for which OpenVista has been certified.

This Complete EHR is 2014 Edition compliant and has been certified by an ONC-ACB in accordance with the applicable certification criteria adopted by the Secretary of Health and Human Services. This certification does not represent an endorsement by the U.S. Department of Health and Human Services or guarantee the receipt of incentive payments.

ED Patient Dashboard

The ED Patient Dashboard supports the emergency environment and provides a snapshot view of patient progress and disposition. The Dashboard displays relevant operational and patient-related information in real time and is integrated with OpenVista CareVue, Medsphere's electronic medical record (EMR), to enable rapid access to detailed patient information including patient condition, orders status, and orders results.

Color-coded status indicators and lab counters change dynamically to inform clinicians in the ED of:

- Abnormal lab results
- Patient wait times
- Patients not yet seen by a doctor
- Patients admitted as inpatients
- Patients with pending orders

The ED Patient Dashboard includes a separate Big Board interface that may be shown on a large screen within the ED with Patient Health Information (PHI) protected in accordance with HIPAA.

After the completion of nursing and physician templates and signature by a doctor, OpenVista automatically discharges the patient.

The OpenVista Interface Suite

In developing and implementing OpenVista to date, Medsphere has created an Interface Suite that enables facilities to deploy an optimal clinical solution yet retain existing patient registration and financial applications.

- ADT Inbound
- Patient Charges Outbound (pharmacy, laboratory, radiology, consults)
- Transcribed Results Inbound (to Clinical Documentation)
- Radiology Image View Link (from PACS to the Clinical Documentation Module [non-DICOM]): The PACS system sends an HL7 message to OpenVista that contains a hyperlink to the stored image on the PACS system.
- Radiology Transcription Bidirectional (works in conjunction with Radiology Image View Link interface)
- Document Image Inbound (to Clinical Documentation): The Document/Image Interface receives document image files from ancillary systems and posts the files as attachments to notes. OpenVista can attach and display GIF, TIF, PNG, JPG, BMP and PDF files.
- Automated Dispensing Machine Inbound/Outbound (for medication dispensing): The bidirectional Automated Dispensing Machine Interface receives verified orders from the pharmacy and sends charge messages when medications are dispensed. The ADM Interface works primarily with Pyxis and Omnicell cabinet applications

Medication Reconciliation

Medsphere has enhanced the CareVue medication reconciliation process to assist hospitals in becoming Joint Commission compliant. Nurses record patient medications in the system so physicians and pharmacists can view the medication list and determine what a patient is taking during admission, discharge and transfer. From there, doctors can make changes to orders as required, document medication reconciliation for Meaningful Use and sign to confirm.

Pricing Engine

With the OpenVista Pricing Engine, pharmacy personnel can configure pricing rules for categories of drugs according to individual hospital need. These unique pricing rules allow various categories of drugs to be configured based on route, dosage form, DEA class, therapeutic (AHFS) class or any combination of these elements. Using these preset pricing rules, the Pricing Engine calculates billing quantities and prices for single- and multiple-component orders, and automatically sends them to the hospital's financial system. With its built-in Pricing Rule Validator, the Pricing Engine displays the steps used to calculate prices, making it a valuable tool to verify the accuracy of any price. The application provides the Healthcare Common Procedure Coding System (HCPCS) information necessary to submit Medicare claims.

OpenVista Radiology

Auto Check-In

Medsphere has enhanced the OpenVista Radiology application to automatically check in a patient and assign a case number on the day of the patient exam. This frees up the technician to perform other duties by eliminating the need to manually pull up a patient medical record upon arrival for an exam (e.g., X-rays, MRI and imaging).

Requisition Report Changes

The Radiology Application now automatically prints the radiology requisition report when the case number is assigned instead of at the time of order. In addition to the automatically assigned case number, this report includes critical tests (e.g., pregnancy) and bar coding of key information, such as medical record number and account number.

Worklist

The Radiology Worklist is a single-screen patient-tracking board that displays all radiology orders regardless of status. With the Radiology Worklist, users can view all patients, including those pending but not yet scheduled, enabling users to more efficiently schedule workloads and staffing requirements.

Query Tool

The Query Tool enables clinicians to take advantage of a greater range of clinical information within the OpenVista system. This tool allows clinicians to use the patient registry to search for clinical data related to appointments, orders, notes and results across multiple patients at once. The Query Tool also incorporates predefined and custom reports designated by patient list and time period. Any Query Tool report can be exported as a text file.

Patient and Physician Portals

OpenVista accepts structured data from external sources and incorporates a Web-based patient portal with direct messaging that is Meaningful Use 2014 compliant. A Clinician Portal provides secure remote access to patient data via virtual private network.

The Complete OpenVista Solution

OpenVista is a cost-effective, open and trusted comprehensive electronic health record (EHR) that enables healthcare providers to enhance patient safety, increase clinical and operational efficiencies, and improve the quality of delivered care. The integrated Medsphere OpenVista core system comprises eight (8) foundational components—seven (7) applications and a suite of interfaces—that support the clinical and nutritional service workflows of acute and ambulatory care facilities.

OpenVista CareVue

OpenVista CareVue provides a comprehensive electronic medical record (EMR) enabling clinicians to accurately and efficiently capture clinical encounters. Providers can enter, review, and update all order-related information connected with any patient, including ordering lab tests, medications, diets, radiograph exams, consults, and procedures. The CareVue Application includes the following functional modules:

- **The Patient Summary:** The Patient Summary provides a snapshot—a cover page, if you will—of the overall clinical state of a patient, including meaningful updates to the patient’s current and historic cross encounter condition.
- **Clinical Alerts and Reminders:** The primary purpose of the Clinical Alerts and Reminders Module is to enhance patient treatment by providing clinicians with relevant information at the point of care. Clinical Reminders empower clinical decision-making by basing reminders on a particular patient’s clinical data and allowing facilities to define reminders by local needs. One of the more valuable clinical alerts sets is created at the patient level and is visible to all clinicians across encounters.
- **Consults Tracking:** The Consults Tracking Module provides an efficient way for clinicians to order consultations and procedures from other providers or services within the healthcare system. It also provides a framework for tracking consults and reporting results or findings. Consults are included in a patient’s computerized patient record and are viewed as part of the integrated patient documentation. Healthcare providers can prevent future problems by educating patients about healthy behavior and tracking educational efforts such as patient education lesson plans, appointment attendance, assessments of learning needs, and the capabilities of the patient/family.
- **Clinical Documentation:** The Clinical Documentation Module provides robust templating utilities for creating immediate point-and-click, object-imported, standardized notes that are easy to assemble and use. The templates may be designed for all care providers with an interdisciplinary or individual approach to the note. All notes are viewed from a single point of entry and may be filtered on the fly to provide clinicians with complete clinical information for informed decision making. With Clinical Documentation, users can import documents into OpenVista via different data capture methods: transcription, direct entry, or upload of ASCII-formatted documents.
- **Computerized Provider Order Entry (CPOE):** The CPOE module enables clinicians to create orders from within the same area of the clinical record that provides relevant patient data. CPOE offers time-saving functions such as Quick Orders, Clinical Decision Support, Disease Specific Evidence-Based Order Sets, and Time-delay Orders.
- **Orders Communication/Results Reporting:** Immediate routing of orders to the appropriate care areas with verification capabilities can reduce time to intervention by eliminating cumbersome manual processes. Order requisitioning is configurable and closely interrelated with the capabilities configured for the Radiology, Pharmacy and Laboratory applications. Results are posted within these departments and immediately available to the patient’s clinical record.
- **Intake/Output:** The Intake and Output Module stores in the patient EMR all intake and output information associated with a hospital stay or outpatient visit. Intake and Output is not service specific. Users may electronically document patient intake (e.g., oral fluids, tube feedings, other types defined by the facility) and output (e.g., excreted patient material).

- **Vital Signs:** The Vital Signs Module stores in the patient EMR all vital signs and additional measurements associated with a hospital stay or outpatient visit. Additional measurements may include height, weight and pain scores. This data is in turn available to other OpenVista modules and applications (PIMS, Pharmacy, Laboratory, etc.).
- **Clinical Image Viewer:** OpenVista's core imaging infrastructure enables attaching JPG, PNG, TIF, GIF, BMP and PDF files to the patient record. Clinicians and technicians can access images through OpenVista Imaging or the CareVue GUI on the clinician desktop, and automatically view images associated with procedures, exam reports, or progress notes.
- **Clinical Flowsheets:** Clinical flowsheets will enable users to document and correlate patient data (vital signs, intake and output, medications, assessments, clinical findings) and tailor the information to meet the unique needs of the nursing unit, care area, or department. The flowsheets will support multi-disciplinary data views and charting, and will be designed to import validated data directly from the patient monitor and ventilator.
- **Multi-disciplinary Treatment Plan:** the OpenVista Multidisciplinary Treatment Plan (MDTP) coordinates mental health care across members of the care team and supports patient progress management, eliminating the need to scour and cross-reference a library of paper records. The first integrated treatment planning module built on the OpenVista platform, MDTP fits seamlessly into clinical workflows and enables clinicians and other care team members to plan, coordinate, and document individual components of the care plan and track progress toward overarching goals.

Health Information Management System

The OpenVista Health Information Management System (HIMS) enables healthcare facilities to implement a paperless environment and gain operational efficiency through the use of an EHR. Critical user identification and medical record management integrates care delivery, including document management, transcription, and electronic signature. HIMS includes the following functional modules:

- **Document Management:** The Document Management Module administers the scanning of documents and document storage, and requires verification of each document by the entering clinician. Healthcare professionals can associate scanned and electronically generated documents with online patient records and display them on clinical workstations. Document Imaging makes all patient information quickly available and easily retrievable from a single source, minimizing filing, eliminating paper files, and speeding-up retrieval time for clinicians.
- **Record Management:** The Record Management Module uses chart deficiency tracking, chart locator, and electronic signature functions to maintain and control medical records and images so both are available to a variety of users. Record Management is integrated with associated modules such as Radiology and PIMS. Through access to the PIMS applications, actions related to the MPI may be performed such as merging and unmerging patient records and visits.
- **Electronic Signature:** The Electronic Signature Module gives healthcare facilities the ability to control access to patient information, in the process complying with HIPAA and other federal regulations. Electronic Signature uses a sign-on coupled with security management features to control user access according to predetermined criteria.
- **Transcribed Documents:** Medsphere OpenVista accommodates document transcription functionality by interfacing with transcription applications, making transcribed results available in the clinical patient record.

Laboratory Information System

Medsphere OpenVista Laboratory is fully integrated with CareVue and provides support for General Laboratory, Microbiology, Histology, Cytology, Surgical Pathology, and Electron Microscopy. Providers can access laboratory information remotely, review data, respond to alerts, and order additional studies. In addition, OpenVista can use third-party applications to automatically populate results from myriad laboratory instruments and foreign laboratories. The Laboratory Application includes the following functional modules:

- **General Laboratory Electronic Data Interchange (LEDI):** The LEDI Module enables facilities to communicate lab information between remote systems via HL7 messaging, reducing or eliminating the need for manual ordering and reporting of results to reference laboratories. LEDI minimizes the labor associated with preparing samples for delivery and processing at both collection and reference lab facilities.
- **Anatomic Pathology:** The Anatomic Pathology Module automates recordkeeping and reporting for all areas of anatomic pathology: surgical pathology (SP), cytopathology, and autopsy. Anatomic Pathology increases productivity by providing comprehensive search and reporting capabilities and workload statistics.
- **Microbiology:** The Microbiology Module supports all clinical laboratory microbiology functions, is fully integrated with other OpenVista modules, and makes testing information accessible immediately upon the entry of results. Microbiology also enables clinicians to generate reports based on specific test results.

Pharmacy Information System

Medsphere OpenVista includes a fully integrated Pharmacy Application facilitating a closed-loop medication management process. OpenVista Pharmacy modules ensure the availability of an always-current, accurate and complete medication profile accessible at anytime to allow professional evaluation of treatment plans. Pharmacy includes the following functional modules:

- **Adverse Reaction Tracking (ART):** The Pharmacy ART Module provides a common and consistent structure for data on patient adverse reactions. Using ART, clinicians can enter and validate adverse reaction data and report it to regulatory agencies. ART also links to third-party applications.
- **Electronic Medication Administration Record (EMAR):** The EMAR Module provides a single location where clinicians can view a patient's entire prescribed medication history. The EMAR Module is automatically updated by BCMA each time a medication is prescribed.
- **Inpatient/Outpatient Pharmacy:** The Inpatient/Outpatient Pharmacy Module enables clinicians to easily manage the medication regimen of patients seen in outpatient clinics and acute-care facilities. The module simplifies monitoring and manages workload and costs. Clinicians and pharmacists benefit from an always-current medication profile facilitating professional evaluation of treatment plans.
- **Bar Code Medication Administration (BCMA):** BCMA employs a graphical user interface (GUI) to improve the accuracy of medication administration and increase the efficiency of documentation. Through the use of a bar code reader, BCMA immediately validates the five "rights" of medication administration—right patient, right medication, right dose, right route, right timing—and provides real-time access to the medication administration record (MAR).
- **Pharmacy Pricing Engine:** The Pricing Engine application provides comprehensive management of medication charge calculation and billing interface support, underscoring a fundamental departure from VistA, where billing is not used. Components of the entire package include the pricing rule editor GUI, the Mirth HL7 interface engine, and tools to maintain current data from diverse sources such as First DataBank, drug wholesalers, and the Centers for Medicare and Medicaid Services (CMS).

Radiology Information System

Medsphere OpenVista Radiology is an integrated system that automates the entire range of diagnostic functions performed in imaging departments, including registration of patients for exams, order entry of requests, tracking and verification reports, and the generation of management statistics and reports.

Radiology includes the following functional modules:

- **General Radiology:** The Radiology Module improves organization by creating a separate report for each type of image. Clinicians and technicians can screen or select options by division and imaging location, schedule exams online, print flash cards and jacket labels, and transcribe patient reports. The Radiology Module supports the exchange results with non-OpenVista systems through HL7 messaging.
- **Nuclear Medicine:** The Nuclear Medicine capabilities of the Radiology Application include all functionality described for the application in its entirety. Additionally, Radiology allows users to enter and edit specific radiopharmaceutical data for nuclear medicine testing and results.
- **Worklist:** The Radiology Worklist monitor is a single screen that displays all radiology orders regardless of status. With the Radiology Worklist, users can view all patients, including those pending but not yet scheduled, enabling users to more efficiently schedule workloads and staffing requirements.

Nutrition and Food Service

The OpenVista Nutrition and Food Service (NFS) Application automates many clinical nutrition, food management, and management reporting functions. OpenVista NFS is fully integrated with OpenVista CareVue, ensuring 24x7 real-time diet census. Nutrition and Food Service includes the following functional modules:

- **Clinical Nutrition:** The Clinical Nutrition Module enables facility personnel to analyze recipes, meals, and weekly menus for nutrient value, and to manage food items and nutrients using governmental data, food item analysis from Bowes and Church, additional research data and, if desired, local dietary guidelines.
- **Food Service Management:** OpenVista's Food Service Management capabilities improve all commissary functions. Food service personnel can build lists of patient food preferences for use in meal production calculations; track ingredients, directions, portions, preparation equipment and serving utensils for each recipe; and control quantities produced by reorganizing patient diet orders into production diets and diet patterns that reflect the foods served.

The OpenVista Interface Suite

The comprehensive Open Vista solution includes a suite of interfaces based on industry HL7 and ANSI standards. The suite of interfaces includes functions related to ADT, Orders, Results, Procedures, Charges, Images, and Text. Medsphere works with the client's technical team in delivery, testing, deploying, and supporting these standard interfaces. Required interfaces that are outside of the standard suite are handled on a contractual basis. The Medsphere Interface Suite includes the following interfaces:

- **ADT Inbound:** The Medsphere ADT Inbound Interface enables OpenVista to receive patient admitting, discharge, and transfer (ADT) information from external billing or patient information management systems.
- **Patient Charges Outbound:** The Patient Charges Outbound Interface equips OpenVista to send procedure and visit information to third-party billing and other financial applications.
- **Radiology Image View/Link (from PACS to the Clinical Documentation Module [non-Dicom]):** The Radiology Image View/Link Interface is an inbound connection that sends images from the external picture archiving and communications system (PACS) to OpenVista.

- *Transcribed Results Inbound (to Clinical Documentation)*: The Transcribed Results Inbound Interface permits external transcription applications to send data to the OpenVista Clinical Documentation Module.
- *Document Image Inbound (to Clinical Documentation)*: The Document Image Inbound Interface receives document image files from ancillary systems and posts the files as attachments to notes. OpenVista can attach and display TIF, PNG, JPG, BMP, and PDF files.
- *Automated Dispensing Machine*: The bidirectional Automated Dispensing Machine (ADM) Interface receives verified orders from the pharmacy and sends charge messages when medications are dispensed. The ADM Interface works primarily with Pyxis and Omnicell applications.