About HealthRx

CORPORATE OVERVIEW

HealthRx Corporation

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Introduction

HealthRx is the home of a highly-experienced group of health sciences software innovators. We develop secure web-based and mobile solutions to streamline information flow in the clinical and research environments. Our products enable efficient research management, clinical resource allocation, complex patient appointing, medical surveillance, and case management to make critical connections in disparate functional groups where research, patient contact, and significant workplace hazards intersect.

As a Corporate Affiliate of George Mason University in Fairfax, Virginia, we are located in the heart of the Volgenau School of Engineering where we have access to some of the region's brightest researchers in bioengineering, computer science, and computational sciences with whom we collaborate on both practical and theoretical problems related to our industry. Our team of highly-educated, well-rounded professionals possess a wealth of experience in information technology, clinical sciences, and health care.

We strive to participate as speakers at invited talks, seminars, panels, and formal classrooms on diverse topics such as health care technology, bioinformatics, data visualization, and biomedical signal analysis. Additionally, our team continues to publish academic articles and serve as leaders in the biomedical and academic communities.

We have a twenty-one-year history of developing and deploying advanced clinical and medical research tools for hospitals, clinics, and research institutions. Through the years, we have had the pleasure of partnering with prestigious health care delivery organizations such as Inova Health System in Northern Virginia, St. Mary's Hospital in Waterbury, CT, Brigham & Women's Hospital in Boston, MA, the National Institutes of Health (NIH) campuses in Bethesda, MD, Frederick, MD, Baltimore, MD, Hamilton, MT, and Research Triangle Park, NC, the FDA in Silver Spring, MD, and the USDA in Athens, GA.

In our partnership with a Dutch radiotherapy equipment manufacturer, we deployed over 100 installations of our Clinical Access Manager worldwide and developed complex scheduling algorithms to support cancer treatment, surgical scheduling, and long-term clinical trials.

Most notably, we are continuing our sixteen-year relationship with the NIH where we've partnered with the leading medical and clinical research as well as health and safety professionals on multiple, interconnected boutique systems. Our systems run in the Clinical

Center, Occupational Medicine Service, Occupational Health and Safety, and in Principal Investigators' labs and offices throughout the NIH.

We are in the third year of serving the Food and Drug Administration at their new White Oak campus in Silver Spring, MD to support radiation safety, chemical safety, multi-site IRBs, biological, and animal research, and occupational medicine using our innovative protocol and material registration and workflow system, PI-Dashboard.

The concept of our Nexus suite was born out of observations collected in a comprehensive explorative study performed by HealthRx for the Centers for Disease Control (CDC). It became obvious in the early phases of the study that the problems of oversight, both in regulatory compliance and enterprise research safety, were the result of inadequate data about specific research getting to those who had oversight responsibility. During the time of the study at the CDC, HealthRx had long been in the clinical solutions business with a set of tools supporting clinical access management and electronic medical records and was supporting the Occupational Medicine Service at the NIH. The biggest challenge we had was connecting documented risks in the laboratory with services offered by OMS for medical surveillance. After the study at the CDC, we discovered that the problems in a research institution with a clinical component were bigger than anticipated. As a result, the Nexus, with its interconnected solutions came to be.

Our mission is to develop products that support clinicians and researchers in bettering human health by streamlining and connecting operations across the continuum of clinical research, health care delivery, and enterprise research safety and portfolio management.

Our core values reflect what is important to us as an organization, and these values remain constant in all of our interactions, products, and industry and community interests.

- Health care and health sciences research are vital for human health.
- We have an obligation to provide quality products and services.
- We must treat customers and others with care, attention, and interest.
- Education at all levels is key to health and success.
- We have a responsibility to advocate for health sciences research.
- Social stewardship is a critical part of our existence.

Our value proposition is simple. HealthRx delivers high value to our customers that is measured in security, efficiency, reliability, and accountability through our Nexus products. Our company has been delivering excellence in this domain for over twenty years, and our set of applications

has evolved over this time to meet changing practices and technology. We reinvest a considerable amount of our revenue into keeping our products current, relevant, and secure.

Security is not an afterthought with our Nexus – it is built in from the ground up with the following guiding principles in mind:

- • Privacy for all parties must be a priority.
- • Research and patient treatment depend upon integrity of information.
- • Compliance is an outcome of good security decisions and design.
- • Security must be maintained while efficiency and ease of use are maximized.
- • All provider partners share security responsibility.

We have garnered the best experience possible by earning the trust of and working in the world's premier research institutions, and we support the organizations that develop the guidelines for all other research organizations: the CDC, NIH, USDA, and FDA. As we grow, we will continue to advance the state of the art in streamlining and optimizing the efficiency and safety of research and clinical environments, and we will leverage our work with these Federal leaders to educate and empower our private industry clients and partners.

We provide our solution as Software as a Service (SaaS). Having had decades of rich client solutions experience (sold by perpetual license), we have learned that the SaaS model allows us to provide a consistent user experience that can be updated and enhanced on a regular schedule to maintain value without depending on a local IT department.

We run a lean operation where staff is well compensated and cared for to minimize loss of talent and ensure that we retain the growing product knowledge embodied in each member's work. A byproduct of this approach is a very happy and dedicated workforce.

Nexus Overview

Nexus is a solution designed specifically for high-volume research institutions working with a variety of potentially harmful and regulated materials. The full set of tightly-integrated tools support research protocol workflow and oversight, highly-regulated materials inventory, laboratory safety and inspection, and complete clinical applications for managing employee health, medical surveillance, and clinical access.

Nexus provides a centralized, highly-tailorable framework that manages organizational research governance and is accessible worldwide by large population of geographically disparate

researchers performing a wide variety of work. The data collected in that process drive compliance in laboratory safety and employee health by connecting the three most important stakeholders of these enterprises – Researchers, Employee Health and Safety (EHS) Staff, and health care providers in the Occupational Medicine Service (OMS).

Nexus is easily implemented, configured, and extended using current methodologies. It provides a highly-secure platform that can be hosted and managed in commercial or Government data centers using our formal deployment process. We have achieved and maintained an Authority to Operate (ATO) from multiple customer security organizations at FIPS 199 Moderate Level in both Government environments and contractor-hosted environments, a higher burden than that required from COTS vendors using Government hosting environments where data center controls cannot be inherited.

The product is licensed for a multi-stage deployment, and our own internal process includes development, staging, and production environments. The software is completely scalable and supports load balancing or a clustered model as a result of a clean separation of web, application, and database tiers. This architecture will quite easily support in excess of 20,000 simultaneous users in hundreds of locations with tens of thousands of individual research projects and a baseline of several hundred thousand electronic documents at implementation. Nexus is in production with thousands of users, over 100,000 patient medical records, over 285,000 encounter records, and tens of thousands of research protocols online.

Nexus Product Components

Although Nexus refers to a product suite for branding purposes, it is actually an application container itself that provides hosting, security, and application services to a number of components that can be configured at the enterprise level and then deployed to users through role-based access.

Launchpad is the home screen for all enrolled users and provides entry points and navigation for the system. From this screen, users can go to full modules to which they have access or click "quick links" that take them to specific points in an application for common activities related to their role. In "My Records," all users see a list specific to their logon containing action items, work-related statuses, and Occupational Medicine Service documents. Help and account configuration are also available from this screen.

PI-Dashboard serves several important purposes in enterprise research portfolio management. The primary use is to provide a workflow and forms support for researchers to submit protocols

and material requests for review and approval. The process begins by filling out online forms that support a particular, and very specific, kind of protocol. Within the basic domains of biological, chemical, radiological, animal, and human subjects research, forms are presented based on the kind of work being done, with what risks, in what laboratory space, and with what specific associated researchers.

Laboratory Safety Manager ensures all components of laboratory safety—people, places, and things connected to research—are visible to the safety department for oversight. PI-Dashboard provides the source data for this application by tying people and risks to specific laboratory space, and the safety staff ensures all laboratory spaces are inspected and cleared based on actual use. Laboratory Safety Manager is used to promote laboratory safety through physical inspection, clearance, and certification with data that is globally updated immediately when information changes, whether on initial protocol approval or during the lifecycle of an inspection.

Inventory Manager is the application for maintaining inventory and tracking regulated materials throughout the enterprise. It is specifically designed for research materials and equipment, including regulated materials and dosimetry badges. Is an integral piece of cradle-to-grave management of materials and regulatory compliance.

Case Manager supports the collaborative processes of assessment, planning, care coordination, and resource allocation to meet an individual's comprehensive health care delivery needs. It leverages the Workflow Engine, Meetings Manager, and communication through smart email and system notifications driven by workflow queues.

Clinical Access Manager (CAM) is a comprehensive, enterprise-grade, multi-department tool for complex conflict-free patient and provider scheduling, automatic charge capture, and analysis of utilization and outcomes. It reduces cancellations and no-shows by using a sophisticated reminder and call back system and by tracking reasons for missed appointments to teach the system to schedule more intelligently. Encounter types can be single, predefined linked sets, series, and protocols to handle scheduling for very sophisticated clinical modalities such as oncology treatment (long interdependent series) and surgical team scheduling (many resources in one place).

EMR and Medical Surveillance Manager (EMR/MSM) is a rich combination of world-class EMR and medical surveillance programs specifically designed for the research workplace to help protect employees from nontraditional risks. The EMR is completely configurable to support any style of practice and includes specialized Occupational Medicine templates, encounter note

templating, e-prescribing, an HL7 interface engine, and a patient portal. User-defined components can be added with the ease of drag and drop. MSM allows an organization's Occupational Medicine Service clinic to proactively and automatically monitor and recall patients into the clinic for surveillance appointments based on workplace risks.

Vaccine Manager is a robust immunization management module that augments medical surveillance programs by adding complex immunization schedules, boosters, and recalls, such as for Anthrax and Hepatitis B. It also supports mass immunization clinics for seasonal flu. Vaccine Manager has supported mass clinic to immunize more than 14,000 patients in a season by using a combination of kiosks, mobile devices, "boarding passes," and barcoding employee IDs to keep traffic moving, then instantly sending confirmation emails and instructions to retrieve formal, signed immunization documentation. Once immunized, the employee's patient record is updated instantly.

Workplace Injury Manager is an OSHA-compliant reporting application that tracks workplace injuries and illnesses from first health care provider encounter through assignment to, and investigation by, a safety specialist. The paperless investigation process allows unlimited attachment of documents, photos, emails, and any other supporting information as the case progresses. This application helps capture true cost of injuries and illnesses in an institution and provides data for remediation and workplace safety training plans designed to reduce workplace injuries.

Analytics uses the power of pivot tables to give users the control over viewing and analyzing data dynamically. In addition to the rich data analysis within the pivot grid, Analytics gives users the ability to reduce complicated dataset information into succinct and summarized visual reports. Once the view is just right, it can be saved to a public or private library to serve as a starting point for a future report. Data available to Analytics comes from all defined data elements within the various components of our Nexus suite. Any report can be to exported to Microsoft® Excel™ for further refinement, or as-is to Adobe® PDF, Microsoft® Word™, JPG, and Rich Text Format (RTF).

Nexus Application Services

Nexus provides the following services to applications hosted by it:

Security and Access Control is of the highest concern to us, and our platform was built from the ground up to ensure security rather than patched after the fact. Our development team includes members with strong backgrounds in health care and Defense where our approach is

the norm. The software does not allow the database layer to reside on the same hardware as the web or application tier, as a direct function of our security model.

There are two modes of user access. The first supports CAC/PIV access, and the second is a dual factor authentication login mode with a user ID and password requiring a temporary code be entered after being sent by email or text to the user. No matter the mode of access, IP address restrictions can be tailored to further restrict access to a particular group or site.

Nexus provides a robust set of proactive security tools to generate logs and alarms on a variety of security events. Every event is logged to an application event log. This includes logons (failed and successful), module access, record creation, modification, deletion, print output, system emails, etc. Our security model requires the ability to trace back any activity in the system to a specific logged on user which guarantees the ability to follow a temporal thread back to log on. This log can be used for support and to document security events, and even extends to encoding PDF output with an invisible user signature.

Report Manager is a powerful feature of the product. It is central to all modules and allows custom reports to be uploaded to the system at any time, thus protecting our customers from obsolescence or a "data hostage" situation. Reports are designed using a tool that anybody familiar with the usual desktop tools can use. Any report can be to exported to Adobe® PDF, Microsoft® Excel™ or Word™, JPG, and Rich Text Format (RTF), which means users can employ data from Nexus in any other system that supports input from these file types. As an example, if there is a request to provide a spreadsheet of all active researchers to be used to populate an existing system, a user would simply design a quick report designated to have Microsoft® Excel™ output and run it. Once built, it can be added to the user's library. Reports bound to the application can be modified through the same process, so users are never constrained to what we think a report should look like.

For ad hoc reporting, where one needs to explore the data and produce output (e.g., drill down on injury reports to find out where specific types of injuries were showing a spike), the Analytics and Reporting modules would be used.

Bar Code Manager is what gives all applications access to bar code printing and scanning. It is used heavily in the Inventory module, and in the laboratory applications, but also supports Vaccination Manager by allowing badge scanning and printing of the Boarding Pass for mass immunizations.

Email Manager drives all email notification functions in the system. There are several types of emails bound to the application that notify users of workflow progress, alerts for preventive maintenance, training or immunizations out of date, and more. The out-of-the-box emails can be modified with the internal rich text editor or any common editor and support plain text or HTML tags. Administrators can design and manage email templates and bulk mailings, which can be sent manually based on role or automatically based on rules. Users can view a history of sent emails that includes any errors encountered.

Document Manager hosts a repository where application-bound or ordinary library documents are stored. A document can be anything from content to image. This powerful repository centralizes file management, and content stored here can be linked to Nexus applications for attachment to emails, workflows, and forms to customize and streamline an organization's Nexus experience. Through these application connections, files in the Document Manager can be uploaded to workflow step approvals, training modules, Email Manager template attachments, answers to questions in forms, and much more.

User Manager is a comprehensive tool supporting the administration of account information, login data, and role management and assignments for all Nexus applications. All user account support and configuration can be done from this interface. User account management is made simple by providing multiple selection of users for common account management actions, such as adding and deleting role assignments and unlocking accounts. A bulk emailing module within the User Manager leverages the Email Manager to allow the user to send emails to existing accounts based on role assignments instead of creating and maintaining lists of names and emails by role.

Forms Manager is the lynchpin of Nexus and provides a huge advantage in configurability. All applications are comprised of sets of forms of one kind or another. Forms are built from a collection of questions, and questions can be of various types — texts, numbers, dates, and so forth. Forms Manager solves the need to support forms that change over time without losing the integrity of data collected by previous versions of a form. This is a major advance in COTS applications, since Forms Manager allows users to create and support whatever input is needed in the Nexus workflow framework. Forms Manager supports more than a dozen field types to cover almost every need. These include simple numeric and short text entries, dates, multiple selections, rich text, data-driven lookups, and radio buttons. Should an organization need something special, such as an interface to an institutional Employee Directory as a field type, it can be easily accommodated in the Forms Manager architecture.

Process Manager allows users to define periodic and chained operations within Nexus. This tool automates multiple simple and complex processes giving the user the power to execute application events, like automated email notifications, customized workflow steps, system health checks - virtually anything that can be expressed in code.

The Process Manager extends and updates functionality in Nexus, helping an organization react to industry standards changes and organizational changes, like workflow modifications. The manager is a one-stop-shop for the scripting of a single or periodic events employing on-demand compilation of industry standard C# using a code editor built into the tool. Processes are able to fully utilize all existing tools in Nexus, and they can also be combined into a chain of events that execute in order or guided by Boolean logic within the processes. To further customize Nexus, any third party C# code or dynamic link library (DLL) can be used to extend the applications' functionality, such as periodically pulling data from an external training system.

Technology

Nexus is deployed and regularly updated in current technology that includes front-end clients built with JavaScript, HTML5, and CSS3, a middle tier using C# .Net, and a data access layer which is database agnostic but in most deployments uses Microsoft SQL Server. Nexus supports all current browsers and uses a commercial JavaScript library to ensure greatest security and browser compatibility.

Launchpad

The Launchpad is the point of entry to Nexus for all users, and it manages all inter-application communication and encapsulation. It is accessed by a trustworthy, encrypted URL which is protected by a certificate authenticating the address. By supporting single sign on and PIV card use, security is tightly coupled to enterprise security policies, such as status of account, strength of password, password ageing, and firewall restrictions. In addition to being the highly secure point of entry to Nexus, the Launchpad is an application in itself. The design implements all of the security model surrounding Nexus, including the audit log, report, email, and document engines that are common to all Nexus applications. It is in this secure framework that all of the other modules are contained and surfaced based on the customer requirements and functional needs.

The user-facing, role-based function of the Launchpad is to provide an intuitive starting point for navigation to the set of applications the user is authorized to use, quick links to common tasks for the role, access to the Occupational Medicine Service portal for appointments and record retrieval, and a summary of action items required for the individual, e.g., e-signature required, notification of being out of compliance in a particular medical surveillance program, or alerting the user that his or her attention is required for some workflow step.

Access to Nexus modules is completely role-based. A user, once validated by enterprise authentication, only has access to the modules and functions granted by the system administrator. That means that the system shares only what is intended to be shared and that research and lab data remains private to a Principle Investigator (PI), their proxy, and the associated researchers linked to a specific project. Only upon submission for approval is EHS able to see data for a draft registration, and on approval, EHS and OMS have access.

The following modules are accessed from Launchpad.

PI-Dashboard

PI-Dashboard serves several important purposes in enterprise research portfolio management. The primary use is to provide a workflow for researchers to submit protocols and material requests for review and approval. The process is started by filling out online forms that support a particular, and very specific, kind of protocol or request. Within the basic domains of biological, chemical, radiological, animal, and human subjects research, forms are presented based on the kind of work being done, with what risks, in what laboratory space, and with which specific associated researchers.

The system is designed to minimize the time researchers need to spend submitting protocols and requests by allowing cloning of previous similar submissions, attaching existing documents instead of typing information, and delegating one or more proxies to manage the process. All governance, such as data entry constraints, required training for specific work, and scheduling continuing reviews, is maintained with a set of rules specific to a protocol type, and e-signatures allow all researchers involved to complete attestations online.

A key part of the review process is the enhanced communication between the Principal Investigator (PI) and reviewers provided by a comments function that allows the review process to move forward outside of business hours whenever an interested party has access to the system. Once a protocol is ready for submission, a single click places it in the queue of whichever reviewer(s) the workflow dictates, and email notifications are sent. Beyond

individual reviews, a Meeting Manager tool assists in setting up committee meetings for group reviews, voting, and meeting minutes.

Downstream from the approval process, connections are made to allow safety and occupational medicine departments to provide maximum oversight by using data from protocol registrations. The safety department instantly knows upon protocol approval what kind of work is being done in specific laboratories and can efficiently inspect for compliance. The notion of compliance is dependent on the specific risks associated with a protocol, e.g., a human pathogen or toxin, and drives training and inspection requirements for the lab. By the same connections, the Occupational Medicine Service can know with certainty which employees need to be enrolled in a variety of available medical surveillance programs or who may need medical clearance for particular work.

During the life of a protocol, all elements, including the original draft, attachments, comments during review, determinations, restrictions, etc., are kept as one "object," which is retrievable, printable in whole, or searchable as necessary. All elements are tied together with a thread consisting of date/timestamp of each activity throughout the whole protocol lifecycle.

PI-Dashboard is specifically designed to manage research committee submissions from a large population of geographically disparate researchers performing a wide variety of research. Nexus supports multiple Institutional Review Boards (IRBs) overseeing human subjects research, Institutional Animal Care and Use Committees (IACUCs) for animal research oversight, Institutional Biosafety Committees (IBCs) for oversight of research involving human pathogens and toxins, as well as specialized radiation and chemical safety research oversight groups. Additionally, workflows for oversight of indirect activities, such as Cooperative Research and Development Agreements (CRADAs) and grants, scientific review and publication clearance, and enterprise-customizable reviews, are supported.

Further, PI-Dashboard is specifically designed to support high-volume research institutions working with a variety of potentially harmful and regulated materials, including radiological, chemical, and biological. The primary goals of PI-Dashboard are to provide a centralized system that streamlines research submission and approval workflow and oversight and to collect data that help to build a shield against risk. The shield is built by connecting the three most important stakeholders of these enterprises – Researchers, Employee Health and Safety (EHS) staff, and health care providers in the Occupational Medicine Service (OMS).

The concept of PI-Dashboard was born out of observations collected in a large study performed by HealthRx at the Centers for Disease Control. It became obvious in the early phases of the

study that the problems of oversight, both in regulatory compliance and enterprise research safety, were the result of inadequate data about specific research getting to those who had oversight responsibility. Researchers want to do research, not paperwork, so we devised a way for researchers to benefit from entering data electronically. This became PI-Dashboard, a core Nexus module which supports electronic submission and approval of research, reducing turnaround time for approvals to hours in some cases, rather than months. A side product was providing a paperless repository of granular research data and supporting documents and images, easily reviewed by oversight committees. An additional enterprise safety benefit was realized by giving safety inspectors and occupational medical providers all the required data for lab inspections and medical surveillance of researchers. At the instant of approval, all stakeholders know what specific research is being conducted in what laboratory, involving what human risk, and with a dynamic list of associated researchers. Nexus puts researchers back into innovation.

PI-Dashboard implements the entire set of workflow processes and forms to support the research protocol applications. The ability to track risks and compliance begins with registration of those risks by the PI proposing the work. Once all edits have been satisfied and the protocol is submitted, the reviewing official will have enough details about the project to make an informed decision to approve it, as well as to determine the PI and associated researcher's "fitness" to work with the specified materials. The automatic checks and links are to ensure that the worker has appropriate training for the work to be done and to safely work with the material(s) to be used, has the appropriate immunizations, if using a biological material, has not reached the limit for possession of the specified material (RAM or chemical), and that the laboratory or building or department or enterprise will not exceed its limit for possession of the material if the project is approved. These checks are done instantly any time the registration is called up for review, and surface appropriate icons and warning messages if there is a problem to be addressed. The approving officer can take several actions to approve registrations with unmet constraints, but all actions involve removing a user from a registration, waiting for training, immunization, or e-signing to be completed, or adjusting the permit or license limit that caused the constraint (e.g., increasing the PI's maximum quantity of a chemical). Any permit adjustments go through a process in the inventory module.

Our approach to research portfolio management allows both real-time monitoring and retrospective analysis of protocol data to ensure adherence to workflow and compliance with periodic reviews. We manage protocol data with sufficient granularity, including funding, duration, product, and productivity, to drive deep analytics using tools included in Nexus to facilitate portfolio management. The resulting reports are tailored to provide knowledge to

support enterprise-level strategic decision making based on true key performance indicators reflecting compliance, funding resource utilization, and overall research portfolio performance.

Case Manager

The principles of case management include collaborative processes of assessment, planning, facilitation, care coordination, evaluation, and resource allocation to meet an individual's and family's comprehensive needs.

Collaboration is enabled through smart email and system notifications as well as workflow queues.   Our built-in collaboration tools enable accurate assessment, effective planning and coordination between case managers, providers, board members, and patients in order to accomplish timely and accurate dispositions. Case Manager interfaces are capable of pulling data from multiple sources and systems to ensure proper care coordination, surveillance, evaluations, and effective compliance tracking.

Our approach to supporting case management is predicated on capturing data at the base record level, enforcing governance to ensure completeness and quality of data prior to submission and providing secure communication across disparate review programs and cultures. In accomplishing that, we provide a database that is reportable, searchable, and actionable at the department level to facilitate the regulatory review process. Our approach allows both real-time monitoring and retrospective analysis of case data to ensure adherence to workflow and compliance with periodic reviews. We tailor Nexus reports to support enterprise-level strategic decision making based on true key performance indicators reflecting compliance, funding resource utilization, and overall patient support performance.

Case and review data collection is supported by a highly tailorable forms designer that uses core and user-defined libraries of questions to generate research- and domain-specific forms. These forms are expected to change over time and are versioned to match the data entered in them, enabling continuity for analytics. An administrator modifies the out-of-the-box forms or generates new forms to associate with specific case record types.

The Nexus Meeting Manager supports the culmination of the review workflow. This tool allows an administrator to construct a meeting to conduct a formal review of a case. The tool includes the ability to set up a meeting, invite specific enrolled users or roles, decide which cases are to be reviewed, assign review permission to attendees, input or attach an agenda, set a quorum, capture minutes, and vote. Meeting announcements go out to reviewers as standard meeting

invitations so they can be included on most calendars, including Outlook. The system allows any user to review data for a case if granted access by the administrator or if assigned to a reviewer role. All recommendations, comments, checklists, and votes – regardless of the source – are kept as part of the case history.

Enterprise-tailorable letters of determination and approval can be generated to include information from the case and the committee findings. Any manner of design elements can be included, such as logos or signatures. These documents are typically attached to a notification email but also can be placed in the recipients' secure Nexus system portal called My Records.

Laboratory Safety Manager

Laboratory Safety Manager (LSM) is a tool to ensure that all aspects of laboratory safety— people, places, and things connected to research—are visible to the safety department for oversight. LSM provides assurance through connections to PI-Dashboard that all labs are inspected based on actual use. All information that the safety department needs to promote laboratory safety through inspection and certification is available in this single system that is globally updated immediately when information changes, whether on initial protocol approval or during the lifecycle of an inspection.

The typical workflow of a lab surveys starts with initiation by the safety specialist at the desktop, based on institutional frequency policy for the particular lab environment. The survey and associated questions ("measures") are specific to the type of work being done in the space to be surveyed. For example, a biosafety level 2 lab will have more measures to be surveyed than a biosafety level 1 lab. A site visit is then scheduled during which a physical inspection is performed and deficiencies noted. Using a mobile device, the safety specialist can fill out the survey form and take pictures to attach to the specific measure that is deficient. Upon returning to the office, the safety specialist can review the survey privately and then publish for PI review when ready.

The PI is notified that there is a survey in the queue and will log on to review any deficiencies that need to be corrected. Deficiencies are answered in a variety of ways, usually with some form of documented remediation. Once finished, the survey is returned to the safety specialist who reviews, re-inspects if necessary, then closes the survey.

Beyond survey completion and deficiency creation, response, and resolution, LSM presents detailed laboratory information, allowing for an at-a-glance understanding of laboratory

conditions and identification of personnel working in the laboratory. All data collected in the creation of laboratory details, surveys, and deficiencies is presented in a series of reports in each role-based LSM reporting module. These customizable reports facilitate analysis of collected information, enhancing the ability to improve operational processes based on data output.

Laboratory Clearance Module

The Laboratory Clearance Module fulfills a unique organizational need to provide a simple process for institutional data collection associated with procedures to safely vacate and decommission laboratory space.

The goal of the clearance process is to ensure laboratory conditions are safe for those who are entering a vacated space where research with hazardous materials, chemicals, or objects was previously conducted. Additionally, the laboratory clearance process serves as a self-check safety and quality assurance process for the PI or associated researchers responsible for clearing the space of hazards.

The basic process for a laboratory clearance check involves both the PI (or a Requestor) and Safety Specialist roles. The PI (or Requestor) will notify the Safety Specialist that the space will be vacated by completing a basic safety questionnaire (customizable in the Nexus Forms Manger) and electronically submitting the entered responses, while the Safety Specialist is responsible for reviewing the questionnaire and granting a clearance. A Safety-Specialist-approved laboratory clearance is required prior to researchers vacating the laboratory and any new parties entering the laboratory. Whether the laboratory is being vacated for a temporary period of time or on a permanent basis, adhering to the established institutional laboratory safety standards is of vital importance.

Inventory Manager

The Nexus Inventory module is a significant part of what drives compliance in the other modules, and it provides a rich application for maintaining all hazardous and non-hazardous inventory and tracking specialized materials, including radiological materials, chemicals, biological materials, throughout the enterprise. The system handles ordering, receipt, and disposal management of, and it is specifically designed for regulated research materials and

equipment. Each material and equipment record type has configurable fields that allows users to track an attribute not already included in the form.

The system is key to compliance in that it is the gatekeeper for receiving, distributing, retrieving, and submitting regulated materials to the disposal and waste stream. The system is preloaded with the most common radioactive materials, chemicals from the EPA List of Lists, and common equipment used in research. The system supports SDS input (from scanned documents) and has a preloaded SDS database of 230,000 items. An interface is supplied to MSDS Online (requiring enterprise subscription) and makes available 3.5 million SDS records.

The system implements a unique event-driven process to support requests from other modules to transfer material for a project, return material to inventory, handle depleted stock, and transfer to a new responsible party. An outgoing event process drives notifications for preventive maintenance, leak testing, wipe testing, and calibration.

Material quantities are managed in this module and ensure that a researcher, a department, a building, and the enterprise are not to exceed their specific statutory limits, as embodied in our Permits management module within the Inventory Manager.

For radiological materials use, dosimetry badges are requested in PI-Dashboard and issued through the Inventory Manager. Badges are reported through the My Records module, where a form exists to enter dosimetry readings and report missing badges.

All inventory reporting is done through the Reports Manager using standard reports or using the Analytics module for ad hoc queries.

Clinical Access Manager

The Nexus Clinical Access Manager (CAM) is a comprehensive, enterprise-grade, multi-department tool for complex conflict-free patient and resource scheduling, automatic charge capture (in dollars or relative value units), insurance referral tracking, and analysis of utilization and outcomes. It reduces cancellations and no-shows by using a sophisticated reminder and call back system and by tracking reasons for missed appointments to teach the system to schedule more intelligently. Encounter types can be single, predefined linked sets, series, and protocols to handle scheduling for very sophisticated clinical modalities such as oncology treatment (long interdependent series) and surgical team scheduling (many resources in one place).

The included Nexus Analytics module allows reporting and analysis on any data in CAM, empowering clinics to have a clear view of efficiency and patient flow with rich clinic statistics reporting.

CAM is optimized for one or more network-connected small to medium sized clinics, with tens to a few hundred health care providers (HCPs) each. CAM is completely configurable to support the visit types, HCP mixture, and complex scheduling requirements of specialty clinics, such as surgery, oncology, and diagnostic imaging, but it handles traditional clinic environments equally well.

CAM is designed specifically for health care delivery. Its primary purpose is to provide an easy-to-use, rich, web-based experience that facilitates scheduling, patient tracking, charge capture, documentation, and administration. CAM is ideal for any resource-intensive medical service organization that has complex scheduling and interrelated resource management requirements. Its components are:

- Searchable Master Patient Index database and related Patient Information records
- Scheduling functionality for making, tracking, and viewing complex appointments
- Queuing and Charge Capture modules
- Health Care Provider Scheduling module with multiple views
- Ambulatory Patient Tracking modules

Clinics can allow patients to access a Patient Portal for self-scheduling, cancellation, and a view of past and future appointments. This is helpful in encouraging compliance and empowering the patient, especially in complex, multi-visit treatment scheduling modalities like oncology.

Master Patient Index (MPI) - The MPI component is used throughout CAM to look up patients in a variety of ways. MPI is a separate module because it is also used as the entry point to Nexus extensions, for example, the Electronic Medical Record framework. The Nexus MPI can operate out-of-the-box or in conjunction with your existing patient database, ensuring maximum flexibility and simple onboarding. Patients are looked up by using user-defined facility identifiers (e.g., employee badge ID, employee number) or partial last name and first name combinations. A list of candidates is then displayed, and the user can choose a patient or refine the search.

CAM provides for the entry of dozens of patient record items, from demographics, insurance, emergency, and referral information, to several free-form text blocks for progress notes and other variable-length information, to document and image uploads. The out-of-the-box

Patient Information module can be replaced with any clinic or third party Patient Information module, even an interface to an existing Enterprise Health Information System record. CAM also provides "hooks" via its Electronic Medical Record framework for user-customizable patient clinical records. All diagnostic and treatment data are maintained with the overarching patient record and are available for reporting and statistical analysis.

Scheduling - CAM makes quick work of all difficult scheduling problems. Whether you are scheduling a single appointment for a patient or a series of appointments with multiple resources, CAM handles the job with a few mouse clicks. You can view schedules from individual staff, team, patient, location, and modality perspectives, or view a master schedule. Enter an appointment from any schedule and all of the other schedules are instantly updated.

CAM manages complete conflict checking and resolution for a single appointment or series of appointments. It provides a Get Next Available Time smart scheduling function for staff, teams, and locations and easy canceling and rescheduling of one or more appointments. All screen and printed schedule formats are completely user-definable to allow each user to decide what information is to be displayed.

When a patient is welcomed at the front desk, or prior to treatment, a picture can be displayed to confirm the patient's identity, along with any visit-specific notes. Users can define any number of alarms to be displayed before or after treatment to ensure that important events such as information collected, forms signed, or labs drawn are completed. On arrival, the provider scheduled to see the patient is notified with an on-screen message.

Queuing a patient through the department can be done using a few simple keystrokes or by scanning the patient's chart barcode while directing the patient into the treatment area. This feature also allows tracking of the patient chart through the department. When a patient is queued into a treatment area, any external program can be launched automatically to handle charting, order entry, record and verify, or any other appropriate clinical support function.

Making Patient Appointments - There are several ways to make appointments in CAM that are as simple as finding an open slot on a provider's schedule to as complex as the Get Next Available Time function (GNAT). In all cases, CAM prevents scheduling conflicts and enforces any scheduling rules. In addition to single appointments, CAM can construct a number of complex multiple appointment series.

Linked Series: The Linked Series creates an ordered sequence of appointments where each one is a prerequisite for the next one. The first one can be thought of as the "root"

or origin for the sequence. The sequence follows no particular time pattern, other than a minimum separation time that can be specified for each link in the sequence at setup. The separation time can account for things such as travel time, time until result becomes valid, or even a separation of days or months for follow-up visits. An example of a Linked Series would be in a Surgical Department where a pre-operative consult is followed by a series of lab tests and radiological studies, which are then followed by a surgery, and finally a series of follow-up exams. A Linked Series ensures that all pieces of a long-term encounter are enforced and constraints are considered, making any analysis of compliance more reliable.

Plan Series: The Plan Series provides a convenient way to generate a group of appointments of the same visit type following some time pattern, such as "every Monday, Wednesday, and Friday." An example of a Plan would be in oncology where a set of identical treatment events are required in some sort of pattern, like ten treatments over three months. This kind of scheduling is also referred to as "wave" scheduling.

Protocol Appointment: A combination and extension of the Plan Series and Linked Series concepts is the Protocol Appointment, which is a set of appointment records for the same time and space for a specific patient. Templates can be set up for teams of specific providers or resources side-by-side with role placeholders. For example, for a particular surgery Dr. Smith requires Operating Room 4 and a specific nurse and anesthesiologist, as well as any three other nurses credentialed for the particular procedure. Generating a Protocol Appointment involves proposing all sets of available specific and role resources in multiple timeframes within the given date range. All CAM conflict checking is strictly enforced.

Schedule Views and Groupings - In general, schedules show time slots down the left hand side of a grid like row headers on a spreadsheet. On the default Master Schedule views, the grid's columns may display several different attributes of the resources involved or the Patient. Color is used in various ways to enhance readability of scheduling masks, visit types, queue statuses (see below), and other definable areas of the schedule view.

In addition to the Master Schedule, CAM has a schedule views for teams, events (visit types), locations, and individuals. The Team view shows a group of HCPs across the top with their relevant masks and their individual appointments in the grid.   The views for Event and Location

schedules function similarly. Clinics can extend and combine grouped schedules to allow mixing and matching of staff, events, and locations on the same schedule view.

Queuing and Charge Capture - CAM maintains a queue of the activities representing the lifecycle of an appointment. This lifecycle begins when the appointment is first made, and it continues with reschedules, cancellations, the appointment itself, and any close-out actions, such as charge capture or check out. The appointment itself consists of patient arrival and waiting statuses, and these patient statuses move in the CAM queue as the patient is moved through the locations required for the visit type (e.g., an area to capture vitals, an exam room, a lab) until appointment completion. All of these steps are recorded in an appointment queue that documents the exact steps that are executed along with the relevant time stamps, staff IDs, location IDs, and, where applicable, cancellation codes.   This queue forms the basis for workflow and load analysis through a busy clinic, as well as charge capture and cost coding that CAM can generate for a billing system.

On any schedule that displays an appointment, the patient queue history can be called up for that appointment.   The appointment lifecycle information is also used for other features such as printing reminders and sending notifications to staff members when their patient has arrived and is waiting.

Using the CAM Charge Capture function leads to fewer missed charges and increased revenues for the clinic, as it provides the ability to capture base charges associated with standard procedures or even with specific patients. Additional charges are predefined and entered from any schedule.   Charges can be captured at the time of service, later modified and adjusted when needed, or simply viewed and annotated to answer patient or insurance company questions.

The Charge Capture module maintains the clinic's charge codes and maps them to CPT-2015 codes. This allows for complete flexibility as well as ease of transition from a manual system. Charges can be tracked and analyzed for clinic use, productivity metrics, and transport to billing for processing using one of many interface options available.

Reporting and Printing - The system outputs a number of reports useful to running a clinic including daily schedules by provider, face sheets for incoming patients, worklists for retiring charts, and visit statistics reports for productivity analysis. The data captured in CAM for appointments, patients, and resources is a rich source of reporting data. Nexus Analytics is used to generate both standard and custom reports from these data, which in turn can be

viewed online or printed to hard copy. The reports can also be exported to multiple electronic formats such as Adobe® PDF, Microsoft® Excel™ or Word™, and Rich Text Format (RTF).

Scheduling Health Care Providers - Before patients can be scheduled into a clinic, CAM must know who is working when and what services they are credentialed to perform. The HCP Schedule module allows an administrator to quickly set up a multi-week schedule for an HCP and, more importantly, change it on the fly.

A typical example is a busy clinic that schedules HCPs three months out in two-week repeating blocks. The administrator sets up the template for the first two-week block, taking into consideration normal starting and ending times, days off and alternate work schedules, blocks of time to perform specific duties or visit types, and any other HCP requirements.   This schedule can then be cloned out into the future and changes made as necessary.

The real power of the HCP Schedule module comes in handling the very dynamic nature of HCP scheduling. When a provider gets called away, or is otherwise suddenly out of the clinic, an administrator can use this tool to block out the time and automatically reschedule any existing appointments to a like-credentialed HCP.

Ambulatory Patient Tracking (APT) - The by-the-minute status of the clinic is one of the most important things for a department administrator to know. A busy clinic is a dynamic environment, and problems that are identified quickly can be solved quickly.   The CAM Ambulatory Patient Tracking (APT) module is a complete picture of the working clinic. Clinic administrators and staff can see at a glance where patients are, who has been kept waiting too long, who has gotten held up out of the clinic, as well as a wealth of other metrics.

The APT module shows selected providers across the top with their patients in columns. Multiple views can be constructed easily so that each user can see only the patients he or she is interested in. There is no practical limit to the number of providers in any given view.

Each patient appointment listed in the APT module is marked with a colored border that corresponds to the patent queue stats: Cancelled, No Show, Not Arrived, In Process, and Complete. Summary information is provided in this same view, with categorical roll ups of status as well as number of patents in the clinic locations.

The APT module is available as a decoupled web-based module that can be displayed on a flat screen status board in the clinic for users who only need status, rather than CAM's full appointment making functionality.

Benefits to Your Organization - CAM improves patient flow through clinics by allowing all authorized personnel to schedule patients onto a common master departmental schedule using any browser from their own workstations or from a mobile device. Further, CAM enhances staff effectiveness by reducing the time required to handle routine scheduling and rescheduling chores. CAM's conflict resolution and smart scheduling functions reduce cancellations and no-shows by using a patient reminder and call back system and by tracking reasons for missed appointments.

CAM simplifies complex scheduling problems by allowing users to view schedules from individual staff, teams, patients, locations, and modality perspectives or view a clinic master schedule. When an appointment is entered on one schedule view, all of the other schedules are instantly updated, reducing errors and administrative work.

In addition to patient and HCP scheduling, physical locations, equipment, and other resources may also be scheduled at the same time. For all types of scheduling, CAM manages complete conflict checking and resolution for a single appointment or series of appointments. The system provides a Get Next Available Time smart scheduling function for staff, teams, and locations, and easy canceling and rescheduling of one or more appointments.

On arrival, the HCP scheduled to see the patient is notified with an onscreen message on their workstation or device, eliminating the need for the administrative staff to leave the front desk. Queuing a patient through the clinic allows tracking of the patient chart through the visit, recording of wait times, and tracking of all associated treatments and providers in that visit.

EMR and Medical Surveillance Manager

The Nexus EMR and Medical Surveillance Manager (EMR/MSM) is a rich combination of world-class electronic medical record and medical surveillance programs specifically designed for the research workplace to help protect employees from nontraditional risks.

EMR/MSM allows an organization's Occupational Medicine Service clinic to proactively and automatically monitor and recall patients into the clinic for surveillance appointments based on workplace risks. A comprehensive medical record, associations with ongoing laboratory risks and patient contact, and personal medical history drive a set of compliance protocols to keep workers safe. There are three typical situations that cause an employee to visit the Occupational Medicine Service clinic:

- Report and document a workplace injury or illness, from simple mechanical injury (slip or fall) to complex injuries, like those involving needle sticks with biohazards, a chemical splash, or a nonhuman primate bite.
- Recall for a medical surveillance program action, such as a blood draw for antibody titer, placement or reading of a tuberculin skin test, or a medical evaluation for a respirator fitting.
- Miscellaneous clinical activity, including a preplacement exam, disability evaluation, medical concern, or EAP appointment.

EMR/MSM consists of two tightly integrated pieces: a full-featured electronic medical record and a medical surveillance manager that assists with associating and surveilling workers with workplace risks.

EMR

The Nexus EMR is built on a legacy of over twenty years of providing electronic medical record support to a variety of complex practice types, including radiation oncology, surgical, family, behavioral health, and occupational medicine. As the technology and industry have evolved, so has our product. HealthRx was an innovator in interfacing EMR with enterprise systems long before HL7 was solidified and before other connections, such as with laboratory information systems, became routine. Today, we have the most configurable and interconnected system available.

The Nexus EMR is hosted in our Nexus framework, a highly-secure platform that supports the protection of sensitive personally identifiable information (PII) and personal health information (PHI). These security measures ensure HIPAA-compliant storage and transmission of patient records and communications.

Out of the box, Nexus EMR supports all common patient interaction forms and documentation, such as complex encounter notes, and it is a complete digital version of the patient chart. There is essentially no limit to how the system can be enhanced and customized with practice-defined forms and reports.

Configurability - Nexus EMR offers unparalleled configurability and is driven by the Nexus Forms Manager, Reports Manager, and Workflow Manager. These components allow a clinic to add or modify stock forms using an intuitive drag and drop designer. When changes are made to an

existing form, for example to add a new question and retire an obsolete one, no data are ever lost. Versioning is fully supported to ensure data integrity throughout the life of the system.

We recognize that some institutions may have custom EMR-appropriate data management products already in place, and we easily incorporate those into our system. In-house legacy clinical modules are prepared for use in the EMR framework by using a simple, well-documented application programming interface (API). From the framework side, a simple user interface controls the appearance of the EMR tree folder list and how records are accessed through plug-in modules, our Nexus modules or an organization's. The real value of the framework is to allow virtually any kind of patient data to be collected and reported on -- even data you do not know you want today.

Each folder in a patient record holds all instances of the record type, for instance, preplacement exams, clinic visits, or immunization records. Record type folders can be added easily to the EMR definition which tells the EMR how to display out-of-the-box modules or custom modules that incorporate legacy functions. If an organization already has valuable specialized modules built, we support incorporation of these modules into the EMR framework with very little effort, using well-documented APIs.

The Clinical Profile provides a summary of important demographic and medical information about the patient for quick reference that is always visible in the patient chart. It contains a fully configurable problem list, history summary, allergies, drug intolerances, and medication list.

The Chronological Record is a patient chart and comprehensive multimedia record of all documents and activity relating to a patient, organized chronologically. In this record, the provider can view trend data, view lab and procedure data, search any term, and quickly skip to any part of a patient's history.

Encounter Notes are highly-configurable and allow for complete and accurate documentation of a patient encounter. The provider can auto-fill the Subjective section with the latest data, organized by the problem list from your Clinical Profile, use free text, voice recognition software, or structured free text, easily reference specific items throughout the chart directly in Encounter Note. Providers can create templates on-the-go for Physical Exams and Review of Systems, and automatically track the documents referenced during the course of the visit.

E-Prescribing and Order Entry are accessed directly from the EMR. Nexus EMR provides fully-featured e-Prescribing that is Surescripts and DEA EPCS certified. With permission, a patient's

medication history is directly accessible even if the prescription was not written in your practice, using the power of Surescripts interface to millions of pharmacy and insurance records. Prescriptions can be sent directly to the patient's preferred pharmacy, and it becomes part of the patient record. Our Order Entry allows the provider to quickly write orders for subscribed services including lab, imaging, cardiac, pulmonary, and sleep orders.

Communication is key in medical practice. Messages can be sent to staff that are accessed and archived in the patient chart, so they are always in context and never get lost, providing convenient coordination with office staff and other providers in the clinic. Providers and staff can securely email or fax documents to patients and other providers directly from the EMR and easily attach any type of documents or images.

The Patient Portal is a tool for patients to communicate with the clinic. It is HIPAA compliant with 256-bit encryption and accessible from any web-enabled device, including smart phones. From an intuitive user console staff can set up patient accounts and control which patients are invited or disabled, control what patients see, securely share messages, reports, referral orders, consent forms, and educational materials.

Mobile by Design, Nexus EMR supports providers engaging with patients by getting away from the computer and working face to face. Our tablet EMR feels like a chart in allowing providers to be in close proximity of a patient while having all pertinent data in hand. Technology finally supports the way medicine has been practiced for centuries – one-on-one. Once the visit is complete, all findings are available at the desktop.

Medical Surveillance Manager

The Nexus Medical Surveillance Manager (MSM) drives oversight of medical compliance for workers associated with specific nontraditional workplace risks. Based on our experience with research in biological, radiological, chemical, animal, and human subjects, and collaboration with the industry-leading occupational health program thinkers at the National Institutes of Health, we have refined our product over more than 15 years to reflect the needs of very serious medical surveillance requirements.

Typical research facilities need to track how researchers are connected to potential medical risks. For example, it is part of the Occupational Medicine Service's responsibility to offer surveillance programs and/or immunizations to workers exposed to tracked pathogens, and the MSM provides tools to maintain the links between offered services, risks, and workers. Once

MSM is in place, all health care providers can know instantly when seeing a patient what risks the patient is registered to work with and what, if any, services need to be offered.

MSM is tightly coupled with our EMR and provides a superset of patient documentation modules. Additionally, the following comprehensive medical surveillance programs are implemented to support periodic recalls and support governance:

Preplacement Exam provides all the information necessary to document an employee's workplace risks in order to drive enrollment into proper surveillance programs.

Immunization Enrollment Program supports complex protocols for documentation and recalls, including appropriate boosters, tied to workplace risk of Influenza, Anthrax, Hepatitis A, Hepatitis B, Human Papillomavirus, Japanese Encephalitis, Measles Mumps and Rubella, Meningitis, Pneumococcal, Polio, Rabies, Tetanus Diphtheria and Pertussis, Typhoid, Tick-borne Encephalitis Virus, Vaccinia, Varicella, and Yellow Fever.

Animal Exposure Program protects workers and animals from hazards, for example, tuberculosis for working with nonhuman primates, and provides "viewers" for outside use to validate employees' compliance in the program without disclosing protected health data.

Asbestos Surveillance Program documents an employee's risk for certain lung disease based on smoking history and asbestos exposure, and documents pulmonary studies and consultations.

Bio-surety Program provides a comprehensive program to ensure suitability of workers for high-containment environment and select agents and toxins, including medical and psychological evaluation protocols

Firefighter and Police Program supports recalls for these related employees based on their particular and unusual exposure risks.

Hearing Conservation Program supports a program of enrollment and recall for workers at risk in high-noise environments, and documentation of hearing testing and referrals.

Retrovirus Exposure Surveillance Program supports a program of enrollment and recall, allowing documentation of exposures and treatments provided, enhancing communication between health care providers and this special set of workers.

Respiratory Protection Program includes evaluation, training, fit, and annual medical clearance for respirator use.

Rabies Program documents detailed risk assessment and ties to Rabies immunization program to ensure compliance.

Tuberculosis Surveillance Program assesses periodicity requirement of tuberculin skin test or IGRA based on what the employee works with (TB bacteria, NHP, patients) and manages recalls and compliance.

Pathogen Exposure Checklist automatically validates that appropriate medical surveillance enrollments match pathogen and toxin work that employee is associated with on registered protocols in PI-Dashboard.

Injury and Illness Reporting supports recording and follow up for very detailed research-centric cases such as nonhuman primate injuries, retrovirus exposures, and other lab-related injuries. This module provides tracking protocols and verification based on the type of exposure, as well as necessary OSHA reporting data. Various types of "time away from work" are tracked to determine the total cost of the injury and to support compensation reporting.

Recall

MSM provides the above surveillance program modules out of the box, but there is virtually no limit to the number of modules that can be created and linked to it. These surveillance programs set up a formal, tracked interaction with the employee-patient to ensure that all protocols are followed. The MSM recall workflow is dynamic to account for – and not miss – an employees' noncompliance. The recall process is driven by emails to workers and includes escalation to supervisors in cases where compliance is deemed to be a condition of employment or access to a space.

Workplace Injury & Illness Manager

The Nexus Workplace Injury & Illness Manager's OSHA-compliant reporting tracks workplace injuries and illnesses from first health care provider encounter through assignment to, and investigation by, an occupational health and safety specialist. The paperless investigation process allows unlimited attachment of documents, photos, emails, and any other supporting information as the case progresses. The real power in the Workplace Injury & Illness Manager is the ability to capture the true cost of injuries and illnesses in an institution and to provide data for remediation and workplace safety training plans designed to reduce workplace incidents.

The source injury or illness report can be as simple as the OSHA 301 or as complex as specialized incident reports provided out-of-the-box for injuries involving human pathogens and toxins, nonhuman primates, and radiation and chemical exposures. Any incident source report can be designed from scratch or modified from one of the existing reports from the Nexus library.

The system manages the workflow of incident investigation to support a variety of reporting needs, culminating in statutory DOL reporting, such as the OSHA 300A. A byproduct of incident investigation is the generation of data provided by tracking workflow from initial report to closure, giving insight into investigator productivity, time-to-close statistics, and the root cause(s) of incidents.

If no Occupational Medicine Service clinic is readily available, employees can file an incident report online through a secure portal in the Nexus suite, which is then routed through the instructionally-designated workflow.

Using the Nexus Analytics module, incident data can be mined to answer important ad hoc requirements, like what department had the highest number of needle stick injuries among Summer interns, which would help to direct precious training dollars to the right use. The data generated by these reports can be exported to any format to be incorporated into larger data analysis efforts.

Vaccine Manager

The Nexus Vaccine Manager is a complete immunization management module that augments medical surveillance programs by adding complex immunization schedules, boosters, and recalls, such as for Anthrax and Hepatitis B. It also supports mass immunization clinics, like for seasonal flu. In our larger customer organizations, Vaccine Manager is used in mass clinics immunizing more than 14,000 patients in a season by using a combination of kiosks, mobile devices, preprinted "boarding passes," and scanned employee IDs to keep traffic moving and reduce total wait, check-in, and immunization time to under five minutes.

 The Vaccine Manager's mass clinic functionality sends confirmation emails, provides a secure patient portal to retrieve copies of formal, signed immunization documentation, and enables the recipient to fill out an electronic survey to provide near-real-time feedback facilitating corrections in the mass clinic process. The mass clinic implementation of Vaccine Manager facilitates high-throughput immunization scenarios by validating eligibility with an employee

badge scan or preprinted "boarding pass," collecting consent form data via tablet device, and exporting the immunization data to the employee's patient record instantly.

In organizations with health care and other workers with patient contact, Vaccine Manager can drive immunization compliance, now the norm in these environments, by matching immunization records against extracted lists of employees mandated to be compliant. A variety of compliance tools ensure that supervisors and department managers are kept informed about the state of their direct report compliance in order to intervene as necessary.

Developed at the National Institutes of Health, the Nexus Vaccine Manager was innovative in being the first product to support a new notion of the importance of driving compliance in the health care environment to protect immunocompromised patients from potentially infected workers (Palmore, T. N., et al. (2009). A successful mandatory influenza vaccination campaign using an innovative electronic tracking system. *Infection Control in Hospital Epidemiology, 30*(12), 1142-42.)

Analytics

Analytics uses the power of pivot tables to give users the control to view and analyze data dynamically instead of predicting which library reports will be needed in the future. In addition to the rich data analysis within the pivot grid, Analytics gives users the ability to reduce complicated dataset information into succinct and summarized visual reports. Once the view is just right, it can be saved to a public or private library to serve as a starting point for a future report. Data available to Analytics comes from all defined data elements within the various components of our Nexus suite. Any report can be to exported to Microsoft® Excel™ for further refinement, or as-is to Adobe® PDF, Microsoft® Word™, JPG, and Rich Text Format (RTF).

Hosted in the Nexus framework, Analytics makes data available to users in a role-based, secure fashion in a virtually limitless way. Authorized users can view and analyze data from the system up to the level that their security profile allows.

Users drag and drop data to build pivot tables – including filters – for data mining and multi-dimensional analysis. Information can be efficiently "sliced and diced" to provide answers to ad hoc questions, allowing data to be viewed from all angles to answer business questions and provide insights into daily operations in an organization.

Analytics provides different levels of detail for flexible analysis and reporting, showing only the detail necessary. The hierarchical display provides expandable and collapsible child groups for both raw and summarized views and reports. Automatic and manually-calculated totals can be placed at the end of each row and column or for any value group. Data can be sorted and filtered easily to manipulate reports. Custom queries and reports can be stored for future use in libraries of templates that are easily controlled to limit use to a user, a particular set of roles, or for public organizational access.