Case study: Intermountain Healthcare
Utah and southeastern Idaho

Strong support for clinical decisions

The 3M™ Healthcare Data Dictionary (HDD) makes relevant data available for clinical decision-making, research, public health and quality reporting. The standardized data is reliable—understood by the IT systems that exchange it and trusted by the users who need it.

As a road map to the content and structure of patient data, the 3M HDD defines and translates every data element and healthcare concept that occurs in a computerized patient record.

“With the HDD, Intermountain Healthcare’s clinical decision support starts from an agreed-upon place. It makes it so much easier to create order sets, provide support, track interactions and more. We are able to share knowledge outside of Intermountain Healthcare, because HDD is concept-based rather than based in a particular standard.”

—Scott Narus, PhD, chief clinical systems architect, Intermountain Healthcare

Featured product

The 3M Healthcare Data Dictionary (HDD) is a controlled medical vocabulary server that has been continuously expanded and maintained for nearly 20 years. The 3M HDD makes it possible to map and manage medical terminologies, integrate content and standardize healthcare data. The technology allows organizations to transmit and receive accurate, actionable patient data across systems and applications, regardless of where data originates. It offers a practical, comprehensive implementation of industry-standard vocabularies across domains, including ICD-9, ICD-10, General Equivalence Mappings (GEMs), SNOMED CT®, LOINC®, RxNorm and more.

Snapshot of Intermountain Healthcare

Intermountain Healthcare is an internationally recognized non-profit system based in Salt Lake City, Utah. Intermountain Healthcare consists of 22 hospitals and a Medical Group with more than 185 physician clinics. Intermountain Healthcare offers a full range of services, from urgent care to home care to the region’s most advanced trauma centers.

In 2011, Intermountain Healthcare logged nearly 520,000 acute patient days, had nearly 136,000 acute admissions, and provided almost 464,000 emergency services. Intermountain’s physicians and staff performed 40,650 inpatient surgeries and 108,149 ambulatory surgeries.

Breaking down natural silos

In the mid-1990s, Intermountain Healthcare sought to create a solid method for clinical decision support applications. Like all healthcare systems, Intermountain collects huge amounts of data. But Intermountain’s goals have always been to share and aggregate data in a meaningful way for treatment decisions and outcomes analysis.

The impetus of Intermountain Healthcare’s use of the 3M HDD dates back to 1994. At the time, Scott Narus and the rest of Intermountain’s medical informatics team worked to develop new applications to support a growing outpatient clinical environment in
addition to the existing state-wide hospital system. The team needed a mechanism to not only centralize data, but structure it as well. Together, Intermountain and 3M Health Information Systems collaborated to create a thorough, normalized and standardized infrastructure.

Data in health systems come from multiple sources and in a variety of standards and terminologies. The vocabularies, codes and terms used in one system may mean something different—or nothing at all—in another. Unless a data dictionary is robust enough to “translate” data elements, interpret data relationships, and map each data element to an actual concept, data as basic as vital signs cannot be shared between systems or integrated into a patient’s record.

As Narus and his team crafted better patient management and display tools, they strived to avoid the natural silos that could build up around the system. In order to leverage the system’s computerized healthcare data, it needed to be concretely defined and consistently translated into a standard, meaningful language.

“Traditional healthcare application development meant that the effort of managing data and creating applications could become almost exponential. Because of the increasing effort and complexity, we faced the very real possibility that data would never be woven together in a semantically correct format,” Narus said.

The Intermountain team knew that if the entire system had a way to agree on specific terms or concepts from the start for data, rules, displays and reports, complexity would decrease and, most importantly, quality of patient care and robust clinical decision support would increase.

“We had to go beyond documentation for documentation’s sake or for billing’s sake,” said Naveen Maram, MD, MSHI, MPH, clinical modeling engineering director for Intermountain. “We knew there was something more that we could do and logical processing was the key. We were, from the beginning, thinking about how best to process information with clinical decision support at the core. 3M’s HDD was that key piece—centralized data plus structured data.”

Because it integrates easily with other systems, the 3M HDD preserves the viability of Intermountain’s data in hybrid systems and data warehouses, supporting the use of legacy data for clinical decision support and research.

Defining the central concept

As Intermountain built its medication management program, one of the first things Narus and his team did was to flag drug-drug interactions and code everything according to the HDD standard.

“With the clinical decision support rules, it was easy to go back to the HDD data,” Narus said. “We could break down anything ordered by a physician, check all ingredients, check all interactions and quickly get correct notifications or alerts because it was all in direct correlation with what was in the HDD.”

What’s more, drug allergies could be recorded as coded data. Because the team coded them against the HDD format, new orders would fire allergy alerts.

“The great thing about our system is that you can make hierarchical associations,” Narus said. “If you were working with a beta blocker, our clinical decision support rules don’t have to list all beta blockers and every visual representation of them. A decision support rule can just say the category of beta blocker and the HDD knows everything that’s been defined as such. It makes the efficiency of maintaining rules so much easier.”

Over the course of Intermountain’s journey with the 3M HDD, one thing remains constant: The reliability of data. With structured, centralized terminologies and ontologies, Intermountain has the keen ability to both understand and monitor information at the patient level and at the institutional level to accurately and compliantly respond to current healthcare mandates.

“We know that terminologies change, but with our system in place and the HDD defining the central concepts, we can map without having to split or change codes,” Narus said. “This gives us so much more flexibility. We can consume outside rules for outside terminologies beyond Intermountain’s own. With our ability to map, I know how they relate to my internal terms rather than having to have our teams come up with yet another description. The HDD lowers the cost of enveloping this information every time.”

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