

California State Hospitals Advance Clinical Outcomes through Pharmacy Data Dashboard Developed by Planet Technologies

Across California's five state psychiatric hospitals, 6,500 patients receive treatment supported with almost 50,000 medications dispensed through the hospital pharmacy system.

Taking a monumental step forward to harness the value of their patient, prescription, doctor and clinical information across the entire network, the California Department of State Hospitals (DSH) is using big data to improve qualitative outcomes, minimize employee risk and maintain the highest standards in patient care.

Clinical insight limited by disparate data

Historically, prescription data reporting from the DSH mainframe system was focused on patient level information. Clinicians had no ability to analyze prescription data across hospitals to identify patterns and exceptions. Data pertinent to patient outcomes was housed in multiple systems, so DSH needed to aggregate data that could be analyzed to:

- Improve staff and patient safety
- Enhance patient care
- Manage risk proactively
- Automate red flags and alerts based on benchmarks
- Control costs to further fiscal responsibility

DSH awarded the project to Planet Technologies. Planet designed a data warehouse and dashboard using software that DSH already owned through their Microsoft Enterprise Agreement, including Microsoft SQL Server and SQL Server 2012 Analysis Services. Data is extracted from five sources to present a single, centralized set of consistent, accurate and accessible information.

Dashboard delivers powerful insight

Planet's consulting team worked with all the levels of clinicians to determine what information would improve their decision processes. With data available on a scale that clinicians had never seen before, it took some time for them to understand how they could apply it in their daily work. Working with the Pharmacy Data Dashboard, clinicians experienced instant insight based on data they could never dig into before.

As the first BI implementation for DSH, it was imperative to show results quickly and then iterate. The clinicians needed to work with the data to define important benchmarks because they had not previously had access to such a broad spectrum of enterprise data.

Information for new insights

The DSH Pharmacy Dashboard is used by over 150 staff including Clinical Leadership, MDs, PharmDs, PhDs and nurses representing every level of technical comfort and literacy.



Project Summary

Pharmacy Data Dashboard gives clinicians access to centralized patient, drug and physician data. Dashboard indicators provide at-a-glance status while drill down provides access to granular detail.

Project Technology

- Microsoft SQL Server 2012
- Microsoft SQL Server Analysis Services 2012
- Microsoft Performance Point
- Microsoft SQL Server 2012 Reporting Services
- Microsoft Excel

Project Results

- Pharmacy Data Dashboard offers drill down and analysis to serve wide-ranging user abilities.
- Enterprise reporting provides insight across hospitals, patients and doctors.



Through an interactive, engaging training program, Planet consultants helped all levels of users build confidence using the web-based dashboard and drill-down. Excel users were quick to adopt PowerPivot, which makes it easy to build custom ad hoc reports.

The access to information enables DSH clinicians to set goals and objectively track the data to measure effectiveness. Examples of how DSH will use the dashboard, include:

- Comparisons of patient treatment courses across hospitals.
- Tracking costs to outcomes to promote fiscal responsibility.
- Correlating outcome patterns across medications and doctors.

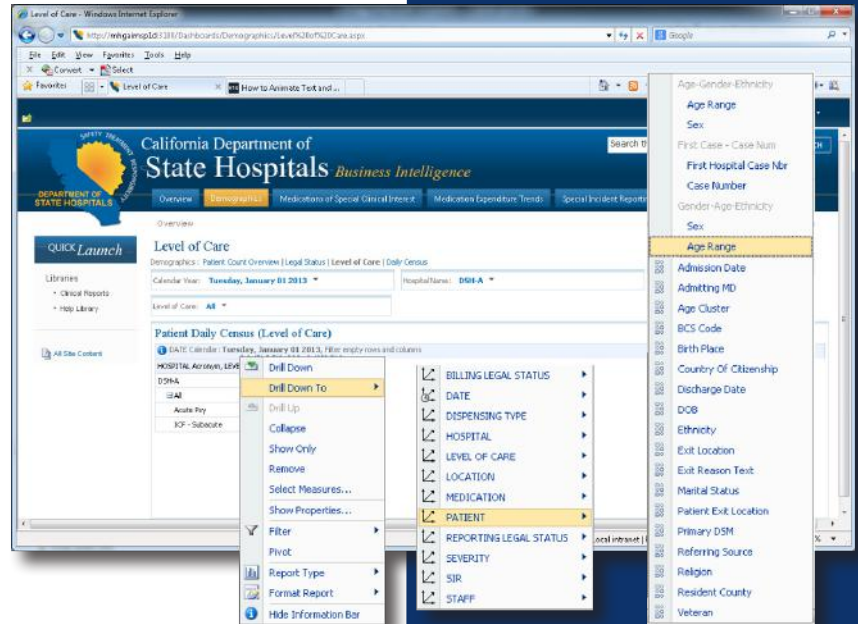
With access to approximately 100 million dispensing records over 5 years, historic data can be tapped to increase sample sizes.

In addition to analysis capabilities, the project has simplified manual tasks like the Daily Census report. Self-service and automated reporting frees up the IT staff to continue to improve their use of technology.

Answers in minutes, not days

It is common for the DSH to receive requests for information from other agencies, like the Department of Finance. For example, an unusually high length of stay rate at one hospital would prompt the requesting agency to ask for the average length of stay across all hospitals, broken down by the primary diagnosis.

With the Pharmacy Data Dashboard's decomposition tree, clinicians are now able to answer question in minutes, not days. They can drill down from the dashboard to see that one patient has been in the facility for three years, which would skew the data. In the past, they would have had to request a report from IT, which could take several days. Now, they can get answer themselves very quickly.



Clinicians use a "decomposition tree" to drill into the details behind the aggregate numbers.

Project by the Numbers

- 6,500 patients
- 13,000 staff
- 5 state hospitals
- 50,000 daily medications
- 150 dashboard users
- 75 GB of data
- 5 sources of data
- 5 year history with 100 million dispensing records



Lessons learned by DSH to apply to your business intelligence project planning

When so many BI projects go awry, why has the DSH project been so successful? Proactively identifying strengths, weaknesses, opportunities and threats to the project as DSH and Planet Technologies did is the first step. Additional lessons learned include:

Develop prototypes quickly to demonstrate the value that the project will deliver. Prove the concept with small wins to build buy-in and then apply to other areas. DSH users are already reaping the rewards of the pharmacy data and enthusiastic about additional data sets coming on line.

KPIs are not the best the place to start. Understanding what data is available and what kind of information is important to decision makers is the first step. DSH is using their new found access to data through the dashboards to determine which KPIs will deliver the most value.

“Wow” the users for faster adoption. The DSH BI dashboard is built on SharePoint which was customized to present a professional and appealing user experience. User adoption has been fast and painless.

Validate data early to gain a clear understanding of the depth and limitations of the information you have available. DSH has clearly defined and documented the limitations of the data available through the Pharmacy Data Dashboard. (An unexpected benefit has been the uncovering of bugs in the mainframe system based on better reporting through the dashboard.)

Continuous training, aligned with user skills. As with most organizations, there is a wide disparity in the technical skills of the people who will use the dashboard. With the help of Planet, DSH built confidence in users through training.

Test every single site. When systems are rolled out to different geographic locations, testing the user experience on site will avoid surprises.

Next steps

Now that the Pharmacy Data Dashboard is delivering new insights to the DSH leadership and clinical teams every day, they are ready to expand.

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About Planet Technologies

Planet Technologies is the leading provider of Microsoft consulting services to public sector and commercial organizations. Our team of Microsoft experts provides support for Office 365, CRM, SharePoint, System Center, SQL, and Windows 7 and 8. Planet has significant experience in deploying business intelligence, cloud services, unified communications, records management, workflow automation, collaboration, systems management, virtualization and more.

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