



U.S. Department of Defense

Saving millions by detecting fraud with SAS®

Dr. Scott Optenberg and associates with the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) and the Department of Defense (DOD) are using SAS solutions to spot billing and health services fraud. Providers who try to double-bill the government health care system are now being detected by DOD personnel through a new method of mining the terabytes of historical and newly entered data.

By utilizing data warehousing and mining tools built at their Fort Sam Houston, Texas, facility, Dr. Optenberg and his colleagues brought an end to a crime spree for an offender who was double-billing CHAMPUS. At the same time the provider was submitting bills to CHAMPUS, he was seeking payment for the same services from the Medicare program. The fraudulent claims submitted from this single vendor totaled \$1.7 million.

Optenberg, chief of the Analysis Branch of the Army Center for Healthcare, Education and Studies (CHES), says the Army's surgeon general asked the center five years ago for an archival database management system that would help financial officers manage CHAMPUS spending. CHAMPUS had been a separate line item in the DOD budget, so no single organization felt accountable for it.

"Nobody really cared when CHAMPUS was a \$500 million line item, but then it started growing about 12 percent a year," Optenberg says. "Pretty soon it broke \$4 billion a year and got on the congressional radar screen." Congress told the services that CHAMPUS

would be folded into their operational budgets as "a guns or bandages type of thing," Optenberg says.

His group took on the task of designing the algorithms, metafiles, and indexing methods that now make it difficult for criminals to hide behind stacks of paperwork and a maze of electronic records. SAS software was Optenberg's starting point for building the Unix system. "We used the deep code in SAS where the real power is for developers," Optenberg says.

One hospitalization can generate 25 or more CHAMPUS claims. Optenberg used his knowledge of episode-builder techniques to convert those 25 claims into a single record so administrators could see the total cost of that hospitalization. It took a large number of SAS subroutines "with hundreds of do loops and array processes," he says.

Any database supports many-to-few data extraction. But a warehouse, Optenberg says, was "the only logical way of managing our combined requirement for many-to-many and many-to-few extractions."

With the CHES IT Infrastructure System's restructured data, administrators for the first time could mine DOD health services records to learn the total cost, for example, of a bone marrow transplant or the average yearly cost of treating diabetes. No one could ever do that with unmodified claims records, Optenberg says, because "you'd be dealing with 1.2 million records in a sequential format, reading one at a time."

Industry	Public Sector
Business Issue	Regulating fraudulent health care claims
Solution	SAS® designed Unix system
Benefits	Administrators can mine DOD health records, while SAS/IntrNet for Windows NT allows analysts to access data more easily with their Netscape browsers.

The 250 officials around the globe who analyze the health services data run a SAS query application on their PCs under Microsoft Windows, Optenberg says.

Access control

The Medical Analysis Support System uses automated data access controls to the data warehouse and tools. Optenberg's group utilizes another SAS solution, SAS IntraNet software for Windows NT, to allow analysts to access the data more easily by using their Netscape Communications Corp. browsers.

Archival and current health services data for the warehouse comes from a DOD megacenter in Aurora, Colo. Other sources send mainframe IDMS and VSAM, Unix tape backup, dBase III, spreadsheet and other data on every possible media type from cartridges and digital audio tape to optical disks and PKZip files on 1.44M floppies.

"I can't think of a data source that we haven't received, and for us that's not a problem. It's fun," Optenberg says.

Built to last

The civilian researcher started building the SAS data warehouse with 200 reels of archival data — standard IBM compressed variable-length record streams "not designed to be mucked with," he says.

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Chief of Analysis
Army Center for Healthcare,
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His expert colleagues sometimes had to work down at the bit level to resurrect some of the data, which dated from 1987. "The mishmash of data sources took lots of scrubbing," Optenberg said. The SAS warehouse at first held only claims data, but has expanded to include eligibility, clinical, commercial, and tumor registry data from more than 100 different databases.

Since the word has gotten out about the system, Optenberg and his colleagues at Fort Sam Houston report their phones haven't stopped ringing. The system will be integrated with other DOD decision-support systems into an even larger Corporate Executive Information System, Optenberg says.



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