Business Intelligence for Medical Practices

SIMPLE TOOLS TO HELP YOU MANAGE YOUR DATA

By Nate Moore, CPA, MBA, CMPE

Many of the major practice management (PM) and electronic health record (EHR) software programs are written so that data is stored in a relational database management system from Microsoft, called SQL Server. Most versions of SQL Server include at no additional charge three programs designed to take advantage of and work with the data stored in SQL Server. SQL Server Analysis Services (SSAS) is used for building cubes and data mining. SQL Server Integration Services (SSIS) moves data into and out of SQL Server. SQL Server Reporting Services (SSRS) creates webpages and schedules email to report on data stored in SQL Server. A brief description of each of these three tools will help billing companies understand these options and how they might help their business.

SQL Server Analysis Services

One of the main purposes of SSAS is to build what are called cubes. A cube is a way to efficiently store a lot of data for analysis. It is common to use Microsoft Excel to analyze database data, but even the newest versions of Excel can only hold one million rows of data. Even if you use a pivot table, Excel slows down considerably if you put anything close to one million rows of data in a spreadsheet. On the other hand, a cube can easily manage several million rows of data without slowing Excel down.

Notice the two Excel spreadsheets in Figure 1. The spreadsheet called "2014 Billed Charges Connected to Table" has 500,000 records stored in the spreadsheet. The spreadsheet is 3.8 kilobytes. The spreadsheet called "Billed Charges Connected to Cube" contains 2.1 million records, over four times as many charges as the first spreadsheet. But the spreadsheet connected to the cube is only 14 kilobytes, less than 0.5 percent of the spreadsheet with the data stored as part of the spreadsheet. Storing the data as a cube and connecting Excel to the cube allows users to analyze more than four times as much data in less than 0.5 percent of the space. Practices with 20 to 30 providers can generate over a million rows in billed charges data in a couple of years. Having the ability to efficiently analyze more data with cubes allows for longer trends and more comprehensive study.

SSAS also includes a variety of tools to help practices with data mining. There are tools for classification problems (Will a patient show up for their next appointment, or respond to a given treatment?), regression problems (What will a patient's healthcare cost next year, or what is the value of a new patient?), or clustering problems (Which patients are more likely to respond to a medication or a marketing program?). Typical data mining approaches gather hundreds of thousands or millions of records and look for patterns in the data to predict future outcomes.

SQL Server Integration Services

SSIS is designed to help users move data into SQL Server to take advantage of cubes, data mining, and the SSRS tools discussed next. Practices that are trying to analyze data stored outside the SQL Server database, such as data in the cloud or in a separate PM or EHR system, use SSIS to combine the data for analysis. SSIS also offers a wide variety of ways to export data to share with other third-party applications.

For example, a practice in Texas uses SSIS to import eligibility and benefits data received as an Excel spreadsheet from a third party. Every night, the SSIS routine looks for the spreadsheet in a set folder on the network and imports the data to a table in SQL Server that is used in generating a superbill to track charges. Another practice in Indiana uses SSIS to import EHR data stored in a separate, non-SQL Server database into SQL Server so that SSRS reporting can be done. A practice in Washington uses SSIS to import clinical data stored in the cloud. The cloud-based reporting system is very limited, but once the data is imported into SQL Server, many more reporting options are available.

SQL Server Reporting Services

SSRS is probably the most immediately useful of the three tools for billing practices. SSRS allows users to create reports based

FIGURE 1

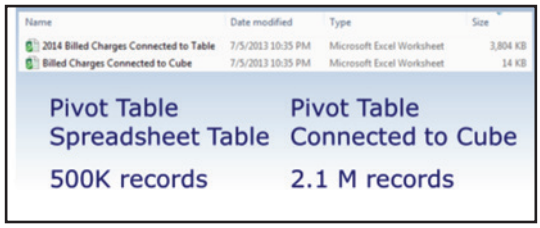

FIGURE 2

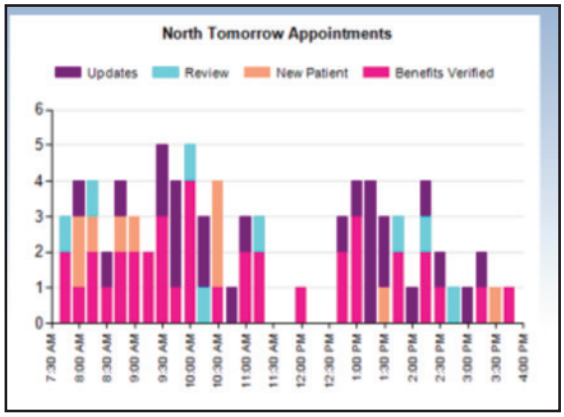

FIGURE 3

DAD Appointment Exceptions 7/25/2013

Appt Date	Acct Num	Location	Provider	Repeated
Check for Methodist Plan Number				
8/13/2013	3092042	ND	SEARS, MD	Repeat - Scheduled 07/15/2013
8/13/2013	3089684	ND	SEARS, MD	Repeat - Scheduled 07/15/2013
Filler Appointment without Deposit				
8/30/2013	4246	LC	FLEISCHLI, MD	Repeat - Scheduled 07/15/2013
9/12/2013	3022580	BA	FLEISCHLI, MD	New
Grenz Patient with PA or Nurse				
7/29/2013	3103960	LC	ROSE, PA-C	Repeat - Scheduled 07/16/2013
7/29/2013	3126778	LC	ROSE, PA-C	Repeat - Scheduled 07/22/2013
7/31/2013	3102502	LC	PARMA, PA-C	New
Inactive Patient with Appointment				
8/1/2013	HOLD	ND	ROSE, PA-C	Repeat - Scheduled 07/15/2013
PA with Medicare Patient DIFFERENT Appointment Reason				
8/1/2013	3128935	BA	PARMA, PA-C	New

on SQL Server data. Those reports can be pulled by users on demand from a webpage that can be configured like a dashboard, or the reports can be pushed to users on a schedule via email.

Figure 2 is an example of an SSRS report configured to come via email. The example comes from a busy orthopedic practice with three main clinics, each within about 30 minutes of the other clinics. Every afternoon at 3:40 p.m., the front desk manager receives an email with this information for each of the three clinics. Every patient with an appointment tomorrow is grouped into one of four categories based on how long they're expected to take at registration. A brand new patient will take much longer to register than a patient whose eligibility and benefits have been verified and who was in the practice recently. The front desk manager can instantly see what tomorrow's appointments look like and plan accordingly by moving staff between the clinics, asking patients to come in earlier, or rearranging internal staff assignments to make sure the clinic flows smoothly.

Figure 3 is another example of an SSRS email, this time from a dermatology practice. This practice used SQL Server to create a wide variety of rules to test against future appointments. For example, patients with a specific insurance, who haven't made a required deposit, who may be scheduled with the wrong provider, or who are in collections, are reported via email every weekday at 7:00 a.m. The practice doesn't need to review all future appointments, since the daily email quickly and succinctly reports any appointment issues that need to be addressed. Any appointment appearing on the list for the first time is flagged in green to get special attention from the practice manager.

Both of these SSRS reports are also available on demand at any time from the practice's internal reporting page. Managers can either pull the data from the webpage or have SSRS push the data to them via email as often as they need to see the information.

The free business intelligence tools included with most versions of SQL Server are extremely customizable to help practices see exactly what they need to see, when they need to see it. Proactive billing organizations can powerfully distinguish their service from the competition using SQL Server tools they may already own. ■

Nate Moore, CPA, MBA, FACMPE, writes custom SQL server code to mine practice management data for analysis in Excel, on webpages, and via email. Nate's first book,* Better Data, Better Decisions: Using Business Intelligence in the Medical Practice*, written with Mona Reimers, was just published by MGMA. His free Excel Videos have been viewed over 900,000 times and are available at mooresolutionsinc.com. Like PivotTableGuy on Facebook or follow @PivotTableGuy on Twitter to be notified each time a new Excel Video is released.