Data Management: A Well-Defined Strategy for Office-Based Labs

With increased pressure on pricing and quality care comes a greater need to accurately track practice analytics than ever before.

BY WAEL ELSEAIDY, PHD, AND MICHAEL THOMPSON

In 2002, the way Major League Baseball teams scouted, drafted, and hired player personnel changed forever. The Oakland Athletics' General Manager, Billy Beane, was faced with the impending departure of star players to free agency. These stars had helped the team make the playoffs the previous year, and Mr. Beane's problem was compounded by the fact that the Athletics had a significantly limited payroll for the replacement of its stars in comparison to other major market teams.

That year, Mr. Beane hired Peter Brand, a Yale economics graduate with a fundamentally different way of assessing players' value based on player and team data and statistical models. Rather than relying on the tradition of scouting players that major league baseball teams had used for decades, Mr. Brand used player and team statistics to prove that on-base percentage is a key metric to judge a player's value.

Mr. Beane and Mr. Brand used this statistical model for player selection while rebuilding the Athletics organization. They assembled a team of undervalued players with much more potential than other evaluators might have identified. With this team of undervalued players, the Athletics set a new American League record of 20 straight wins during the 2002 season and went on to win their division. During the 2004 season, the Boston Red Sox used the same statistical models to break a 100-year losing streak and win the World Series.

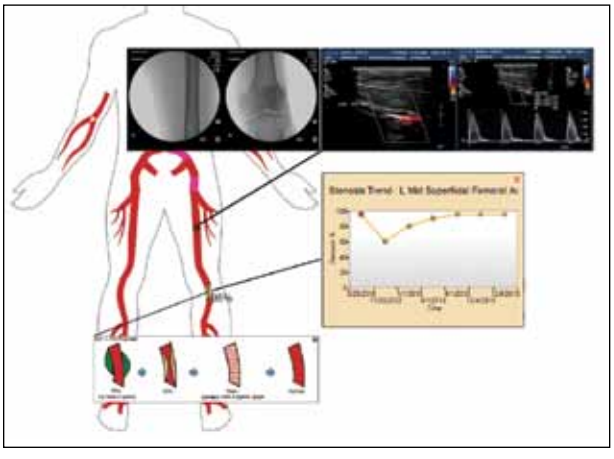

Figure 1. Graphic Fusion Workflow provides physicians with the ability to create treatment plans by drawing on specialty-based diagrams, like the one shown here.

Data are changing the way industries across the world function. Faced with rising pressure from the government to hold down prices and improve the quality of care, health care providers are also searching for new data management tools to help create a

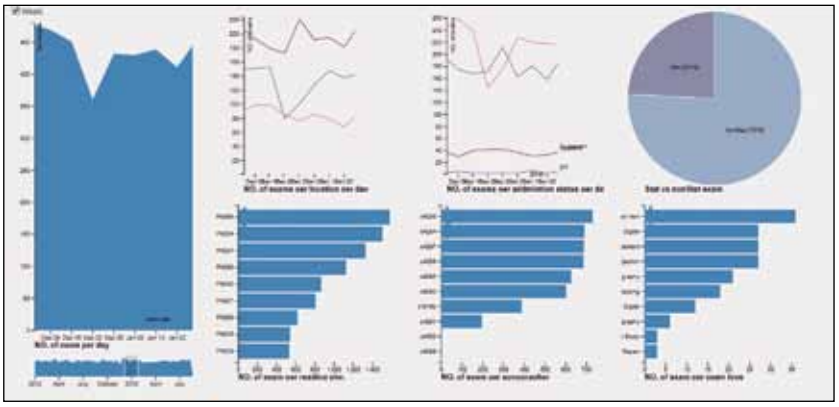

Figure 2. Operational management analytics can instantly calculate the effects of a change in personnel, medication, or device selection.

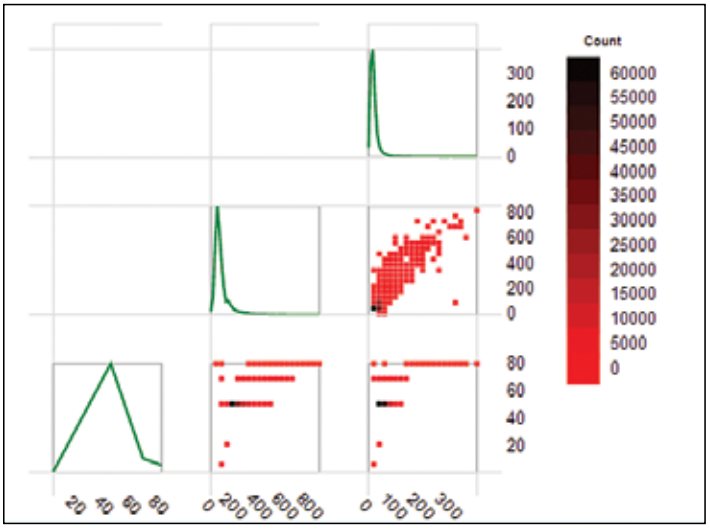

Figure 3. Population health analytics allow physicians to share and view national and international data to gain deeper insights into vascular disease management.

path to greater efficiencies and productivity. Data and statistical models are changing the way physicians manage and operate their practices, including office-based endovascular labs (OBLs). Access to data and the corresponding assessment of data will allow physicians to view and manage their OBLs in ways that will change the fundamentals of health care going forward.

OBL DATA MANAGEMENT CHALLENGES

One of the many challenges facing a new or existing OBL is the amount of data sources that administrators, operators, nursing staff, and physicians have to deal with on a daily basis. Many of these data are still compiled and exist only on paper. Compounding the problem is the diversity of data formats and data-creating devices, which include images, office notes, sketch diagrams, patient monitoring, catheterization devices, ultrasound devices, hemodynamic devices, and patient medications. Inventory, billing, and electronic medical record (EMR) software are not designed to handle the complicated workflow and diverse data sets and sources in the OBL setting.

Managing an OBL using a generic EMR also leads to inefficiencies and creates significant amounts of manual work and lost productivity. More importantly, generic IT solutions do not provide the ability to track valuable information at the operation level, as well as at the administrative and productivity level of a practice. A successfully run OBL needs to have a strong data management platform tailored to the complete OBL workflow, structuring data at a clinical level, and providing this valuable asset to the owners and operators in a cost-effective and efficient manner.

NEW IT SOLUTIONS FOR MANAGING THE OBL

New software applications are now being introduced to the OBL market that bring together legacy modality and disparate IT products, as well as provide performance and productivity solutions. High-quality IT products that include analytics support should not be reserved only for the large enterprise organization. These new products bring together imaging, diagnostics, and traditional practice management and EMR in a single informatics workflow application designed specifically for the OBL markets. With this type of system, data stay structured and whole throughout the patient ecosystem from the practice management module to the imaging modality and back into the EMR. The system optimizes workflow, eliminates manual entry, and enhances patient safety and clinical accuracy with one unified solution. This end-to-end solution should be supported with a single back-end database and web-based analytics engine.

NEW OBL WORKFLOW AND PRODUCTIVITY TOOLS

Innovative technologies like Graphic Fusion Workflow (GFW; Medstreaming, Redmond, WA) allow physicians

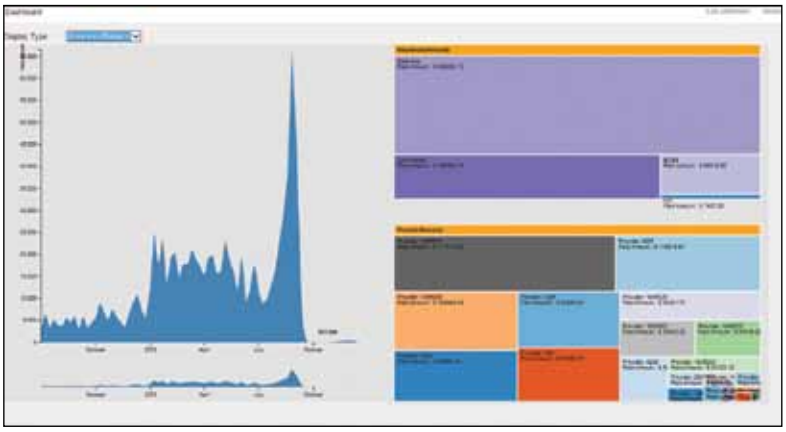

Figure 4. Revenue cycle management analytics give insights on how to maintain profitability.

to create treatment plans or develop clinical findings by drawing on specialty-based diagrams (Figure 1). GFW technology provides a graphical history and sketch library containing different parts of the anatomy. The drawings correlate with the database and create structured language, further supporting the quest to create minable data in all facets of the digital solution. An encounter that might have required 15 to 20 clicks and many minutes of time in a typical EMR platform would only take a few seconds using this new technology. These types of technologies also create communication efficiencies by providing a visual medical history, which quickly orients the physician to the patient's past procedures and diagnostic studies.

A dedicated approach to the capture of structured data will allow the OBL to turn data into real and actionable business insights and clinical intelligence (Figure 2). For instance, tying the intraprocedural workflow to the inventory management software in the OBL provides fast and accurate case costing and monitoring. The effects of a change in personnel or medical device can be instantaneously calculated. The OBL is then in a position to analyze all facets of case costing, including device, consumable supply, and medication utilization, along with staffing and overhead, in real time. More importantly, with this information, a practice is primed to plan and react to changes in reimbursement.

QUALITY REPORTING BENEFITS

Users of these new IT solutions will be exposed to data models on consumer-level spreadsheet technology. With access to data in manageable formats, OBLs will gain the ability to generate quality reports in minutes, versus the hours and days it may take to compile data manually. This can be accomplished with existing personnel and does not require specialized IT skills. Because these clinical data reside in the OBL structured database, they can easily be compiled and shared with quality initiatives across the world.

OUTCOMES AND PREDICTIVE MODEL POTENTIAL

Unified, structured IT workflow/fusion layers will help drive the OBL data model. This model enables powerful predictive analytics to help proactively manage all facets of the OBL. Predictive analytics also assist decision making in real time, as well as uncover new insight into the efficient operation of an OBL's clinical workflow, finances, inventory and material management, and human resources. More importantly, data models will help elevate patient care and disease management. OBL owners and clinicians will be positioned to share clinically discrete data at a national and international level (Figure 3). Dedicated vascular clinical data warehousing will combine tens of thousands of endovascular procedures, and with this information, the endovascular community stands to gain insights into vascular disease management and disease prevention.

CONCLUSION

Data are empowering industries around the world with new, actionable insights. Information gained from data is allowing organizations to increase quality and productivity while simultaneously lowering costs. A structured, specialty-based workflow application designed specifically to support OBL clinicians, health care organizations, and the endovascular community with real-time, web-based applications will allow data evaluation from the entire patient ecosystem. From productivity intelligence and outcome analysis to quality control and the revenue cycle (Figure 4), these data engines will provide platforms for comprehensive analytics that are simple to use, cost effective, and designed to be used on the web from any place at any time. These enabling IT technologies should be considered as a standard in new and existing OBLs. ■

Wael Elseaidy, PhD, is the CEO of Medstreaming in Redmond, Washington. He may be reached at wael.elseaidy@medstreaming.com.

Michael Thompson is the COO of Medstreaming in Redmond, Washington. He may be reached at michael.thompson@medstreaming.com.