

MAKE YOUR LIFE EASIER: USE SLEEP LABORATORY DATA MANAGEMENT TOOLS

by Duane Johnson PhD



Organizing clinical, financial and quality data for effective sleep program management can be a challenge when working from stacks of paper. Creating a reliable method of calculating and reporting the data in a consistent manner is yet another challenge. But, developing and maintaining an effective database is the backbone to handling a program's data management requirements. It replaces paper data with electronic data, which can easily be searched and summarized providing reports that ease the operational and management burdens. So, I asked Kent Savage, a database specialist, the following questions to help you better understand the benefits and motivate you to take advantage of them.

Why Develop a Database?

- 1) Having a database provides systematic approaches to monitoring quality data.
- 2) As sleep programs progress towards pay-for-performance reimbursement in sleep medicine, our new requirement will be to adhere to nationally recognized standards demonstrating evidence-based performance.
- 3) A database is also the solution for tracking data needed to complete AASM and JCAHO accreditation requirements.

What is a Database? A database is:

- A collection of related data stored in tables
- A query mechanism which can search and sort data
- A mechanism which can format results into usable reports

What should a comprehensive database in a sleep program include?

- Clinical patient data including patient encounters for evaluation, diagnostics and treatment as well as data supporting clinical decision-making
- Data which can demonstrate communication across the continuum of a sleep patient's care
- Clinical quality and safety data relevant to patient care
- Data demonstrating compliance with accreditation and regulatory indicators

A database is a structured collection of information used to support work practices in an organized format that allows for retrieval of useful information often from the patient's chart, which supports clinical decision-making. The organized collection of data may include clinical, financial, staffing, and regulatory information mandated by accreditation requirements. The database information is also used to augment communication along the continuum of the sleep patient's care. This may include information about treatments, medication etc. for hand-off to the next provider, such as back to the referring primary care physician for continued care of their sleep complaint or for referring the patient for CPAP treatment with the DME provider or referring the patient to a psychologist for management of their insomnia.

An effective sleep database, is a tool that documents evidence of patient care, compliance with national clinical standards, compliance with regulatory requirements and compliance with accreditation standards. Specifically, documentation of issues such as DME referrals, treatment efficacy, PAP compliance, medication management, handoff to the next provider, and other routine activities becomes a simple process rather than a process requiring hours of chart review.

What are some specific scenarios where a database can provide efficient and valuable information?

- Sleep patients have a right to expect timely access to evaluations, diagnostics and treatment. Can you demonstrate that your sleep program has an acceptable time frame for producing diagnostic reports? Most sleep professionals believe they are responding quickly to this need. Yet, when reviewing actual data, we are often surprised with our own inefficiencies. We could drill into the cause of inefficient reporting by looking at: 1) the time between the patient diagnostic and completion of scoring; 2) the time between scoring and physician dictation of the report and; 3) the time between dictation and distribution to the referring physician.
- Efficacy of PAP treatment in association with patient compliance could be another scenario. By tracking respiratory indices before and after PAP treatment and correlating patient compliance, we can demonstrate the efficacy of PAP treatment not only for individual patients but groups of patients based on such indices as age, gender, co-morbidity or other relevant parameters.
- Efficacy of medications can be tracked to demonstrate evidence-based treatment or to facilitate research trials.
- Developing your sleep program's database is a solution to tracking the data required for answering any accreditation question.

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What about evidence based, pay for performance documentation?

Using a database provides real time data for these and numerous other possible scenarios, which aid in benchmarking evidence-based medicine from both a clinical perspective and from an operational perspective in terms of pay-for-performance.

When responding to questions from insurance companies, or national quality agencies, or from accrediting bodies such as the AASM, one of the program statistics they expect to review is the distribution of diagnostic classification using the ICD9 codes. Access to the ICD9 diagnostic codes upon discharge will provide the number of patients seen for sleep apnea, narcolepsy, parasomnias, restless legs disorders/periodic limb movement disorders, and insomnia. These diagnostic groups can be summarized in minutes when the ICD9 code is listed for each patient visit into your database at the time of their visit. The encounters are rapidly summarized using a query of the database when the data elements are entered at the time of discharge from your diagnostic session or when the report is being transcribed.

Quality data entered into a database can be retrieved in seconds to provide evidence of quality care and quality improvement strategies implemented to improve patient care. The accreditation requirement for Diplomate of Sleep Medicine review of non-boarded providers' study interpretations is easily documented and summarized to meet accreditation requirements. The same holds true for inter-scorer variability. A database automates the time consuming, mundane task for intermittently auditing patient charts, collating the data and creating a report.

What data sources can a sleep program use to establish the framework of a database? You use your existing data sources:

- Demographics, encounter info and scheduling info from patient accounting systems which form: the basic structure of clinical patient care, Trending information for marketing and strategic growth planning, referral patterns and financial integrity.
- Data from safety audits which: benchmark data for JCAHO accreditation, AASM accreditation, CMS Pay for Performance ratings and National Committee on Quality Assurance ratings, demonstrate compliance of safety for the environment of care by documenting biomedical safety and fire safety, document functional fixtures (plumbing, floor coverings, beds, and document cleanliness and other aspects of infection control.
- Adequate staffing levels from work schedules which: demonstrate clinical safety when providing clinical and diagnostic services, demonstrate the properly trained / credentialed staff provide care within their scope of practice and demonstrate that staffing levels are adequate to respond to unexpected or emergent situations
- Patient satisfaction data which: assists in documenting application of quality improvement initiatives and correlates to pay-for-performance.

All of this data, once added to a database, provides a means to reporting objective, usable information in an automated manner. Some examples are: Tracking improvement of health risks associated with sleep apnea, trending BMI and other co-morbidities within the continuum of treatment as it relates to overall patient health and tracking practice patterns that demonstrate a positive impact on health and wellness. These and other sets of data demonstrate patient outcomes needed to meet expectations of accreditation organizations and pay-for-performance reimbursement.

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via VPICU telemedicine. The Japanese patient had diaphragm pacers surgically implanted in LA using the innovative thoracoscopic technique originally developed there. Because pacing is not actually started until 2-months after surgery, the option of VPICU telemedicine was used.

To support the goal of enhanced education VPICU has an education section, accessible from the top bar, where education material is presented in a practical format. Case studies, clinical examples, lecture material and interactive discussions are used. VPICU is hoping to develop an electronic tracking system that practitioners can use to track self-education. A "Question of the Month" is presented, with archives of past questions. Case studies are enhanced with clinical materials such as x-rays and lab values. The answer is also given at the bottom of the presentation.

The PICUList is an email mailing list for discussion of Pediatric Critical Care issues. To subscribe, send an e-mail to PICUList@vpicu.org with the word "subscribe," typed in the SUBJECT. All practitioners interested in pediatric intensive care medicine are welcome. At the main website click on "PICUList" and you will find Etiquette instructions and user instructions.

The "PICU Directory" can be used to search for a Pediatric Intensive Care Unit by state and/or by country. The hospital name and address is given and stats on admissions and staff are given. There is also contact information. If you are a registered facility you can update that information right from the website, or can initiate registering your facility.

If you click on "VPICU Directors" from the home page you will be taken to a list of the Directors. They are listed with their professional background information and personal contact information including websites. You can also read their Medical Practice Philosophy, their Professional Biosketch, and the Computer/Telemedicine/ Informatics Projects they've worked on.

The website itself is very easy to navigate. You will quickly find all the information that I have described and can link over to "myVPSOnline". Anyone with an interest in pediatric intensive medicine will find something of interest here. This would be a great place to initiate networking in the field. And if you are a PICU, certainly you will want to investigate participating in some or all of what this organization has to offer.

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"Nine to five might be a problem - I like to sleep in."

So there you have it. As Kent Savage said, we don't need to be challenged with organizing the clinical, financial and quality data needed to manage a sleep program. We don't need to cope with stacks of paper audits, calculations and manual reports. Some of the questions you may want to answer to determine your readiness for a database are: What data do you currently track and how do you report this data? What are my current financial and human resources available to coordinate this process? What obstacles do you anticipate in implementation of a database? Where do you want to be in the future with data management and reporting?

A database comprised of patient demographics, sleep related clinical measures, encounter history, quality audits and basic financial data can become the backbone of a sleep program management system. Combined with the expertise of a program's clinical and non-clinical human resources, the database becomes the tool for both clinical and fiscal operations leading to successful patient outcomes, clinical quality, clinical safety, accreditation and higher pay-for-performance.

Simply put, a database is a documentation tool. A database is designed to enter data at the time of collection, which results in reduction of stacks of paper and saving personnel time to collect data retrospectively, making the process extremely efficient and cost beneficial.

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Reflections on Manual Ventilation *Continued from page 36*

requires that flow rates into the bag be adjusted to keep the bag sufficiently expanded, but not *too* expanded. In some designs, there is also a requirement to adjust the flow out of the bag via use of a variable flow resistor where the gas egresses the bag. And in some designs the egress of the gas from the bag is controlled by partially occluding a hole in the bag with your thumb. In the hands of experienced clinicians, these design flaws can be overcome, but "experienced" clinicians are not always using the bags. I have personal knowledge of a number of adverse events related to clinicians misapplying flow-inflating resuscitation bags.

I have concluded that overall patient safety is enhanced by eliminating the use flow-inflating bags. And we have almost completely converted our hospital to self-inflating bags. Anesthesia remains a hold out and they have circled the wagons on this issue. They argue that they need flow-inflating bags to do inductions and intubations. They argue that they can attach the flow-inflating bag to the endotracheal tube and allow the patient to spontaneously breath, without imposing too much work of breathing on the patient. They claim that the valves in a self-inflating bag impose too much inspiratory work of breathing on patients, especially small children and infants. As indelicate as it may sound, I just don't believe this. If there is sufficient flow into a self-inflating bag with a duck bill grommet designed valve, the valve actually stays slightly open all the time. Our next stop on the issue is the bench. We intend to measure the imposed inspiratory work of breathing through endotracheal tubes of various neonatal and pediatric sized, while attached to different styles of manual ventilation bags. Obvious man may strike again.

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