

Data Management Overview

Pitfalls of Traditional Retrospective Chart abstraction

Although there are various approaches to data collection, the most prevalent method utilized by stroke centers is retrospective chart review (abstraction), requiring a detailed read-through of multiple records (electronically or manually) following an event or patient discharge. Electronic Medical Record (EMR) review will always be necessary since many quality assurance measures are based upon discharge information (DRG, ICD-9 codes, etc.). This information is then entered into either a local database, several spreadsheets, and/or into an alternative tool such as the Carotid Artery Revascularization and Endarterectomy (CARE®) Registry or Get With the Guidelines®-Stroke (GWTG/Stroke), or more typically, both. Whereas retrospective chart review has been found useful for massive data gathering functions, this approach performs poorly where it concerns emergency processes, both for heart attacks (STEMI) and stroke. A consistent complaint by all stroke coordinators/data analyzers is the excessive effort required for retrospective data abstraction and then the subsequent analysis.

Another common problem is for mis-information to be entered by time-stamping of an earlier event or by “guesstimate” after the fact, e.g. when the neurologist thought they had arrived. Or, instead of documenting the actual “time the CT scan was read” by a clinician who makes the treatment decision, the time is actually when the report from Radiology is documented in the chart. More commonly, certain data points are not even recorded (such as when a CT scan was ordered, or when tPA was ordered)

Time and cost are also issues. For manual chart review, data abstraction can necessitate significant time *and* expense. To accomplish such a task, hospitals must dedicate substantial resources in the form of full-time internal or external data collectors to the effort, not infrequently the stroke coordinator themselves. Even if institutions invest in custom software that acts as data retrievers that facilitate automatic entry into a registry system, the results obtained might be erroneous or incomplete: “Garbage in: Garbage out.”

Unfortunately, custom-designed local database systems do not have the capability of producing sophisticated single and multi-factorial data analysis or facilitating benchmarking; in fact, this form of data collection/analysis is expressly discouraged by the Brain Attack Coalition and the American Stroke Association.* When each stroke center “reinvents the wheel” over and over, individual hospitals unknowingly contribute to perpetual inconsistency in documenting the processes and clinical outcomes so necessary for our field and now mandated by the Joint Commission. So whether the goal of the hospital is simply to find a depository for mandated data points, check a box “complete,” to present or publish accurate results, or embark on a more meaningful process and quality improvement effort, a local database is limited and/or unreliable.

The Simple Solution to Securing the Best Data

Why Concurrent Point-Of-Service (POS) Data Collection is Optimal

Cardiology has solved the data problem with concurrent POS data collection. As the only process improvement stroke registry in existence capable of producing complex process and single and multi-variate clinical outcomes reports, **INSTOR** is dependent on a limited amount of specific and accurate data. Whether institutions are using the system to prepare for Joint Commission review, report on institutional performance or sustain a dedicated process improvement initiative, the extensive output capacity of **INSTOR** is optimized with accurate and complete data.

Stroke coordinators know that EMR abstraction is extremely labor intensive as well as sometimes inaccurate and/or incomplete. A POS model was originally adopted for **INSTOR** by former cardiology nurses and relatively novice stroke coordinators with no preconceived notions about the best way to go about collecting data. Documenting specific data points in a single location by using task-specific data forms (e.g., Data Summary Sheet, ED Data Sheet, Angio Suite Data) has been proved in actual Stroke Centers to be consistent, reliable, accurate, and simple. Contributing to the rationale of a POS model is that most of the required data points for the emergency treatment of acute stroke occur within the first hour following patient presentation. Thus, the implementation of a POS model can be, and has been, easily accomplished.

The advantages of a POS model include the following:

Promotes Accuracy and Thoroughness. By collecting data in real-time, personnel can proactively pursue the necessary data points. Additionally, by having a specific data form, it is more likely that all data will be complete and accurate.

Saves Time. With a POS method, data documentation is performed during the event itself and thus necessitates no extra personnel per se. Most defined data points can be collected within the first hour, with additional information on Intravenous (IV) tPA or Endovascular Treatment (EVT), including 36-hour and 90-day follow-up, requiring minimal additional time. Comparing this approach to the time it would take for a dedicated full- or part-time employee (or even a vendor) to review charts and electronic records, the POS model has major advantages. Additionally, when information is gathered in real-time, all data can be entered into **INSTOR** immediately thereafter in minutes.

Reduces Hospital Costs. By utilizing stroke team or emergency care personnel who are already “on shift” to manage data collection (+/- data entry) for stroke cases, hospitals can eliminate costs associated with additional full- or part-time staff tasked with retrospective chart abstraction, or employing external vendors.

Immediate Feedback. Quality improvement is maximized when results, trends, events, and tracking is fresh, frequent, and memorable.

What the Point of Service (POS) Model Looks Like

A POS model could be implemented in a few ways for emergency stroke care. The first option would be for a nurse from the stroke unit to respond to every code stroke/stroke alert in the hospital, both in the emergency department as well as for inpatients. The advantage of this option is that, in addition to managing data collection, these full-time “neuro” nurses have the expertise to dependably expedite the overall emergency process. They are experts in performing an accurate National Institute of Health Stroke Scale (NIHSS) examination, obtaining an accurate history, coordinating with multi-disciplinary personnel throughout the stroke process, assisting with patient transport and facilitating the entire emergency process. This model is particularly important for consistency and training in academic centers with residents (or ED nurses) potentially changing daily or monthly. It is not necessary that the data collector be a nurse practitioner or advanced practice nurse; stroke floor nurses need little or no training given that this is their area of expertise and documentation is an integral part of their daily responsibilities. Alternatively, an ED nurse can perform this function, but this then leaves the inpatient situation undefined. To facilitate ease and efficiency, these designees typically utilize a one-page (e.g., Data Summary Sheet, ED Data Sheet, Angio Suite Data, etc.) Data collectors can record the limited data

points on paper and the EMR while parts of the EMR take care of themselves, or they can scan the form after the code stroke.

***Metrics for Measuring Quality of Care in Comprehensive Stroke Centers American Heart Association/American Stroke Association**

Registries

To facilitate data collection in a standardized way and to avoid the redundant efforts that would occur if CSCs designed their own databases, we expect that CSCs will make use of national databases or registries to collect data required for metrics and to collect additional detailed data that will assist in quality improvement, some of which we have noted in the additional data elements discussed above. Such data may include information about the baseline characteristics of patients, the location and size of their strokes and vascular abnormalities, diagnostic tests and their results, treatments that are initiated, complications that develop, discharge plans, and clinical outcomes and ongoing treatments at follow-up after discharge. Although registries do exist for some of the diseases, conditions, and procedures that CSCs will need to monitor, some may require modification to capture all of the data elements that will be needed, and other databases will need to be developed. Participation in standardized registries will permit risk adjustment and eventually allow for comparisons between different CSCs.