



# Transitioning From Paper to Computerized Documentation

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Although charting forms have evolved over time to meet the changing needs in healthcare, little has changed in the process of documentation until the introduction of computers in healthcare in the late 20th century. The author describes three early nursing documentation systems and the evolution of the automated process. One of the important lessons learned about the move from paper to computerized charting is that the process is not “*automatic*.”

The process for documenting patient care was formalized during the years of Florence Nightingale’s practice. She wrote about the importance of communicating between and among caregivers and was a pioneer in the development of forms to facilitate that communication (Abbott, 2003). Although charting forms have evolved over time to meet the changing needs in healthcare, little has changed in the process of documentation until the introduction of computers in healthcare in the late 20th century.

## History of Computerized Documentation

In the late 1960s and early 1970s, administrators began to invest in electronic systems to handle accounting systems (accounts payable, accounts receivable, admissions, discharges, and transfers) to better control hospital finances. As computerization capabilities grew, department directors began to see application for computers within their specialized departments: laboratory, radiology, pharmacy, and of course, nursing. Some of the early computerized systems that were adapted for nursing came from order-entry or financial systems. The focus of these systems was primarily from the finance perspective and secondarily, for nursing.

Since the advent of computers in healthcare, nurses have explored the capability of automating the documentation of care. In the early years of computer capability, there was often an effort to take the forms that were used in the manual process and “import” them into the computer. Typically, many hours of committee involvement had been spent to develop the “best” form. Since so much time and energy had

gone into the development of the “perfect” form, it was assumed that computerization of that paper form was a good solution for documentation. It was difficult to let it go.

It was soon learned that the “best” paper form was not necessarily the “best” computerized form. “Computers are quite unforgiving. To a computer, data are a series of binary code . . . Codifying nursing data for a computer to be able to use is incredibly difficult.” (Abbott, 2003, para 4) The linear nature of handwritten charts does not relate to the networking technology of the computer. Vendors began to produce systems that were designed to facilitate the nursing process of documentation.

## Computerized Systems in Nursing

One of the early systems “designed for nursing by nurses” was the MedTake™ system. This proprietary hardware and software product provided a point-of-care documentation system specifically for nurses’ use and was used on general medical-surgical units in hospitals. The software in this system enabled vital signs to be entered into the computer using a specially designed keyboard at the bedside and automatically graphed in several formats that could be selected by the hospital. The nurse documented patient care using the same keyboard, selecting terms from a menu to create sentences for data entry. Intake and output could be entered at the keyboard and the system calculated totals by shift, by day, and by length of stay. Chart forms could be printed from a central printing station; however, the appearance of those forms was unique to the system. All entries were time stamped and electronically signed through the nurse’s secure logon code. This product was in use in hospitals across the United States from the mid-to-late 1980s. The limitation of

the product was its proprietary nature: it could not be networked to other clinical systems. Further, the data entered into the system was not able to be retrieved in user-defined specifications to facilitate research.

Another system designed specifically for nursing was the Vitalnet™ system, a product of Critikon (a wholly owned subsidiary of Johnson & Johnson, Inc.). Vitalnet™ incorporated the technology of the Dinamap™ to automatically measure, document, and graph temperature, pulse, and blood pressure. This system used barcode technology in the process of documentation. An introductory set of barcodes were provided to the user, enabling a “quickstart” approach for nurses in the acute care setting to document patient care. The proprietary computer and a user-defined barcode book were placed by each patient bed in the acute care area. Nurses used a barcode “wand” to select entries for documentation. With this system, hospitals could appoint a coordinator who adapted the barcodes to meet the needs of specific units within the hospital. Vitalnet™ offered flexibility and the ability to define terms for abstraction for research; however, each database was unique, so electronic abstraction into multisite, shared databases was limited. It was used in acute care hospitals across the United States and Canada from the mid-1980s until the early 1990s. Once again, the limitation of not being able to be networked to other clinical systems in use became problematic.

QMI™ originally a product of Corometrics, connected to fetal monitors, enabling automatic documentation of the heartbeat of the fetus and the capability for nurses to document patient data that would print on the fetal monitoring strips. In addition, general charting was done using a standard keyboard, making entries into user-defined screens. QMI™ continues to be used in areas of Labor and Delivery, and has been expanded for use in the critical care areas.

Each of these systems met a need for nursing at a specific time. The experiences learned from the implementation of these systems became invaluable in the development of the SGNA Minimum Data Set project. The capabilities and limitations of these systems were interwoven into the work done by the task force.

### Key Considerations for Computerized Documentation

One of the important lessons learned about the move from paper to computerized charting is that the process is not “automatic.” The capacity of computers to sort, rearrange, and copy data expands the potential for data management; however, the computer must be told what to do. For example, in a paper chart, a column is needed to write a date and time for each entry. In a well-designed computer system, the date and time are defined when the user makes an entry. No specific column is needed; although the programmer must know how the user wishes these data to be presented. If the date and time for one activity is needed to be displayed or stored in another section of the clinical record, the programmer needs to know where to network that information.

Dodd (1996) emphasized the importance of integrating people, computers, and communication networks: “computing is about communication and integration” (para 6).

As the SGNA Minimum Data Set task force developed the items for inclusion in the SGNA Minimum Data Set, there was an underlying premise that this product be useful to the clinician, and not merely an effort to move from paper to computer. Developing a data set that could be used as a foundation to communicate between nurses, physicians, inventory control, and other healthcare providers was a primary concern.

### SGNA Minimum Data Set Considerations

The SGNA Minimum Data Set Task Force was committed to laying the groundwork for this communication within the endoscopy center. Consideration was given to where each data element might be needed again in the process. For example, in the Pre-Procedure Minimum Data Set, when the field for “Previous Medical Procedures” has an “orthopedic appliance” marked, the programmer is instructed to automatically flag that information to appear in the “Intra-Procedure Grounding Pad/Pad Placement” field. And, once the “Anticipated Procedure” is marked in the Pre-Procedure data set, instructions are given for a link in the Post-Procedure data set for “Actual Procedure Performed.”

### Conclusions

Ozbolt, Fruchtnicht, and Hayden (1994) explained “standard definitions, terminology, and codes have not yet been established and incorporated into automated clinical records from which the relevant data could be abstracted electronically into multisite, shared databases” (p. 176). Although work has continued with minimum data sets in a variety of clinical settings since 1994, the work of the SGNA Minimum Data Set Task Force has made a major contribution to this body of knowledge. When incorporated into electronic clinical databases, the SGNA Minimum Data Set developed for the procedures performed in an endoscopy center will enable relevant data to be abstracted into multisite, shared databases. The opportunities to research best-practice procedures and patient outcomes in the endoscopy setting are improved with the presentation of this Minimum Data Set.

### References

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