Can this trend profoundly alter the nature of nursing?

Christopher Evans, a British computer scientist, provides a picture of the world fully in the grip of the "computer revolution" in his book The Micro Millennium. As a historical precedent, he cites the invention of the printing press and the consequent "wave of information washing across the world" as leading to "the first serious challenging of the establishment religious, the questioning of medieval social values, the great intellectual uprising of the Renaissance, and the industrial revolutions..." In his view, the incredible shrinking chip will similarly bring about technological developments that will alter the way society uses information. With entire books and even libraries stored on microscopic chips, and with intelligent home computers that become interactive "research partners" in answering the user's information needs, one of the changes Evans sees as inevitable is the decline of the professions, whose "special strength (is) the fact they act as exclusive repositories and disseminators of specialist knowledge."

Imagine for a moment that while all of these technological changes are taking place over the next decade, nursing advances rapidly (mostly with the help of computers) in achieving a unified theory of practice founded on a scientific database; that there is a standardized nomenclature of problems amenable to nursing intervention; that probability estimates for all of the signs and symptoms of these problems have been derived; and that a catalogue of interventions with the likelihood of their success in various sets of circumstances has been developed.

For a few years, the positive effects of scientifically-based nursing practice will very favorably impact the status of the profession. We will have become, just like the other professions, "exclusive repositories and disseminators of specialist knowledge." But imagine further that all of this information becomes generally available to the lay public, in the form of a tiny "medical reference" chip, and that with the help of the intelligent computer, a concerned client can receive an assessment of his problems, a listing of alternative solutions and their probability of success for his particular case. Again, with the help of the computer, the client can select his goals and choose the strategy for achieving them. What need is there then for the nurse?

The answer, of course, is that while information processing and decision making are a large component of nursing, they are by no means all of nursing. As long as physical disability renders the client unable to effect his chosen strategy for himself, nurses will be needed (provided that nurses by this time have not handed over all aspects of physical care to other health care workers). And as long as there remains an emotional and psychological component to health care problems, nursing intervention will be required to deal with these problems. Billions are being spent to endow the computer with the power of reasoning, but no one, not even the most futuristic authors, are predicting or even proposing that the computer be endowed with feeling.

It appears, then, that the more scientific and rational nursing becomes, the more likely it is to be supplanted by computers; the more humanistic we remain, and the deeper our skills in empathetic understanding and support, the less likely we are to be supplanted by computers.

John Naisbitt, another futurist, would put it this way: that nursing must balance its "high tech" with "high touch." According to Naisbitt's theory, "whenever new technology is introduced into society, there must be a counterbalancing human response -- that is, "high touch" -- or the technology is rejected." He cites as one example the consumers' demand for home births, birthing centers, and hospices as a high touch response to the increasingly high tech environment of hospitals. If Naisbitt's theory is correct, then Evans' scenario of the lay person using an intelligent computer in place of physician or nurse will simply never happen unless there is a built-in mechanism for corresponding high touch. Who supplies this high touch is, of course, up to us.

Could it be that the answer to our future lies in our past?

References
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THE ADVANTAGES OF INTEGRATED VS TURNKEY SYSTEMS
Mary L. McHugh, M.S., R.N.
Research Coordinator, Critical Care Study
St. Joseph Mercy Hospital
Ann Arbor, Michigan

Many of the automated systems on the market designed to support nursing activities are turnkey systems. (Turnkey systems are hardware systems internally preprogrammed to perform a very limited set of functions and unable to accept user programs for other applications). Examples of turnkey systems for nursing include some patient
classification systems (with or without management reporting facilities), and several brands of heart monitor that not only display heart rhythms and sound rate alarms, but also print the date, time, rhythm interpretation, and the patient's name and room number on hard-copy rhythm strips. Turnkey systems were not designed to interface with the hospital's general purpose computer, and it is usually difficult or impossible for the in-house EDP department to build an interface. Therefore, nurses cannot extract the source data locked up in the turnkey system. Data inaccessibility means nurses cannot use their own data to obtain information other than what the turnkey system produces - unless they retype all the source data into another computer. In the near future, computer and software vendors should plan on some big changes in the attitude of their nursing customers and toward inflexible systems.

The nursing department's inability to move its data across systems has been accepted because nurses have not realized that automated data transfer should be possible, nor have they demanded that capacity. However, as nurses become more fully attuned to the capabilities of computers they will become less tolerant of systems that will not grow with them. They will be frankly intolerant of systems which deny them information, the sources of which are known to be in the computer. Nurses are already getting tired of being told reports cannot be generated because needed data are scattered among storage devices attached to incompatible processors. (Of course they may dislike the bad news, the EDP personnel, rather than to the cause of the problem). The tendency of nursing departments to look to turnkey systems to solve their processing problems will inevitably lead to the establishment of fragmented computer systems, a solution every bit as undesirable in computers as it is in patient care.

For the immediate future, nurses may have to continue to accept some incompatibility among their hardware items. Very few nursing departments have the resources to build their own integrated computer support systems, particularly since in most hospitals, nursing applications are not given a high priority by the in-house EDP department. As long as nurses have to go outside the hospital to get their computer applications, some fragmentation is almost inevitable. Here are some suggestions for nurses who want to limit the amount of systems fragmentation in their department. First, where choices exist, it makes more sense to select an off-the-shelf system that can be easily interfaced with whatever equipment is in place than to select a system for which no interface has been written. (Never listen to a salesman's glib assurance that another hospital had "no trouble" interfacing this product with a computer just like yours. If an interface exists somewhere, it probably won't work on your equipment). Second, try to find a vendor who has or will build a version of his/her product to run on your equipment. Given the limited selection of software for nursing, you probably won't find many programs that can run on equipment you already have. Fourth, if the vendor can't rewrite the software to run on your equipment, try to contract with his/her company to develop a method of getting out at least the raw data entered - in machine readable form. Fifth, if none of these approaches work, consider negotiating with a software house or contract programmer to write custom applications programs in a language available on the in-house computer. Or if the in-house computer cannot be made available, the nursing administration can select one brand of microcomputer and establish it as the allowed hardware. This rule will not prevent fragmentation. It will, however, allow the nursing department to integrate their fragmented system for a reasonable price sometime in the future.

**PROCESS OF DIAGNOSTIC RELATED GROUPS IN AUTOMATION**

Roy L. Simpson, R.N.
Corporate Manager, Nursing Systems
Hospital Corporation of America
Information Systems
Paula Y. Eleazar, RRA
System Representative
Hospital Corporation of America
Information Systems

As prospective reimbursement evolves, clinical data and financial data will be merged. As nursing systems evolve, one can only project the increased demand for nursing administrators' roles in the design of systems to increase dramatically. The concept of the "working DRG" is indeed worthy of automation by hospital nursing management if they are to effectively operate in the new prospective payment environment. It is explained as follows:

Upon admission, a provisional diagnosis and any expected operative procedure should be obtained from the physician. Historically, the information obtained concerning a patient's condition on admission has been sketchy, at best. It will now become increasingly important to obtain complete and accurate diagnostic data. This will facilitate the assignment of an admission (or "working") DRG to begin the monitoring process of the patient's hospital stay.

The pre-admission systems in hospitals will merit close scrutiny as requirements for admission data become more stringent. Medical staff education outlining hospital admission requirements and penalties for misuse of these requirements must be accomplished. Admitting department personnel will need administrative backing to enforce these procedures. Hospital management may want to consider educating physicians' office staff(s) to encourage the prompt submission of pre-admission data. Proper diagnostic terminology with inclusion of any pre-existing conditions as well as estimates of length of stay are desired.