VISIONS OF THE FUTURE FOR NURSING INFORMATION SYSTEMS:
A PANEL DISCUSSION

Organizer: Judy G. Ozbolt, Ph.D., R.N.
Associate Professor, Center for Nursing Research
The University of Michigan
400 N. Ingalls
Ann Arbor, Michigan 48109

INTRODUCTION

The purpose of this panel discussion is to propose some visions of the future for nursing information systems. These visions are compounded of knowledge, experience, speculations, and dreams. We hope they will stimulate thought and discussion, challenge and debate, so that all of us who are engaged in shaping the future of nursing information systems can benefit from one another's imagination, knowledge, and critique.

MICROTECHNOLOGY AND THE FUTURE OF NURSING

Rita D. Zielstorff, R.N., M.S.
Assistant Director,
Laboratory of Computer Sciences
Massachusetts General Hospital
Boston, Massachusetts 02114

The explosion of microcomputer technology is having a subtle but far-reaching effect on nursing's use of computers. Tired of the sometimes formidable barriers to obtaining hardware resources, software products and/or programming assistance, many nurse administrators, researchers and educators are making a startling discovery: For a very small capital expenditure, one can purchase a microcomputer that requires no special environment or highly-trained individuals to run it, that performs a variety of time-consuming tasks very well with easy-to-use software packages, and that can even be custom-programmed in a variety of easy-to-learn, high-level languages.

Computer power has at last become truly affordable and truly oriented toward the naive user, and these facts are responsible for a mushrooming cadre of nurse users who are "computer-smart."

These nurses are proving that just as one does not need to understand the principles of an internal combustion engine to operate an automobile, one does not need to understand computer architecture and machine language in order to use a microcomputer. They are learning firsthand what "user-friendliness" means; they are experiencing the limits of random access memory and the effects of file structure and size on retrieval capability; and many of them are exposed for the first time to the mathematical and logical constructs that are the foundation of computer programming.

These experiences teach them as no seminar could about the practical capabilities and limits of computer power. Could anyone disagree that these nurses will be much more competent as members of committees that make decisions about institution-wide computer systems? Or that they will be much more effective in collaborating with systems experts in designing large systems? Many professional associations and scientific groups have pronounced the urgent need for programs that promote computer literacy. But the widespread and increasing availability of microcomputers for direct use by the naive user is having an effect that, for good or bad, is immediate and far-reaching.

The bleakest part of this picture currently is the paucity of packaged software for nursing applications. But even this aspect has its bright side. With computer power brought to a practical level, nurses will at last think of creative ways of using it to solve nursing problems. Thanks to constant increases in machine power and storage capacity, they will be able to program many of these solutions themselves in high-level computer languages. (One author even proposes for the next generation of microprocessors a high-level assembly language, which would optimize performance dramatically). As the number of micros owned by nursing departments and faculties increases, and as nurses make known their creative ideas for using them, the forces of the free enterprise system will ensure that the market for software will be satisfied. "Computer-smart" by virtue of experience, nurse-consumers will be able to judge the proliferating packages in terms of cost, performance, effectiveness, and user-friendliness.

All of this is merely a vision of tomorrow. Apart from the exciting prospect of seeing computer technology at last taking root in nursing's very fertile ground, there is nothing very earth-shattering here. What of the years ahead? How will the changes in micro-technology affect our interaction with computers? What effects will ensue from the bounding trend toward magnified power in sub-microscopic chips at shrinking cost?
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 Millenium. 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 religions, 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 that 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, as have 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 large components 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

3. Ibid., p. 116.
4. Ibid., p. 121.
6. Ibid., p. 39.

THE ADVANTAGES OF INTEGRATED VS TURNKEY SYSTEMS

Mary L. McLough, 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