Nurses or technicians? The impact of technology on oncology nursing

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Abstract

Medical technology has had a tremendous impact on the diagnosis and treatment of cancer in the last 30 years. In response to these changes, oncology nurses have become technologically-skilled practitioners as they care for patients undergoing rigorous diagnostic testing and complicated, extensive treatment regimes.

In the face of this rapid technological change, what has happened to the role of the oncology nurses? I suggest that our independent role (that which is unique to nursing) diminishes as our dependent role (delegated function) expands to accommodate the increased demands of technology. Is our priority to provide comfort, support and education to patients and their families when there are orders to check, IVs to start, medications to mix, or machines to master? Granted, many nurses choose to work in high-tech areas because of their challenging nature and high status, but others feel that their independent nursing functions are being eroded by more and more delegated functions.

Until nursing clarifies its unique mission and defines the boundary of its practice, I suggest that oncology nurses will unwittingly continue to prioritize dependent over independent functions in most health care settings.

This presentation examines the issue of the impact of technology on the independent, dependent and interdependent functions of the oncology nurse. It reviews the historical perspective of the use of technology in health care, examines oncology nursing roles highlighted by interviews with practising oncology nurses, and finally suggests some strategies for minimizing the impact of technology on oncology nursing practice.

Introduction

The intense technological expansion of these times is radically changing the face of oncology nursing. Hence it is crucial that we as oncology nurses understand the extent to which health care technology is defining our practice. We must be aware of what we stand to lose as our practice becomes highly technical and highly specialized.

My aim is to challenge your thinking about the present state of oncology nursing and to encourage you to step back a little from your practice in order to consider some of the ramifications of health care technology on oncology nursing today.

Janie Brown

I will explore in some detail the issue of technology and its impact on oncology nurses and the profession of nursing. I will define technology, review some of the changes in the use of technology over time, ask why the boom in technology is happening, and then examine the independent and dependent functions of the oncology nurse in relation to technology. I will only briefly mention the impact of technology on the patient, because this is another topic unto itself. Finally, I will propose some strategies for dealing with the impact of technology on nursing.

Physical/spiritual dimensions of nursing practice

To start, I would like to quote from the book "Megatrends" by John Naisbitt (1982):

"Something else was growing alongside the technological invasion [of the 1950s and 60s]. Our response to the high-tech all around us was the evolution of a highly personal value system to compensate for the impersonal nature of technology. The result was the new self-help or personal growth movement, which

LA CONFÉRENCE SCHERING - INFIRMIÈRES OU TECHNICIENNES? L'IMPACT DE LA TECHNOLOGIE SUR LES SOINS INFIRMIERS ONCOLOGIQUES

ABRÉGÉ

La technologie médicale a eu un énorme impact sur le diagnostic et le traitement du cancer au cours des trente dernières années. En réponse à ces changements, les infirmières en oncologie sont devenues des praticiennes possédant des compétences technologiques pour soigner les patients qui suivent des tests diagnostiques rigoureux et des régimes de traitement complexes et étendus.

Vue la rapidité de ce changement technologique, qu'est-il advenu du rôle de l'infirmière en oncologie? Je pense que notre rôle indépendant (ce qui fait le caractère unique des soins infirmiers) diminue au fur et à mesure qu'augmente notre rôle dépendant (fonction déléguée) pour nous permettre de nous adapter aux demandes toujours plus grandes de la technologie. Votre priorité est-elle d'offrir réconfort, soutien et éducation à vos patients et à leurs familles quand il y a des transfusions à démarrer, des médicaments à mélanger ou des machines à contrôler? Vous me direz que de nombreuses infirmières choisissent de travailler dans les domaines de la technologie de pointe à cause du défi qu'ils représentent et du prestige qu'ils confèrent mais il y en a d'autres qui estiment que les fonctions indépendantes des soins infirmiers sont menacées par un nombre toujours croissant de fonctions déléguées.

Et, en attendant que les experts définissent la mission unique des soins infirmiers et la limite de la pratique, j'avance que dans la majorité des situations de soins de santé, les infirmières en oncologie continueront d'accorder, sans le vouloir, la priorité aux fonctions dépendantes au détriment des fonctions indépendantes.

Cette présentation examine la question de l'impact de la technologie sur les fonctions indépendantes, dépendantes et interdépendantes de l'infirmière en oncologie. Elle passe en revue la perspective historique de l'emploi de la technologie dans les soins infirmiers, examine les rôles infirmiers oncologiques mis en valeur par des entrevues réalisées auprès d'infirmières praticiennes en oncologie, et enfin, elle propose certaines stratégies visant à minimiser l'impact de la technologie sur la pratique infirmière oncologique.

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eventually became the human potential movement. Much has been written about the human potential movement, but to my knowledge no-one has connected it with technological change. In reality each feeds each other high/high touch. We must learn to balance the material wonders of technology with the spiritual demands of human nature" (p 40).

The term high tech/high touch has increasingly been used in nursing over the last few years. I have to question whether we as oncology nurses are actually managing to balance the physical realm with the spiritual as we become immersed in highly technical, highly specialized work environments.

In my view, nurses have historically been good at integrating all aspects of the person, providing care that is spiritually as well as physically nurturing. I am sure that every nurse knows what it means to connect with a patient at a deeper level, as one human being to another. The interaction is meaningful and we know that we have made a difference. Oncology nurses touch peoples' lives in ways that are never forgotten. One experience I have had in my practice is illustrated by a recent letter I received from a 16-year-old woman. I worked closely with her during her course of chemotherapy for cancer of the ovary. She wrote, "I can't talk to strangers, about the way I feel that is, and you for some reason were not a stranger, but an instant friend. Thank you for helping me through this and I hope to never go through it again, but I'd do anything for a friendship like yours."

I know that it is connections like this one that keep me working in the field of oncology. This work is truly rewarding and inspiring.

However, would I also be correct in suggesting that each of us knows of times when we have "done to" a patient, when we act rather like a robot, rushing around, taking little time to connect at that human or spiritual level? You know, when you look at that pump or intravenous just seconds before you make eye contact with the person attached to that pump. Other times you may have found yourself choosing not to bring up an emotional topic for fear that it will lead to a long conversation for which you do not have the time right then. I know that I have made such choices in my practice.

I spoke to a woman (a nurse herself) recently who had been admitted for her second treatment of Taxol™ for cancer of the ovary. She told me that she had been in hospital many times over the past three years, as she went through a complete course of Cisplatin™ chemotherapy followed by a course of Carboplatin™ when the cancer recurred. She told me that not even on one of those many hospital admissions was she ever touched by a nurse other than to start her intravenous! She said, "That's why I bring a friend or family member with me, so that if I need a hug or a reassuring touch there will be someone there for me".

That story really hit home for me, especially since I had just started her intravenous and given her her chemotherapy! Have we become so immersed in the technical aspects of care that we have forgotten the more human or nurturing aspects? I hope not.

I believe that we as oncology nurses gain job satisfaction from connecting at both the physical and the spiritual levels with the patients and families in our care. I have to question whether we can maintain this holistic view, however, in an increasingly mechanistic and technocratic health care system.

Why understand the effects of technology on nursing?

I believe the massive boom in health care technology we are experiencing is dramatically altering oncology nursing practice in ways that may not be viewed favourably by the profession as a whole, by individual nurses, or by patients.

As oncology nurses, we must investigate and understand the impact of technology on our practice for four reasons:

1. **Technology is here to stay.** It is no longer possible to imagine nursing a patient in an oncology setting (or probably any other setting) without being influenced by some aspect of technology.
2. **Nurses are often the end-users of technology.** In the health care system, it is frequently nurses who form the interface between technology and the patient. Nurses, then, are in a strategic position to influence the development of, as well as the use of, technology.
3. **There are benefits for nurses and patients.** I believe that there is an

opportunity for nurses and patients to benefit from what I would call the "right use" of technology, where there is evidence of balance between the physical and spiritual realms.

4. **Nurses are leaving the profession.** I question whether this trend may be in part due to the changing role of the nurse caused by the impact of technology.

What is health care technology?

Farmer (1978) defines technology as "those non-passive things of economic value which simulate a function or facilitate an action" (p 17).

There are many examples of health care technology within the field of oncology. There are diagnostic and screening procedures such as Computerized Axial Tomography, Magnetic Resonance Imaging, Gallium scans, ultrasounds, echocardiograms, x-rays, mammography, pulmonary function tests and heart function tests. There are treatments such as radiotherapy which includes prior visits to the "Mould room" and "Simulator". Radiotherapy on various high-tech machines; brachytherapy, or selectron treatment. There is laser therapy, chemotherapy, immunotherapy, and bone marrow transplantation. Other technologies include patient-monitoring devices, computerized information systems and a variety of electronic equipment.

Ask yourselves how much you know about these diagnostic procedures or treatments for cancer and whether you could adequately explain to a patient or family member what they might expect to experience as they interface with such technology.

Often when we send patients off for a test or a treatment, we do not know exactly what that person will experience. Sometimes I believe we underestimate the invasive or stressful experience of undergoing diagnostic tests and of being treated. Patients describe the claustrophobic nature of having to wear a face mask during radiotherapy treatments, of having a full-length body cast made prior to radiotherapy treatments, or of being positioned and immobilized for a treatment or test while in pain. There are patients who become extremely anxious about needles prior to having blood taken or an intravenous inserted. These scenarios are often invisible to us as oncology nurses because nurses are not present in many of the areas where patients undergo tests, procedures or treatments. Many patients do not have access to nurses who can provide them with support or education.

Individuals with cancer must face gruelling challenges when they are first diagnosed, when they are being treated and as they are being followed for months and often years. Clinic visits at any point in the process usually include such invasive and technological interventions as blood tests, scans and x-rays.

Nursing input and the design of technology

I am always intrigued by the commercial exhibits at nursing conferences because of the emphasis that is placed on the latest high-tech devices which will allegedly transform our practice! I look at the equipment wondering who designed it, were nurses in practice consulted in the design phase, does it have to be this complicated, and how much of my time will this save or how much time will it consume? I remember looking at an implantable port a few years back and wondering whether it would be accepted by patients, physicians or nurses. Now they are everywhere and certainly require a great deal of nursing time. In my experience, lab technicians will only take peripheral blood specimens, not blood from venous access devices or central venous catheters. Hence, nurses in many settings have taken on this function.

Technology is all around us. It takes on many shapes and forms. It is ever-changing and ever-challenging. Every individual with cancer interfaces with technology throughout the diagnostic, treatment and follow-up phases of the cancer experience.

Before I examine how technology impacts upon us as oncology nurses, I would like to review the history of technology.

Historical perspective

Up until the invention of the stethoscope and ophthalmoscope in the 1800s, physicians relied entirely on their senses and astute observation for diagnosing disease. For example, Paracelsus, the well-known

sixteenth century healer, outlined the basic qualifications of the doctor, as follows:

"Like each plant and metallic remedy, the doctor too must have a specific virtue. He must be intimate with nature. He must have the intuition which is necessary to understand the patient, his body, his disease. He must have the 'feel' and the 'touch' which make it possible for him to be in sympathetic communication with the patient's spirits" (Hartman, 1973, p 111).

Paracelsus believed that a good doctor's therapeutic success depended largely on his ability to inspire the patient with confidence and to mobilize his will to health.

Nurses, like physicians, had little technology to work with or rely on in early times. Florence Nightingale in her *Notes on Nursing* (1893) also believed in the connection between human beings and nature. She writes about the purpose of nursing... "to put us in the best possible condition for nature to restore or to preserve health, to prevent or to cure disease or injury" (p 5).

My mother was always saying to me as a child: "Just let nature take care of it". That always sounded so reassuring to me somehow, knowing that there was something or someone out there who was rooting for me. Now we have so much technology to take care of things for us, that we forget that we even have a connection with nature at all. An example of this is seen when we catch a cold. How many of us run immediately to the nearest drugstore for aspirin, decongestants or even antibiotics? We rarely see fevers in hospitals these days. Antibiotics are commenced at the first hint of an elevated temperature. Do you ever see a fan blowing over ice or a tepid sponge bath anymore? We rarely let nature take care of things for us, although we can often guarantee that it would do so. This fix-it mentality has pervaded the whole of our health care system, with more and more technological interventions appearing which supposedly take care of things more efficiently and more effectively than nature.

Physicians rarely depend on technology-free assessment and more often than not validate their observations with diagnostic tests. Over time it appears that as technology has been developed physicians have become more and more reliant on it as an aid to diagnosis. In other words, if the technology exists, then it may as well be used.

In oncology, x-ray therapy for breast cancer has been dated back to the late 1800s, but the first cobalt machine came in to use around 1950 - only 40 years ago. Similarly, it was as recent as the 1950s that the first chemotherapeutic agents were discovered. Now there are literally dozens of these drugs on the market.

Bone marrow transplantation is another new and rapidly developing area of cancer treatment, the philosophy being that the more effective the salvage or rescue procedures the higher the dose of drug that can be given and the better the chance for cure. With more effective antibiotics and antiviral drugs as well as the introduction of colony-stimulating factors to reduce the neutropenic period, higher doses of drugs, once dose-limiting because of the severity of side-effects, may now be given. Bone marrow transplantation is now being proposed as a curative treatment for metastatic ovarian cancer, breast cancer and some brain tumours. We will undoubtedly be seeing more bone marrow transplant units springing up in Canada in the next decade.

Individuals with cancer in the 1990s, then, can expect to be bombarded by a host of technological interventions during all phases of their cancer experience.

Why the technological boom?

As I visualize the rapidity of the change in cancer care over the last three decades, I question why this is happening so fast, without any apparent control or limitation and with very little research or evaluation as to the effectiveness of the technology in terms of patient outcomes (Rachlis & Kushner, 1989).

The literature suggests these reasons:

1. **Advances in other sciences** such as electronics, molecular biology, nuclear physics, and computer science have accelerated the development of technologies with medical applications.
2. **The public expects progress** in terms of medical advances. A friend of mine had a bone marrow transplant for Hodgkin's disease five years

ago, recurred one year ago and talks about the future in terms of "living long enough to receive the treatment for cancer which will ultimately cure me completely". The public has high expectations of medicine.

3. **Cure rather than prevention** is still the state of medicine. Only a minute percentage of the budget for cancer research goes into investigating the causes of cancer.

4. I also believe there is something even deeper than the need for medicine to find cures for all ills. In western civilization at least, it is the **need to prolong life at all costs** and ultimately the fear and inability to face the inevitability of death. That is a whole debate unto itself however.

We have established that the boom in health care technology is happening and will continue to happen as long as medicine continues on the path of cure and prolongation of life. This boom is occurring despite the lack of evaluative procedures necessary to assess whether the patient outcome justifies the expenditure. The big question, then, is how has all this impacted on oncology nursing?

Independent/dependent functions of the oncology nurse

I need only to look back at my own practice in oncology over the last 10 years to see how the practice of nursing has changed as a direct result of the introduction of medical technology. After graduation, I went to work in a breast cancer unit where women were diagnosed, treated surgically, and then often given chemotherapy or radiotherapy. There were only a few chemotherapeutic agents on the market, but what was available was mixed and administered by the physician. He or she also initiated and maintained intravenous infusions and obtained all blood specimens.

As a new graduate, I remember many hours spent doing pre- and post-operative teaching and providing support to the women and their families. Comfort measures and management of symptoms were greatly emphasized. I'll never forget Sister Taylor (with the large piece of white netting on her head which supposedly identified her as the boss) coming around on the evening shift with her sherry cart offering all the pre-operative patients a "wee sherry" to calm their nerves.

At that time I wondered "why can't nurses learn to give chemotherapy, start intravenous and take blood specimens? We would probably do a better job!" Ten years later I now know what I was grappling with then was defining what nursing should and shouldn't be responsible for. Now I have learned to give chemotherapy, start IVs, take blood and monitor electrolytes. What I question today in contrast to 10 years ago is, "Do I want to be doing all these things? Is this really nursing?" I often wonder why I don't have time left in the day to fully support or fully educate the patient and his/her family. It is because so much of my precious time is spent on what I see now as delegated or dependent functions. I look back on the days in the breast cancer unit with some nostalgia for the quality and type of nursing care that I was able to provide.

Independent functions

I see independent functions as those elements of nursing which are unique to nursing. They are the things we do which no other health care professional does for patients and/or families. For example, the two-hour dialogue and back rub in the middle of the night when the patient is too afraid to sleep; or the family teaching session explaining all the intricate details of what the patient may expect to experience during chemotherapy or experience in the next few hours/days/weeks/months at home following chemotherapy; or the astute observation, and clinical decision-making for a patient following major surgery for cancer; or ensuring the patient in severe pain is well-managed and as comfortable as possible; or speaking up for a patient who does not have the confidence to assert him or herself to say "no" to treatment. These independent functions comprise the heart and soul of oncology nursing. They are what provide us with the feeling that we really make a difference in someone else's experience of having cancer. I believe these independent functions provide the oncology nurse with the opportunity to integrate both the physical and spiritual aspects of care and hence provide the nurse with a sense of satisfaction.

Dependent functions

The dependent or delegated functions are those activities that we do for another health care professional. There are many examples of these: Administering medications prescribed by the physician; portering a patient to an appointment; or taking blood specimens every five minutes for several hours following the infusion of an investigational drug for pharmacokinetic studies. This reminds me of a recent incident on the bone marrow transplant (BMT) unit, where a patient was being started on a new protocol of chemotherapy. The physician announced that blood specimens were to be taken every 15 minutes for two hours, every 30 minutes for the next four hours and every hour for the following four hours, for pharmacokinetic studies. Guess who would automatically assume the role of taking these blood specimens? The nurse said to me, and I quote, "If the patient asks me for a bedpan in the middle of this I won't be able to help her because I'll be standing there with my sterile gloves on waiting to take the next specimen from the Hickman line". Is this "nursing" and is this an example of how we wish to spend our time? Other dependent or delegated functions include mixing medications, checking charts to ensure all is in order for the patient's appointment with the physician, checking pathology before administering chemotherapy, delivering meal trays, cleaning equipment or ordering and stocking supplies. The list is endless.

Interdependent functions

The interdependent functions are those which require two or more health care professionals' input. One cannot act without the other's contribution. For example, the physician prescribes a range of analgesics for a patient and the nurse uses her knowledge about pain management and specific information about the patient to put a plan into action. A social worker and a staff nurse may problem-solve together about a particularly difficult family situation. There could be much debate where activities fit in terms of dependent, independent or interdependent functions. We must begin to question how we spend our time.

Shifting balance

I perceive that the balance is shifting toward nurses taking over more and more dependent functions, leaving less and less time for independent functions as the use of technological interventions increases. Think of the chemotherapy protocols with six or seven agents. Combination chemotherapy is the way of the future. All dosages must be checked, IVs started, adequate premedications mixed and administered, drugs picked up from pharmacy, each one administered, blood specimens taken and antiemetics given. This takes up an incredible amount of nursing time. Is there also time to check in on how the person is dealing with a new diagnosis of cancer or how the rest of the family is coping? How can we check in if we have three other people waiting to be treated or blood to be taken or platelets to be given?

As an oncology nurse in present times, I am finding that the piece of pie that was and is unique to nursing is being gobbled up and I am expected to perform more and more delegated functions. In my view, this shift in roles directly relates to the increase in medical technology. Consequently, job satisfaction is at risk and I sometimes contemplate making the switch to palliative care or home care, where there is less evidence of the high-tech, more high touch and more of what I consider to be nursing's independent role.

I know, however, that there are many other nurses who choose high-tech areas because they believe it will increase rather than decrease job satisfaction. They enjoy the challenge of mastering technology, becoming highly skilled in the use of technology. Nurses may initially feel excited at the prospect of learning new, highly technical skills but when those skills have been mastered there may be a feeling of "now what?"

Perhaps what I sense is missing today is the balance between the physical and the spiritual realms of nursing. It is ultimately that connection on a spiritual realm in conjunction with the physical that keeps me in the profession of nursing. It is called by some the "art" of nursing. Adams (1986) states that:

"The art of nursing is much more than the technical or quantitative aspects of nursing. It involves interpersonal, social, and nurturing aspects as well. The art of nursing is in threat of extinction unless nurses prepare for the challenge of accelerated technology" (p 28).

I recently spent some time with a young woman on the bone marrow transplant unit. One afternoon I found her sitting on the bed looking very anxious and surrounded by a sea of machinery. I asked if she would like me to massage her neck and shoulders, as she looked quite tense. She nodded and sat herself with her back to me on the edge of the bed. I placed my hands on her shoulders very gently and took a couple of quiet breaths to calm myself and to connect with her. Within about 20 seconds, the tears came and she wept. I just held her gently and let her cry until she eventually stopped. Then she said to me "I just needed to be touched so badly. I wanted to ask the nurses for a hug or a backrub, but I felt they were too busy and I didn't want to bother them". Sometimes the sheer amount of physical work or dependent functions required of us as oncology nurses in these times eliminates any possibility of providing nursing care that is truly nurturing to the patient and rewarding to the nurse.

Interviews with expert oncology nurses:

Defining the struggle, articulating the goals

We have talked and continue to talk endlessly about the unique mission of nursing, what to claim as ours and what to give away to others. I thought it would be useful to interview some expert nurses in the field of oncology and hear their views on the independent/dependent functions of the oncology nurse in relation to the impact of technology.

A nursing manager from an oncology unit told me that she had conducted an informal survey of her staff during the nurses' strike in British Columbia. She asked the nurses to identify any daily tasks they performed which do not require the skill and expertise of an RN and which they felt interfered with their job satisfaction. The aim was to identify those tasks or activities which could be performed by a person of another job classification. Obviously, the sample of nurses was small (N = 12) but the results were very interesting.

Non-nursing duties which half the nurses identified as interfering with job satisfaction included: Tidying rooms, making beds daily, mixing medications, moving beds, mopping floors, ordering medications, taking routine vital signs, portering patients, answering telephones, cleaning instruments/commodities, stocking supplies and the linen cart. I was not surprised at this list of non-nursing duties.

However, what did surprise me was that half the nurses also included the following as non-nursing duties which they would be happy to give up to another person: Bathing patients, feeding patients, providing mouth care, providing pericare, taking vital signs, emptying catheters, maintaining an intake and output record, giving enemas, turning patients, and mobilizing patients. I would like to know, then, if nurses do not wish to include the above, how they do wish to spend their time? Is it doing delegated functions? I wonder.

I would say that many oncology nurses afford higher status to functions such as administering chemotherapy, starting IVs, taking blood specimens, and reading electrocardiograms (EKG). Bathing, feeding and turning patients are the comfort measures we provide, but our profession does not value or reward such activities. We often hear the words "basic nursing care" or "bedside nursing" used in a way that certainly does not resonate high status or value.

I spoke with a clinical nurse specialist on a bone marrow transplant unit and asked her what she thought nurses considered as nursing and non-nursing functions. Having worked in the BMT area, I know how much time is spent taking blood specimens from central lines, changing endless tubing, administering antibiotics and blood products, and giving chemotherapy. This area of oncology is probably the epitome of a high-tech environment. She told me that many nurses are eager to learn skills such as taking arterial blood gases, cardiac and EKG monitoring, or oximetry, because it affords them higher status. They talk about line-certified nurses in a way that implies higher status or value than non-line-certified nurses. The BMT unit is considered by many other nurses to be elite.

She also talked about the excellent physician/nurse collaboration and mutual respect on the unit. I have heard this said often about good nurse/physician relationships on specialized units. I suspect that this is true because nurses have learned how to speak the language of medicine, have mastered highly technical skills and prioritize dependent over the independent functions. If nurses had a clear view about what nursing's unique function is, independent of medicine's, and valued that function, would we be so anxious to become certified in all the skill-related aspects of technology and talk in medical language? Would we be treated with as much respect by the physicians if we put comfort, symptom management, support and teaching first on our list above our dependent functions? I make the conclusion, then, that the higher the level of technology present, the harder it seems for nurses to maintain a clear vision of their independent functions.

I spoke with another oncology clinical nurse specialist about this. What did she think about nurses, technology and its impact on nursing? She said that "technology defines our practice rather than our practice defining the technology used". She believes some nurses "hide behind technology". She believes some nurses use the excuse of not having time to attend to other needs such as the more intangible areas of psychosocial support or patient and family teaching. Perhaps many nurses are in fact not interested anymore in what some call the "art of nursing". That is, promoting integration of the physical and spiritual realms of human nature.

However, she also stated that as a clinical nurse specialist she views herself functioning independently, doing very few if any delegated tasks, and that she is valued and seen as high status by nurses and physicians. Therefore, nurses do not have to perform delegated tasks to gain respect from others or to feel satisfied with their jobs. I asked her if she thought it would be possible for staff nurses to gain such respect without performing as many delegated functions or at least not prioritizing them above independent functions. She stated "yes" emphatically and said that she believes the key lies with strong nursing leaders who decide what does and does not belong to nursing. She believes strongly that the key to respect is knowledge, because knowledge is power. She thinks nurses should have basic medical knowledge as well as an excellent theory base in nursing. To sum up, she believes that it is possible for nurses to assert their independent function as a priority in a highly technological system by having an extensive knowledge base and strong nursing leadership.

I decided then to talk to some staff nurses to hear their views on the issue of dependent/independent functions and the impact of technology. What is their view of what nurses should or shouldn't be doing in oncology?

I spoke with a staff nurse who works full-time on the bone marrow transplant unit. She believes that many nurses there embrace technology and delegated tasks. They strive to become as fully certified in skill development as possible. However, she believes that if nurses gave up such delegated tasks as giving chemotherapy or other technical skills to another person, such as a technician, there would be a danger of fragmentation of care. She believes that the solution is not to not participate in delegated functions but to be very clear about what is and what is not a delegated task. With that clarity, nurses can make a clear choice about what belongs to nursing and what does not.

In discussion with another oncology nurse we debated whether part of the solution might lie with the implementation of a nursing conceptual model to guide practice. If receiving chemotherapy is viewed by nurses as a major event or experience in the life of the person, rather than as a drug to be given or a technical task, nursing could claim administering chemotherapy as an independent function. Administering the drug would be viewed a part of a whole concept or experience rather than a task to be accomplished. Time would be taken to connect at both the physical and the spiritual realms.

To conclude, it appears that without a clear vision of the unique function of nursing under the umbrella of a conceptual model, and without strong nursing leadership, it is difficult for nursing to state what should or should not be embraced as part of our independent function. In the meantime, I foresee nurses taking on more and more delegated functions as technology continues to impact on the

health-care system. Job satisfaction may become harder to achieve as we focus more and more on the more physical aspects of care.

Impact of technology on the patient

How does all this affect the patient? Does it matter to the patient whether nurses prioritize dependent or independent functions in a high-tech environment?

Little research has been done on the responses of patients to technology but the following negative effects have been documented. Patients may experience sensory deprivation or overload, sleep interference, fear and anxiety, physical and/or social isolation, injury or iatrogenic illness and feelings of depersonalization (Collard, 1986; Fagerhaug, Strauss, Suczek, & Wiener, 1980; Sinclair, 1988). In my mind, nurses have a prime responsibility to be aware of these potential responses to technology and to do all that is possible to lessen the severity of the impact. As more nursing time is taken up with dependent functions which are often technology-related and physical in nature, there is little likelihood that a patient's feelings of isolation or depersonalization will decrease. I suggest then, that if the priority of nursing function is independent in nature, then there is a much greater chance that negative responses to technology will be lessened.

Having said that, the question arises of who will perform those delegated functions if nurses have no time left in the day and/or choose not to do them? If care of the patient becomes divided among many individuals, how will the patient respond? Will they feel even more separate and isolated?

These are questions that need to be asked if nursing takes a stand and chooses what will and will not be included in their independent and dependent roles. Who will pick up the pieces that nurses choose to discard so that the independent function may be prioritized? We must also consider how the patient is and will be affected by such changes.

Strategies for minimizing the impact of technology on nursing

Finally, I would like to offer possible strategies for resolving the issue of oncology nursing functions in a highly technical health care system.

1. Nurses require a clear vision of nursing's unique mission so that choices can be made about their independent and dependent functions.
2. Nurses must learn to say NO loudly.
3. Nurses in practice need to debate more about priorities. There needs to be a discussion of our priorities for practice and why they are priorities.
4. Nurses must adopt the use of conceptual models to guide practice and assist in activating that clear vision.
5. Nurses require strong leaders who can discern and assert the priorities of nursing.
6. Nurse educators need to reconsider the message to students that high tech nursing equals high status and that dependent functions are of greater value than independent ones.
7. Emphasis on teaching the art as well as the science of nursing is required to balance the physical with the spiritual realms of nursing.
8. Nursing research is needed to better understand patient and nurses' responses to technology as well as the effects on patients of fragmentation of care.

Vision for the future

Carnevali & Reiner in the 1990 book "The Cancer Experience", look at cancer care from the patient and family perspective. They look at the phases of prevention, diagnosis, initial medical treatment, post-treatment, long-term survival, recurrence, advancing disease, terminal illness and dying. Perhaps instead of calling ourselves chemotherapy nurses and focusing on the task of administering chemotherapy, we would take direction from the patient's perspective in the treatment phase of the cancer experience. Rather than teaching new chemotherapy nurses from the perspective of the drugs to be administered, ie teaching them first about non-vesicant drugs and then about vesicant drugs, why not teach them from the perspective of the woman with ovarian cancer and her experience in the treatment phase or recurrence phase of cancer? The latter approach would obviously

include learning about the various drugs, but the focus of the learning would be on the experience of the person in the treatment phase of cancer, rather than on the tasks to be accomplished. This model would also suggest that nursing is necessary in every phase of the cancer experience. We would require oncology nurses in all areas where patients interface with technology; where they see physicians, undergo tests, receive radiotherapy, chemotherapy or any other type of treatment. Oncology nurses would also be present to provide palliative or terminal care to patients in the last phase of illness. This vision of oncology nursing is, to me, very exciting.

There are certain factors which may hinder resolution of the issue of technology and its impact on nursing. Firstly, it is hard to remember what nursing was like before the impact of technology, even though it wasn't that long ago that things were very different.

There is no visible slowing in the race for technological innovation, and nursing is already caught up in it with many delegated functions well-entrenched within nursing practice.

Secondly, nurses value the high-tech specialty areas and view them as high status. Nurses will continue to be drawn to them as long as technical skills continue to be given priority over other less tangible types of activities. Until nursing knowledge is valued as highly as medical knowledge in the eyes of nurses, it is unlikely that nurses will assert their vision of the priority of independent over dependent functions.

Certain factors may, however, enhance the possibility of resolution of the above issue. Nurses are becoming familiar with conceptual models

for nursing and many health care facilities are implementing them. This will assist nurses to define their unique mission and clarify what should belong to nursing. I see nurses becoming more assertive in giving back or handing over the more obvious non-nursing duties to others.

I am also aware of the growing interest in and evidence of holistic health and its application to nursing. I think that nurses are becoming more sensitive to the "spiritual demands of human nature" as John Naisbitt mentioned. Nurses are incorporating such practices as therapeutic touch, hypnosis, neuro-linguistic programming, health nutrition and complementary healing methods into their domain as the need for balance is sought in the high-tech world.

Conclusion

It is my hope that my presentation has given you food for thought. By examining how and why technology has changed I have raised questions about the impact that technology is having on the independent and dependent functions of oncology nurses, and on patients.

It has been argued that technology is revolutionizing oncology nursing practice and tipping the scales in favour of nurses prioritizing dependent over independent functions. I ask you as oncology nurses in these times of rapid technological expansion, "What are we going to do about it?"

In conclusion I offer a quote from Adams, (1986):

"Only when nurses view technology in the same light as their stethoscopes will nursing's future as a humane and caring profession in a highly technological society be ensured" (p 28).

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"Why"

I closed his eyes in death, peaceful now, his strong jaw
jutting forward.
And once again, I stroke his brow.
This proud, quiet man I "nursed".
I watched the struggle ...
I saw the ravage of the disease ...
And yet, I did not come to know him well, directly.
Why?
We did not have much time together, he and I
We did not have enough time to overcome barriers of
shyness, obstacles of schedules and his own high need
for privacy.
But yet ... I knew.
I knew he was a good man,
Strong and proud.
At first, he wouldn't ask for anything.
In time, he came to ask, with ease,
"One more turn"
I knew it was "OK" to call him George
And that he'd be pleased to know we draped his body
with the flag,
Under which he served.

I knew ... not because he spoke
But because I nursed him with my heart and saw it in his
eyes; and because,
I nursed his family too.
Wife and daughters
They too were my charge.
Today, as I held his life's partner of fifty years in my arms,
And stroked her hair
And murmured words of comfort, ignored the ward
routine
And scheduled tasks,
All barriers were down.
For an unhurried moment in time,
In their family history
And mine, ...
Souls met, in a way, too private and too rich for words
And tonight, once again, I know:
Why: I LOVE
I NURSE

*By Louise Goupille, RN
Saint John, New Brunswick*