IT in nursing
Recommendations of the Danish Nurses’ Organization
Preface

The digital development has been on its way in all parts of healthcare for a long time. In community nursing, IT is an integrated part of daily work in the form of electronic care systems, and electronic messages are sent across sectors through the Danish Healthcare Data Network. Some hospitals have long experience with electronic patient records (EPR) or Computerized Provider Order Entry systems (CPOE).

The newest development in e-health is telemedicine that enables patients to manage chronic disease such as diabetes or chronic obstructive pulmonary disease (COPD) and renders them partially independent of hospitals and general practice.

IT has become an educational tool in the form of e-learning which increasingly is used in education and training of health professionals. As well, it has great potential in patient education, prevention and health promotion.

With the rapid IT development and the Danish national Strategy for the process of digitalization of the health sector, it is difficult to imagine what future digital solutions will look like. Therefore, the clear position of the Danish Nurses' Organization (DNO) is that nurses must have a voice in development, implementation as well as further development of IT-systems. Nurses should help to ensure that new IT systems result in better quality in nursing and that they set free nurses to concentrate on nursing care.

Nurses must also be involved in development of electronic documentation of nursing to ensure that future electronic records systems mirror and support nursing documentation in accordance with the guidelines set down by the Danish National Board of Health.

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IT IN HEALTHCARE

Until 2006, the digital development was governed by the individual regions and municipalities. Since then, the Danish government has centralized the digital development in order to facilitate cooperation and exchange of health data across institutional and sector boundaries. Thus the National Strategy for the process of digitalization of the health sector 2008-2012 aims at a strong national infrastructure for IT throughout the healthcare system. The Danish Nurses’ Organization greets this initiative that has been long overdue.

The national strategy does not deal with the local development of IT in regions and municipalities. The individual regions and municipalities consequently bear responsibility for all systems to be used in the clinical work.

This opens up new opportunities for nursing and for nurses. At the same time, however, it may imply implications for the profession that we can not yet foresee. It is therefore imperative that nurses provide the necessary requirements for system development, and that they actively participate in the digital development processes at all levels throughout the health system.

The digital development also opens up new possibilities for nurses. There are already many Danish nurses with master degrees in health informatics, and new opportunities arise to retain these nurse informaticians close to patients and clinical practice. Telemedicine is an example of a field of development where more nurses are needed with advanced knowledge on health informatics and digital health solutions.

IT presents many opportunities, but there is also a risk that IT will govern rather than support nursing, and that IT will replace some of the basic communication and interaction that constitute a significant part of professional nursing. Electronic communication cannot replace the meeting between nurse and patient, or between nurse and nurse.

QUALITY OF NURSING

Quality of nursing care is not an unambiguous concept. It depends on the perspective or perspectives used. Within quality development and accreditation in Denmark it is customary to distinguish between clinical quality, patient experienced quality and organizational quality.

IT in itself can not provide quality nursing care, but IT can - if developed and implemented appropriately - support and facilitate workflows and processes. In addition, IT can contribute to more sharing of knowledge and easier access to written documentation.
In clinical nursing IT, among other things, is a tool to keep track of the many data that nurses collect during a patient pathway. IT discloses new opportunities within quality development and nursing research that have not been possible with traditional documentation on paper. With electronic registration and clinical databases, it is far easier to monitor the incidence of e.g. pressure ulcers, one of the classic indicators of nursing quality.

When it comes to patient experienced and relational quality, we must state our requirements for future IT systems that allow nurses more time for nursing and care.

Organizationally, IT may in the future present a variety of contexts, for instance correlation between staffing and quality by means of indicators such as e.g. number of infections, pressure ulcers or loss of weight.

IT is among other things a tool to support research based nursing practice. Accurate data and clinical guidelines in the electronic systems enable nurses to create a general view that serves as a basis for better decisions in collaboration with the patient.

**The Danish Nurses' Organization recommends**
- **that** nurses engage in and take responsibility for developing and implementing electronic record systems, telemedicine and clinical databases
- **that** nurses focus on the linkage between quality development and the digital development in healthcare, including recruiting nurses with master degrees in health informatics.

**Nursing in the interdisciplinary team**

Nursing takes place in interdisciplinary collaboration wherever it is exercised. It is therefore natural that patient records are interdisciplinary, and that the health professions share and use each other’s documentation and records. One of the main purposes of the electronic systems is that data only has to be registered once, and that it can be retrieved and reused in other contexts.

Until now it has not been really investigated what an interdisciplinary journal is, what it might look like or what it should contain. It is therefore essential that nurses cooperate with other professionals, doctors, therapists and nurse assistants in order to discuss and clarify what information is relevant in the interdisciplinary collaboration. For instance, nurses routinely pass on information to the physician during ward rounds, which means that these data appear in the nursing record, as well as in the medical record.
It is necessary that nurses in collaboration with the interdisciplinary team reach an agreement on who needs to see what. It is essential for the interdisciplinary collaboration for professional, ethical and legal reasons.

**The Danish Nurses’ Organization recommends**
- that nurses take the initiative to engage in interdisciplinary discussions about what types of data are common for the professions involved.

**Implications for the identity of the nursing profession**

It is unknown what impact IT will have on nurses’ professional identity and self-image. If an interdisciplinary journal primarily consists of objective and measurable data, there will be an increased focus on these types of notes. Thus, there is a risk that essential elements of nursing are lost, matters such as empathy, communication and intimacy.

Part of the current development of the electronic patient record (EPR) has been characterized by the fact that tomorrow’s journal will be highly structured. That means that as much of the record as possible should be coded in order to enable others to recognize, retrieve and reuse data, for use in research, quality assurance, administration and billing. It is a record that differs greatly from the record we know today where both nurses and doctors write in plain prose and free text.

The question is whether it is desirable or necessary that everything should be structured and coded. A record that allows only tick and codes will reflect only part of nursing, because nursing cannot entirely be documented in structured form. Much nursing requires prose and free text to make sense, including the soft values of nursing, where only the narrative form gives meaning and significance.

On the other hand, it is necessary to document nursing to make it possible to track and develop quality of nursing care. It requires that nurses record the impact of good nursing, in other words: nursing sensitive indicators.

The challenge is to find the balance between the necessary degree of structure and prose/free text in the record.

**The Danish Nurses’ Organization recommends**
- that nurses in collaboration with other professions clarify
  - which data that need structure and coding for retrieval and reuse.
  - which types of information that must be recorded in ordinary writing.
**Accessibility**

All nurses must have access to the record; it must be easily accessible and user-friendly. If nurses must sign in and out of many different systems countless times during the day, they experience spending much time on unnecessary systems. Therefore, it is necessary to develop sign-on systems that open all systems at once: single sign-on.

In 2007 the Danish Law on Health was amended with the result that hospital nurses only have access to electronic data related to the current patient trajectory and department. The hospital director may grant access to historical data to individuals or to groups of health professionals, but in principle nurses have no access to notes on previous admissions.

Nurses are licensed and accountable health professionals, trained to prescribe and carry out nursing. This requires that nurses obtain information about previous admissions and incidents in order to create consistency between the past and current nursing process. The data that a nurse needs are only partially coinciding with the data the physician will obtain for the medical diagnosis and treatment. Consequently, there is a risk that these data do not come to the nurse's knowledge and hence to the benefit of the patient. The quality in being able to build on previous admissions and care pathways might be lost.

**The Danish Nurses' Organization recommends**
- that nurses get legal access to all historical patient data
- that nurses get legal access to the whole record in order to secure consistent patient trajectories
- that the systems are safe for nurses to work in, so they cannot inadvertently get into the parts of the record, to where they have no legal access.

**Consistency across sector boundaries**

Collaboration between municipalities and regions may cause a problem in relation to patient trajectories across sector boundaries. It applies to all patients crossing borders, but particularly for chronically ill patients in life-long treatment that rotate between hospitals, municipalities and general practice. Medication errors occur, information gets lost, and the patient falls between the stools represented by the various health services and sectors.

Denmark already has a well developed system for exchange of electronic messages by means of the Danish Healthcare Data Network. It is mostly used by general practice
and pharmacies, but it also provides means of exchanging messages between hospital, home nursing and general practice. It is a prospect to be exploited much more than is the case, as it will allow the flow of patient information across sector boundaries.

The need for information flow across the municipal health system will increase in line with the decentralization of e.g. rehabilitation, health promotion and prevention. Here, nurses will make a huge difference by taking up the options inherent in the digital possibilities. Given that it is one of the milestones in the National Strategy for Digitalization of the Health Sector, nurses have the opportunity to realize one of the goals of the strategy and simultaneously create better patient care pathways. Not least for the chronically ill patients.

**The Danish Nurses’ Organization recommends**

- that regions and municipalities take in use the electronic solutions that already exist in the communication between sectors and institutions
- that IT systems in healthcare in due course are able exchange data across sector and institutional boundaries.

**Telemedicine**

Telemedicine is gaining ground in several areas. In home nursing there are good results with wound care, where specially trained home nurses take pictures of the patient’s wounds and send them to the medical wound specialist at the central hospital. The physician then can quickly decide on the continued treatment without the patient entering the hospital.

In the emergency field, telemedicine is developing rapidly with transmission of e.g. ECG and electronic journals from the ambulance to the emergency department. Telemedicine enables the ambulance nurse to communicate accurately with the hospital’s emergency department, in order for the patient to receive optimal treatment and to be referred to the right hospital and department.

An area of great potential for telemedicine solutions is the large group of patients and people with chronic diseases. There are currently 1.5 million patients in Denmark with one or more chronic conditions, and the number is rising. For these people the disease means that they can look forward to lifelong treatment and dependence on healthcare.
Telemedicine within e.g. diabetes, COPD and anticoagulant therapy is an achievement, which for the patient means that he/she can monitor the disease and adjust the treatment at home. By means of measuring equipment for blood tests or lung function, the patient is enabled to monitor the disease and by means of an online system to adjust the treatment accordingly. This means that the patient gets deep knowledge about his own illness and treatment. It also means great freedom not having to go to the hospital or the clinic for blood tests or examination and then wait for a medical consultation.

Patients gain independency that empowers them to cope with their own illness. Nurses play a major role in telemedicine, as it now is the visiting nurse who follows up on the patient’s self-care at home. At the hospital the specialist nurse becomes key in assessing the patient’s treatment and vital signs that automatically are transferred to the hospital patient records. Thus nurses take on new roles which involve training patients in use of the systems and the subsequent contact with the patient and following up on his/her progress.

**The Danish Nurses’ Organization recommends**
- **that** nurses engage in the development and implementation of telemedicine systems within all fields of healthcare.

**Nurse Managers are key players**
Nurse Managers are in a key position of the digital development, regardless of managerial level. Only nurse managers can ensure that systems meet nursing requirements and needs, not only the formal requirements for documentation and registration, but also the professional needs for systems that support the many professional facets of nursing.

At the strategic level, nurse managers influence the overall decisions on the digital development. It is therefore necessary that nurses with strong nursing, managerial and informatics skills participate in the entire decision-making process. For the nurse managers to make high-quality decisions, they must collaborate with nurse specialists and nurses with degrees in health informatics to ensure synergy between the various fields of knowledge.

At the tactical level, nurse managers often take leadership of the large implementation processes. At the operational level in clinical practice it is usually the head nurse who assumes responsibility for the major planning and training processes, and not least for the practical and personal implications of the new IT-systems.
The Danish Nurses’ Organization recommends

- that nurses at all levels of management are involved in all decisions and phases in the digitalization of healthcare, from decisions to planning and implementation of new IT-systems
- that nurse managers provide a high level of information to create ownership among employees
- that nurse managers collaborate with nurse specialists and nurses with degrees in health informatics to ensure a level of knowledge that includes management, nursing and health informatics.

Employee participation / involvement

The Confederation of Danish Employers (DA) and The Danish Confederation of Trade Unions (LO) signed in 1986 an agreement on technology. It was later incorporated in the Agreement on Cooperation and put the employers under obligation to discuss implications of new technology with the employee representatives.

The 'Framework agreement on employee involvement and participation ' from 2005 created more opportunities for involvement and participation. Technology is covered by the agreement and further clarified in the 'Agreement on employee representatives, cooperation and liaison committees '. The document states special provisions concerning introduction of or change in technology which means that involvement of employees must be higher in the field of technology than in other cases.

The management is obliged to keep employees informed about introduction of or changes in technology. Information must be submitted in writing for discussion in the liaison committee and/or technology committee. The information must relate to the aims, function, design, budget and planning of new technology, and state possible connection with other systems.

In addition, management must report foreseeable consequences of technology for working environment, work organization and tasks, staffing needs, division of tasks, and education.

The task of the liaison committee is to discuss the introduction or modification of (existing) technology. Guidelines on employee participation in the project groups must be agreed, as well as guidelines for employee access to available documentation on the specific project.
For each technology project, a special technology committee under the main liaison committee must be set up, should the employees require it. On the technology committee, the staff/groups of staff that are affected by the technology project must be represented.

The liaison committee must agree on the procedure for introducing new or modifying existing technology.

The Danish Nurses’ Organization recommends
- that management and employees are informed about the contents of the agreements.

The Health and Safety at Work Act
Under the current Health and Safety at Work Act the employer must ensure that employees are consulted on the planning and implementation of new technologies, including the impact on the working environment in selection of equipment, protection equipment, etc. At workplaces with a security organization, the security group must be involved in the project.

The Health and Safety at Work Act also states that when introducing new technology it must be ensured that the work environment is aligned with the general and special legal requirements.

Employers must also ensure that a written workplace assessment of health and safety conditions at the workplace is completed. A workplace assessment should be updated whenever there are changes in work, work methods and processes, which are of significance for the working environment. The assessment must be performed within three years.

The employer must ensure that each employee receives sufficient and appropriate training and instruction in undertaking work without danger. Training and instructions should mainly be given on introduction of new technology.

The Danish Nurses’ Organization recommends
- that the security group gets involved early in the planning process when introducing new IT-systems
- that the statutory workplace assessment is performed in order to secure safety and health conditions at the workplace
- that a special training program is developed for employees on introduction of new IT-systems.
Testing of systems before they are implemented

Before an IT-system is implemented, it must be tested with particular reference to not only errors, but to user friendliness as well. Systems that do not function and support workflows are difficult to integrate into daily life with the potential result that they are not used optimally.

Efficient methods have been developed to test systems in realistic environments, and the ideal is regular testing during the development process. The minimum requirement is a thorough test before implementation on a large scale.

Nurses have an important role in these testing processes, where they can contribute as test users, test the system in situations close to clinical practice, and give constructive criticism on what seems inappropriate.

The Danish Nurses’ Organization recommends
• that all new IT systems should be tested by nurses, doctors and other relevant professions, and that the tests if necessary, are used for adjustment of the systems.

Effect of workflows

It is well known that IT-systems in healthcare require change of existing workflows. It may prove to be an advantage if it involves getting rid of inappropriate routines. But as often as not, the traditional workflows are excellent and safe working practices to be preserved.

The interdisciplinary collaboration is a very complex pattern that is woven together by knowledge, tradition, flexibility, and very fluid boundaries of task division. This pattern is difficult to transfer to a computer system that requires strict workflows in a specific order. Therefore, it is always a challenge to get system and the clinical reality to play together. In fact, development and implementation of IT-systems must always constitute a compromise between system requirements and the requirements set by the clinical reality.

The Danish Nurses’ Organization recommends
• that introduction of new IT systems means establishing new and safe work practices, at the same time preserving the valuable and essential practices essential for clinical work
• that nurses engage in and take responsibility for workflow analyses to ensure that new IT-systems support good working practices.
Training and Implementation

The National strategy for digitalization of the health sector does not mention training and implementation of IT-systems. Notwithstanding that experience proves that it takes up many resources. It is more the rule than the exception that the necessary resources are not allocated for training, support and additional staffing during the implementation phase. As a minimum, workflow analyses should be performed, as well as appropriate training of all health professionals immediately before implementation, 24-hour implementation support in the department, as well as additional support and training for employees with poor IT skills.

There is a tendency to downplay the complexity of implementation of IT-systems. A new system is not just a new machine to be operated. It is a completely new tool in clinical practice with significant impact on workflows, communication and collaboration patterns. It is not a neutral process. It is something which cuts deeply into the professional work.

The Danish Nurses’ Organization recommends

- that budgets allow for the necessary resources connected with implementation and training
- that nurse managers secure and allocate the necessary resources for development, training and implementation of new IT systems
- that nurses engage in and take responsibility for the organizational implementation of new IT-systems
- that new staff and students are secured instruction on and training in the local IT-systems.

Who should document?

Nurses are trained to document and maintain nursing records to ensure quality, continuity and patient safety. Nursing documentation is an integral and well-founded part of professional nursing.

In addition, there is an ever-increasing pressure to register a large number of quality data and other types of data that are only indirectly part of nursing. Since resources are rarely allocated for this type of registration, it is common for nurses to assume these tasks, resulting in time being taken away from bedside care.
It is essential to distinguish between documentation required for high quality nursing, and documentation that is only indirectly part of nursing. With the increasing demands on clinical practice, it is reasonable to investigate whether other groups may take over part of the recording tasks. It is here natural to involve secretaries to a far greater extent than is the case today. Secretaries are trained to record with care and accuracy, and they will free nurses to do the nursing they are trained for.

**The Danish Nurses’ Organization recommends**

- **that** nurses do what they are trained for - nursing
- **that** secretaries are trained to perform a much larger proportion of nurses’ documentation and registration tasks
- **that** nurses engage in development and implementation of IT-tools that leave nurses more time for their patients/clients.
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