Theories and new trends in Nursing

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رؤية الكلية

تطمح كلية التمريض جامعة سوهاج أن تحتل مركزا متميزا في التعليم التمريضي والبحث العلمي بهدف الوصول للريادة لتخريج كوادر قادرة علي المنافسة في سوق العمل وتقديم أفضل الخدمات التمريضية للارتقاء بالمستوي الصحي في نطاق جنوب الوادي.

رسالة الكلية

تسعي كلية التمريض الى تخريج كوادر بشرية في مجال التمريض ذو مستوى عالي من الكفاءة وذلك عن طريق تقديم خدمة تعليمة مناسبة لاكسابهم المعارف والمفاهيم والمهارات اللازمة لسوق العمل وأجراء البحوث العلمية في مجال التخصص وتقديم خدمة متميزة للمجتمع وتنمية البيئة في محافظة سوهاج.

الأهداف الاستراتيجية للكلية

- التحقق من كفاءة برامج الكلية للتعليم التمريضي وذلك من خلال تطوير برامج الخريجين و الدراسات العليا وتطوير البيئة التعليمية.

- تنمية القدرات الابداعية للخريجين فى مجال التدريب الأكلينيكى المخصص لرعاية المرضى باستخدام تكنولوجيا المعلومات الحديثة والرعاية القائمة على الدليل .

- تحديث وتطوير المهارات المهنية والإدارية لأعضاء هيئة التدريس والهيئة المعاونة .

- تنمية وتطوير القدرات البحثية لأعضاء هيئة التدريس والباحثين ودعم المشاريع البحثية والابحاث التطبيقية.

- الحصول على الإعتماد الأكاديمي من الهيئة القومية للجودة والإعتماد الاكاديمي.

- إنشاء برامج خاصة كالتعليم المفتوح لكوادر هيئة التمريض المختلفة بما يتوائم مع إحتياجات المجتمع ومتطلبات سوق العمل.

- تلبية احتياجات المجتمع المبنية على تقييم وتحديد هذه الاحتياجات من خلال التعاون مع جهات المجتمع المختلفة.

- صياغة شراكة فعالة مع أطراف المنظومة الصحية ومؤسسات المجتمع.

- تنمية الموارد الذاتية و الأمكانيات المادية للكلية من خلال تفعيل دور الوحدات الخاصة وتحويلها إلى مراكز تميز.

- تفعيل التقويم الذاتى والتحسين المستمر في جميع عناصر مجال التعليم الجامعي والبحث العلمي.

- الأرتقاء بكفاءة وفاعلية خدمة المجتمع في محافظة سوهاج.

- التطوير المستمر والشامل للقدرة المؤسسية للكلية لمواكبة التطور التكنولوجي.

- تطوير المناهج الدراسية بما يتواكب مع التطور العلمي والتكنولوجي.

List of content:

Safe nursing practice

Seven legal tips for safe nursing practice

To help you maintain a high standard of practice and protect against legal problems related to your nursing care, I'll spell out seven key principles you should follow when providing patient care. I'll also provide examples of how lapses in the standard of care can expose nurses to legal liability.

Adhering to the seven key principles that follow will also help protect you legally.

1. Administer medications properly

Medication errors jeopardize patient safety and are all too frequent. They can also be costly: Besides harming patients, they can lead to expensive follow-up care, litigation, and monetary awards for damages.

Knowing the drugs you administer is a vital element in the nursing standard of practice for medication therapy.

Before giving an ordered medication, you must:

- Understand its purpose and actions,

- The dosage appropriate for your patient's condition,

- The administration route,

- Possible adverse reactions,

- Any contraindications.

As the last line of defense before an error reaches the patient, you must also remain vigilant for problems at other points in the medication

administration process, including the ordering, dispensing, and labeling of medications. If you're unfamiliar with a medication, check a current drug reference or ask the pharmacy.

When administering a drug, make sure you follow the traditional "five rights" of medication administration:

* right patient

* right medication

* right dose

* right time

* right route (delivery method or site of administration).

A "wrong" in any of these basic steps could harm or even kill a patient. But medication safety experts say these five points are just the tip of the iceberg. Other potentially serious lapses implicated in medication errors include failure to check the medication administration record (MAR) against the order, use of banned abbreviations leading to administration of a wrong drug or dosage, mistaken interpretation of illegible penmanship, failure to obtain clarification as needed, and transcription errors.

Consider the many ways a patient could miss a medication dose or get an extra dose. For example, he may miss a dose if the order wasn't transcribed, if he or the medication wasn't available when the dose was due, if a medication order was overlooked, or if his dose was mistakenly given to another patient. On the other hand, he could receive a duplicate dose if one nurse fails to document that she gave a dose and another nurse administers

a second dose. This is more likely at breaks or mealtimes, when a second nurse may temporarily assume the patient's care.

Hospitals can implement safety mechanisms such as independent double checks to help prevent errors associated with single-unit doses of high-alert medications, especially in pediatric patients. According to your facility's policy, an independent double check may call for one nurse drawing up the medication and another nurse independently determining that the medication, dose, and route are correct; both then sign the entry in the MAR or enter the details in the electronic medical record. The facility determines which medications require this extra precaution; common examples include the high-alert drugs intravenous (I.V.) heparin and insulin.

The following scenario details a medication error due to lapses in prescribing, dispensing, and administering the drug.

A physician writes an order for the antibiotic doxycycline as *Vibramycin, 100 mg I.M. b.i.d.* But parenteral Vibramycin can be administered by the I.V. route only, not intramuscularly (I.M.). The pharmacist who reviews the order catches the error and includes a package insert with the vial indicating that the medication must be administered I.V. However, the nurse either doesn't see or disregards the pharmacist's instruction and follows the written order. As a result, the patient gets the medication via the wrong route.

The physician writing the prescription triggered this error. The pharmacist should have contacted the physician to clarify the order and also should have advised the nurse that the drug is to be given I.V. The nurse,

unfamiliar with the right route for Vibramycin, should have consulted a current drug reference. Instead, she administered the medication according to the incorrect order.[1]

2. Monitor for and report deterioration

According to the nursing process, the recognized standard of care calls for continually assessing your patient. Once you've performed an initial assessment, made a nursing diagnosis, and initiated a care plan, you must continue to evaluate his condition and communicate the effectiveness of his treatment. Worsening signs and symptoms or a lack of response suggest that you need to modify the care plan.

Many legal actions brought against nurses center on an allegation of failure to monitor or recognize changes in a patient's condition. But your duty goes beyond careful monitoring and prompt documentation of any changes. Even if you've done these well, failing to recognize the significance of the changes or to communicate them clearly and promptly to the attending practitioner could endanger your patient and leave you open to liability.

In some lawsuits, nurses have been charged with failure to communicate or "failure to rescue" (not responding appropriately to the patient's deteriorating condition). The following example shows why.

A woman is admitted to the hospital with severe abdominal and lower back pain. Based on the results of diagnostic testing, her physician suspects left lower lobe pneumonia. He starts the patient on a broad-spectrum antibiotic and her condition improves. Then her pulse rate rises, and she begins experiencing distress, shortness of breath, and diffuse pain. Her nurse,

however, doesn't advise the physician of the change in her condition. Two hours later, the patient goes into cardiac arrest and dies.[2]

3. Communicate effectively

Besides informing a practitioner about your patient's current or changing condition, you need to clearly communicate with patients and colleagues at every point of patient care.

Good communication skills are essential when:

* transferring your patient's care to another person

* speaking with and educating your patient

* interacting with the patient's family or other visitors.

Communication is a two-way street that requires good listening skills too. Listen carefully to family members, who may be the first to know that something is wrong with their child or other loved one.

A growing challenge for health care providers in the United States is that more and more patients and their family members have limited proficiency in English. Rely on a professional medical interpreter to translate your instructions or questions to your patient and his responses. Hospitals have a duty to provide these interpreters as necessary. If a competent medical language interpreter isn't provided, you could face charges of substandard nursing care. (See "Speaking Up for Medical Language Interpreters" in the December issue of *Nursing2007* to learn more about this topic.)

The Joint Commission has set a standard for communication when one caregiver transfers patient care to another caregiver. According to The Joint

Commission requirements, the nurse transferring care must give the nurse taking responsibility for the patient all appropriate information about his condition, how he's responded to treatment during the shift, any changes in his condition or treatment plan, and any other information that will help the next nurse plan for his care. The standard requires that communication during transfer of care be interactive so that both parties can ask questions and that interruptions be minimal.[3]

(A handy way to remember what information to include when you talk with other caregivers at such times appears in *Think "SBAR" when discussing care*.)

The following scenario shows how poor communication can lead to legal trouble.

A neonate is receiving an infusion of calcium gluconate through an I.V. line in his right foot when the nurse notes discoloration and edema at the injection site. As the baby is being transferred to another unit, a transfer note indicates the time the infiltration was discovered and the fact that the nurse checked the area before the transfer; however, these details don't appear in the medical record. In the medical record are flow sheets on which some of the original writing is scratched out and written over.

When the baby's parents arrive and ask the staff about the injury, they're told it's a blister. With time, however, it leads to considerable scarring and loss of motion. The parents sue the nurse who cared for the baby when the infiltration occurred.

Think "SBAR" when discussing care

To ensure effective, comprehensive communication when you report on your patient's condition or transfer care, remember the abbreviation *SBAR*:

S is for *situation.* (Identify the patient and why he was admitted.)

B is for *background.* (Provide a brief and significant medical history, including any tests or treatments completed.)

A is for *assessment.* (Describe the patient's current condition.)

R is for *recommendation.* (Discuss the plan of care for the patient.)

If you're receiving a new patient, be sure to get all this information from the prior caregiver.

You can learn more and download copies of two SBAR tools at the Institute for Healthcare Improvement Web site, http://www.ihi.org.

4. Delegate responsibly

In general, today's hospitalized patients are more acutely ill than those of the past. Because experienced nurses are in short supply, nursing teams that include unlicensed assistive personnel (UAPs) are making a comeback. As an RN, you must know who has the appropriate skills and competencies to meet a patient's needs when assigning a portion of her care to someone else. When you establish a work assignment, you're still responsible for the patient's care, and you must delegate appropriately and supervise the person carrying out the assignment.

To delegate safely, you must first know what your state board of nursing allows you to assign to others. Some states don't specify which duties may

be delegated, but others may spell out tasks you may delegate, such as hygiene care or insertion of an indwelling urinary catheter.

The "five rights" for delegating to another caregiver provide an easy-to-remember guide: right person, right task, right circumstances, right direction, and right supervision.

The *right person* refers to both the nurse who's delegating and those who'll perform the task. To direct and supervise appropriately, you must be a licensed nurse and you must understand the qualifications and competencies of your staff.

The *right task* is one that may be safely delegated for a specific patient. Typically, safe tasks are those that recur frequently in the patient's care; involve an unchanging, standard procedure; and have minimal risk and predictable results. Don't delegate complex tasks that require nursing assessment or nursing judgment.

To determine the *right circumstances*, consider all relevant factors, including appropriateness of the patient setting and available resources. Even tasks that fit the criteria for "right task" may not be appropriate if circumstances such as the patient's condition don't allow for delegating them. For example, assigning a UAP to help ambulate a patient who's at high risk for falls may not be appropriate.

Giving the *right direction* means providing a clear, concise description of the task you're delegating, including objective limits and expectations. Here's an example: "When you take Mr. Brown's blood pressure, the acceptable range is between 120/80 and 140/80. If you get a reading outside

this range, please report your findings directly to me as soon as you get the reading."

Providing the **right supervision** calls for knowing the qualifications and competencies of your staff, knowing the results of the delegated task, and evaluating performance. At times, you may need to intervene in the care being given. As the supervising nurse, you remain responsible for the patient and need to evaluate her condition and response to the tasks performed.

Here's an example of inappropriate delegation posing a great risk to the patient:

A charge nurse asks a UAP to use a meter to determine a patient's blood glucose level. The UAP goes to the patient's room and apparently does as asked. At the change of shift, the charge nurse asks the UAP for the test results. The UAP reports that when she did the test, "EEEEE" appeared on the meter screen. Asked if she repeated the test, the UAP replies that she hasn't but that she did document the reading in the patient's chart. A repeat test indicates that the patient's blood glucose reading is over 800 mg/dL, and she's transferred to the intensive care unit for treatment.

Violations in the "five rights" of delegation are evident in this scenario. The UAP apparently didn't have proper education to use the blood glucose meter and wasn't the right **person** to perform the **task** under the circumstances. Was the patient's blood glucose level stable before the nurse assigned the task? Proper **direction** and **supervision** were lacking too. The charge nurse should have specified a range for the patient's blood glucose reading and told the UAP to immediately report the findings to the charge

nurse if they weren't within that range. Waiting until the end of the shift to ask for the results was another serious error in judgment.

5. Document in an accurate, timely manner

Accurate, timely documentation in your patient's medical record is crucial for these reasons:

* The medical record is a legal document required by state laws and regulations.

* It's a means of communication between caregivers that ensures continuity of care.

* It's used for education and research.

* It's used to substantiate insurance reimbursement claims.

* It can be used as evidence in legal proceedings to establish whether or not the care rendered met the legal standard of care.

A basic rule of safe documentation is to know and follow your facility's documentation policies and procedures. Institutional policies typically detail the forms of documentation to use, how to make a late entry, and how to correct an error in an entry. Failure to follow facility policy can result in inconsistencies; in turn, these may compromise patient safety and create legal problems if the record ends up in court. Regardless of how professional a nurse appears on the witness stand, careless documentation can make a profoundly negative impression on a jury.

The following situation demonstrates the dangers of careless documentation.

A man injures his left leg falling off the back of a truck. A cast is applied to his leg in the emergency department, and he's admitted to the hospital for his injuries. The next day, he begins to develop numbness in his left foot. The physician examines the patient and notes in the medical record that his "toes are cool and getting more numb," so he removes the top part of the leg cast.

The next day, the patient complains of severe pain in his left foot and the nurse alerts another physician of the change. Examining the patient and noting that he has compartment syndrome, the second physician performs a fasciotomy, but the patient's circulatory problems continue and his left leg has to be amputated.

A malpractice suit is brought against the physicians, hospital, and nursing staff. Because hourly circulation checks weren't documented in the patient's medical record, one of the decisions the court has to make is whether nursing negligence was partially responsible for the loss of his leg.[5]

6. Know and follow facility policies and procedures

Institutional policies and procedures help establish the nursing standards of care you'd be held to in court. Patient-care policies and procedures must be based on current and recognized practice. They must be updated regularly, and they should be realistic.

Any deviation from a policy or procedure that harms the patient can subject you and the facility to liability exposure, so some flexibility is necessary.

For example, rather than stating that patients' vital signs must be taken every 4 hours, a policy stating "within 4 hours" or "every 4 hours plus or minus 30 minutes" allows some leeway.

The nurse in the following scenario is sued after failing to follow hospital policy and procedure.

A nurse in an acute care hospital applies wrist restraints to a patient before briefly leaving his room. When she returns, the patient is next to the bed, hanging by his arms from the restraints. He subsequently develops pain in his right wrist and has X-rays, which show a fracture.

The patient sues the nurse, claiming that the restraints caused his injury. Court testimony shows that applying wrist restraints to the patient was inconsistent with hospital policy, but the patient can't prove that the restraints caused his injury.[6]

7. Use equipment properly

As a nurse, you have a duty to make sure you've received adequate training on the equipment you use to provide patient care. You must understand the equipment's intended use, know how to operate it properly, and follow policies and procedures for using it if they exist. Never try guessing how to use equipment.

The following scenario demonstrates how a patient is harmed when medical equipment is misused.

A patient is undergoing hysteroscopy. The equipment is missing a clip, and the nurses improperly connect an exhaust line that's hanging loose to an outflow port. The patient dies, and the family sues the hospital.

Evidence submitted at trial indicates that when the equipment used for the procedure left the manufacturer, it was properly set up. It also shows that two of the nurses assigned to the patient's case had no training on the use of the equipment and that their lack of training may have resulted in improper unclipping of the tube.

Standards put into practice

By adhering to the seven principles of nursing care spelled out here, you help protect your patients, meet the standard of nursing care in your daily practice, and avoid legal problems.

References:

Austin, and Sally, (2008): Seven legal tips for safe nursing practice. March 2008 - Volume 38 - Issue 3 - p 34–39

1. *Gasson v. East Jefferson General Hospital,* 628 So. 2d 256 (LA 1993) and 687 So. 2d 120 (1996).
2. *Flores v. Cyborski,* 629 N.E. 2d 74 IL (1993).
3. The Joint Commission. *2007 National Patient Safety Goals.* http://www.jcrinc.com/26813/newsletters/13469/. Accessed November 2, 2007.
4. Federico F. Responding to a medication error. *Forum* (Risk Management Foundation, Harvard Medical Institutions). 23(2):18, May 2003.
5. *Dillon v. Medical Center Hospital,* 648 N.E. 1375 (1993).
6. *Lyons v. Hahnemann University Hospital,* 03-2022 (3rd Cir., 2004).
7. *Chin v. St Barnabas Medical Center,* 711 A.2d 352-NY (1998).

Complementary and alternative medicine

Complementary and alternative medicine (CAM) is the term for medical products and practices that are not part of standard care. Standard care is what medical doctors, and health professionals, such as registered nurses practice.

Complementary and alternative medicine, as defined by NCCAM, is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine.

Complementary and Alternative Medicine (CAM) are quickly becoming more popular and accepted in today's society.

Alternative therapies include acupuncture, acupressure, hypnosis, spiritual healing, , and herbal and vitamin therapies,…...ect.

Reasons for increase interest to alternative treatment

- Ineffectiveness of conventional treatments.
- Most of the diseases, chronic pain, and illness are found to be incurable with conventional treatment.
- Alternative treatment can not only ease your physical pain but also relieve your mental and spiritual stresses and tensions.
- Conventional treatment only focuses on your physical ailments and nothing else, whereas the alternative treatment will focus on your entire body.
- In addition to these benefits, alternative medicine has minimum side effects.

- Alternative medicine is more cost-effective as compared to medical treatments.

1- Oxygen therapy

Definition

Oxygen therapy is a term that describes a number of different practices in which oxygen, ozone, or hydrogen peroxide are administered via gas or water to kill disease microorganisms, improve cellular function, and promote the healing of damaged tissues.

With higher levels of oxygen in the tissues, bacteria and viruses are killed along with defective tissue cells. The healthy cells survive and multiply more rapidly. The result is a stronger immune system.

Benefits of Oxygen therapy:

- Stimulating white blood cell production.

- Killing viruses (ozone and hydrogen peroxide).

- Improving the delivery of oxygen from the blood stream to the tissues of the body.

- Increasing the efficiency of antioxidant enzymes.

- Increasing the flexibility and efficiency of the membranes of red blood cells.

- Speeding up the citric acid cycle, which in turn stimulates the body's basic metabolism.

Hyperbaric oxygen therapy (HBO)

Hyperbaric oxygen therapy (HBO) involves putting the patient in a pressurized chamber in which he or she breathes pure oxygen for a period of 90 minutes to two hours. HBO may also be administered by using a tight-fitting mask, similar to the masks used for anesthesia. A nasal catheter may be used for small children.

Precautions when use Oxygen therapy:

Patients with a history of pneumothorax, chest surgery, emphysema, middle ear surgery, uncontrolled high fevers, upper respitory infections, seizures, or disorders of the red blood cells are not suitable for oxygen therapy.

In addition, patients should be aware that oxygen is highly flammable. If treatments are administered incorrectly or by an unskilled person, there is a risk of fire.

Side effects

Typical side effects of oxygen therapy can include elevated blood pressure and ear pressure similar to that experienced while flying. Side effects may also include headache, numbness in the fingers, temporary changes in the lens of the eye, and seizures.

2- Reflexology

Reflexology is a form of bodywork that focuses primarily on the feet.

How does reflexology work?

The underlying theory behind reflexology is that there are "reflex" areas on the feet and hands that correspond to specific organs, glands, and other parts of the body. For example:

- the tips of the toes reflect the head
- the heart and chest are around the ball of the foot
- the liver, pancreas and kidney are in the arch of the foot
- low back and intestines are towards the heel

Practitioners believe that applying pressure to these reflex areas can promote health in the corresponding organs through energetic pathways.

Why do people get reflexology?

- Stress and stress-related conditions   -Tension headaches
- Digestive disorders   -Arthritis
- Insomnia   -Hormonal imbalances
- Sports injuries   -Digestive problems, such as constipation
- Back pain

Reflexology is a popular alternative therapy. It promotes relaxation, improves circulation, reduces pain, soothes tired feet, and encourages overall healing.

Reflexology is also used for post-operative or palliative care. A study in the American Cancer Society journal found that one-third of cancer patients used reflexology as a complementary therapy.

What is a typical reflexology treatment like?

A typical treatment is 45 minutes to 60 minutes long and begins with a consultation about your health and lifestyle.

The pt., asked to remove the shoes and socks and sit comfortably in a reclining chair or on a massage table. Otherwise you remain fully clothed. The reflexologist will assess the feet and then stimulates various points to identify areas of tenderness or tension and then uses brisk movements to warm the feet up. Then pressure is applied from the toes to the heel according to the pt., comfort. Lotion or oil may be used.

How will I feel after?

Most people feel calm and relaxed after a treatment. They may even feel sleepy.

Occasionally, people feel nauseous, anxious, or tearful, but this is only temporary and is considered to be part of the healing process.

Precautions

- Be sure to give the reflexologist a complete and accurate health history.

- If you have foot ulcers, injury, or blood vessel disease such as blood clots, consult your doctor before having reflexology.

3- Aroma Therapy for Alternative and Preventive Medicine

Aromatherapy is an alternative and complementary type of alternative medicine being used by many people today.

There is growing evidence about its effectiveness in soothing the mind and body of anxious individuals. Aromatherapy uses essential oils which can either be used for topical application or for inhaling.

Aromatherapy benefits the individual when the minute molecules of the essential oils go directly into the bloodstream the moment they are inhaled. These minute molecules are being absorbed while the lungs are working to oxygenate the person's blood. This process takes place when the essential oil is placed on a tissue, in a vaporizer, or when they are mixed into the bathwater.

When these essential oils are used for topical application the minute molecules enter the skin through the hair follicles. The sweat glands also serve as another entry point for these essential oils. Thus, the healing properties of these essential oils are mixed into the person's body fluids. These essential oils also help fight against bacteria and viruses. Thus, the individual's immune system is improved.

Other Benefits of Essential Oils in Aromatherapy

Each essential oil contains different healing properties. There are essential oils that help improve the efficiency of eliminating toxins from the body. There are also those that help improve the growth of new body cells. Others work to enhance the body's capability to heal on its own.

Precautions for Using Aromatherapy

- The process of inhaling essential oils may bring about some allergic reactions to an individual.
- Those who have asthma must be careful in choosing essential oils.
- There are also times when an individual experiences nausea or headache.
- Those people whose skin is extra sensitive to the rays of the sun must also take caution in using topical applications for aromatherapy.
- Women who are lactating or pregnant must also be cautious about using essential oils for aromatherapy.

<div align="center">4- Acupuncture</div>

Definition:

Fine needles are inserted at specific points to stimulate, disperse, and regulate the flow of vital energy, and restore a healthy energy balance.

In addition to pain relief, acupuncture is also used to improve well being and treat acute, chronic, and degenerative conditions in children and adults.

Description:

The practice of acupuncture began with the discovery that the stimulation of specific areas on the skin affects the functioning of certain organs of the body.

It has evolved into a system of medicine that restores and maintains health by the insertion of fine needles into acupuncture points just beneath the

body surface. These points are in very specific locations and lie on channels of energy.

Method:

Special needles are inserted into the acupoints, which are located just beneath the epidermis. In theory, inserting these needles helps correct the flow of energy within the body and thus relieves pain and restores health.

When placed on the face, acupuncture points promote sinus drainage and open up nasal passages.

Acupuncture practitioners work in hospitals, rehabilitation centers, and private offices. Acupuncture needles are usually inserted to a depth of about a quarter of an inch into the skin. The therapist gently twists or twirls them for up to 10 minutes, leaving them in five to 20 minutes longer; or stimulates them with a weak electrical current; or heats.

5- Acupressure

What is Acupressure?

Acupressure is often called acupuncture without the needles. Instead of needles, acupressure involves the application of manual pressure (usually with the fingertips) to specific points on the body.

There are thought to be at least 14 meridians connecting our organs with other parts of our body. Acupuncture and acupressure points lie on those meridians.

Why Do People Try Acupressure

Most people try acupressure for a specific ailment. Some of the more common ailments are: nausea and vomiting during pregnancy/ morning sickness

Acupressure can also be self-administered. Although it's best to consult an acupuncturist for proper instruction, acupressure is generally done by using the thumb, finger to apply gentle but firm pressure to a point. The pressure is often increased for about 30 seconds, held steadily for 30 seconds to two minutes and then gradually decreased for 30 seconds. It's often repeated three to five times.

Precautions

- Acupressure should never be painful. If you experience any pain, discontinue the session.

- Pressure should be gentle over fragile or sensitive areas, such as the face.

- People with osteoporosis, recent fracture or injury, easy bruising, bleeding disorders, circulatory problems from diabetes, and those using anticoagulant or antiplatelet medications should avoid acupressure unless under the supervision of a qualified therapist.

- Acupressure shouldn't be done on the abdominal area or to certain points on the leg if pregnant.

- Acupressure shouldn't be done over open wounds, bruises, varicose veins, or any area that is bruised or swollen.

Side Effects

- After an acupressure session, some people may feel soreness at the points. People may also feel temporarily lightheaded.

New trends in pediatrics

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2-Definition of Pediatric Nursing

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4-Genetics and genomics in pediatric

5- References.

Introduction:

Health of the children has been considered as the vital importance to all societies because children are the basic resource for the future of humankind. Nursing care of children is considered for both the health of the children and for the illnesses that affect their growth and development. The increasing complexity of medical and nursing science has created a need for special area of child care, i.e.; pediatric nursing.

- World is changing and different trends appear that have effect on the environment surrounding children and their families and their health

Definition of Pediatric Nursing:

It is the specialized area of nursing practice concerning the care of children during wellness and illness .It includes preventive , promotive ,curative and rehabilitative care of children .It emphasizes on all around development of body ,mind and spirit of the growing individual .Thus , Pediatric nursing involves in giving assistance ,caring and support to the growing and developing children to achieve their individual potential for functioning with fullest capacity.

1- Robotic Surgery:

The Center for Robotic and Minimally Invasive Reconstructive Surgery at Boston Children's Hospital provides unrivaled expertise in pediatric robotic surgery. Specially-trained surgeons use a high-tech robot to perform

complex and delicate operations through very small surgical openings. The results are less pain, faster recoveries, shorter hospital stays, smaller scars, and happier patients.

In children robotic surgery is safe and applicable to a wide range of surgical conditions. Further experience is required in order to establish its full potential, Post-operative complications were not robot-related (one wound infection, one urine extravasation from a displaced ureteric stent **(Wiley J,2007).**

<u>The ALIZ-E project</u> : investigates the use of social robots with children in hospitals, These types of robots would be able to involve a child in a game to prevent anxiety in a hospital environment while being aware of the child's mood, capable of switching to another game if the child were to lose interest. The robot could also teach the child a dance to promote physical activity while assessing the child's progress in learning the sequence of moves, repeating the sequences and motivating them as needed.

Currently, the project is continuing to develop the theory and practice behind embodied cognitive robots in the hopes that it will lead to the development of educational companion robots for child users.

Surgical robotics has been used in many types of pediatric surgical procedures   as   well   including: tracheoesophageal   fistula   repair,

cholecystectomy, nissen fundoplication, morgagni's hernia repair, kasai portoenterostomy, congenital diaphragmatic hernia repair, and others.

<u>Examples of</u> <u>Robotic Surgery</u>

Children can now have reconstructive surgery on the urinary tract performed with the minimally invasive benefits of laparoscopy and the technical precision of open surgery. During robotic surgery, the surgeon uses the assistance of a robot to operate on the patient through tiny holes (or ports) in the body instead of a large open incision. The camera is placed through one of these ports. Sitting at the console of the robot, the surgeon sees vital anatomical structures with 3-D high-definition clarity magnified six times their normal size. This enhanced clarity of vision sets the stage for a more precise robotic surgery procedure .The other robotic arms are placed through the other ports and hold specialized instruments. The surgeon uses controls at the console to guide the movement of the robotic surgical instruments that reproduce the surgeon's delicate hand and finger movements. One major advantage of the da Vinci® system is the seven degrees of motion that mimic the motions of the human hand and wrist which essentially eliminates tremor, and maximizes dexterity, precision and control. The robot can only respond to the surgeon's movements and motions, and it is incapable of moving on its own, thereby ensuring safe outcomes.

<u>Benefits of Robotic Surgery</u>

Compared to traditional open surgical procedures, the da Vinci® robotic

surgery system results in exceptional benefits for children and adolescents, including:

- Tiny 5-8 millimeter incisions instead of one large incision
- Minimize blood loss
- Optimal recovery
- Quick return to normal diet
- Fewer complications
- Less pain than open surgery
- Shorter length of stay in hospital
- Reduced appearance of scarring
- Faster return to normal daily activities

A quicker recovery means that children and adolescents, as well as their families, return to normal activities sooner.

Robotic Surgery Procedures

- **Pyeloplasty –** reconstructive surgery that corrects the cause of the obstructed kidney and reconnects the ureter to the kidney
- **Nephrectomy** – removal of a non-functioning kidney
- **Partial Nephrectomy – removal of a portion of kidney with poor or no function**
- **Renal Cyst Ablation** – removal of large cyst of the kidney
- **Ureteral Reimplantation** – reconstructive surgery to correct reflux of urine from the bladder back to the kidney

- **Urachal Cyst Excision** – removal of the tube that carries urine of the fetus. This usually closes before birth but may not or may become infected and removal becomes necessary
- **Mitrofanoff Procedure –** reconstructive surgery in which the appendix is connected to the bladder and then to the abdomen allowing patients who require catheterization to perform this more effectively
- **ACE (Malone) Procedure** – surgery aimed to allow patients to perform enemas in an antegrade fashion by bringing the appendix to the   abdomen

2-Genetics and genomics in pediatric

The latest release of data from the PCGP (the Pediatric Cancer Genome Project), published in the journal Nature Genetics, includes 520 genome sequences from childhood cancer patients; half of the genetic material comes from their tumors, and half from their healthy tissues. By matching the tumor genomes to those of normal cells from the same patients, researchers hope to pinpoint the differences and get a better idea of where the cancer cells went awry. These discrepancies in the genetic code are also likely to be the richest targets yet for potential new therapies.

Ultimately, the researchers aim to use the genetic information to help develop new, more effective cancer treatments. Despite the fact that survival rates of many childhood cancers has improved to reach 80% to 90% in recent years, much of this benefit is due to early detection and quick

intervention with conventional treatment, including surgery, chemotherapy and radiation therapies. There have been no new drugs to treat pediatric cancers in nearly two decades, and the rates of recurrent and new cancers among survivors remains high.

Already, genetic information has provided some important clues about how best to treat certain childhood cancers: decoding the tumor genomes of a form of acute lymphoblastic leukemia (ALL), for example, showed that doctors were treating this cancer the wrong way; instead of being similar to other lymphoblastic leukemias, these tumors had more in common with acute myeloid leukemia (AML), another cancer of the bone marrow and blood cells, which is treated very differently. "So immediately we saw that we needed to modify the therapeutic approaches for patients with ALL," says Downing.

Trials to treat patients who have relapsed on all available treatments for ALL with AML-based therapies are just beginning to launch, to establish whether the gene-based intelligence can make a difference in survival for these patients.

There are other examples, as well, in which a childhood eye cancer was traced to a mutation for which a targeted anti-cancer drug already exists.

References

1- http://medical-dictionary.thefreedictionary.com/evidence-based+practice.

2- http://healthland.time.com/2012/05/30/decoding-cancer-scientists-release-520-tumor-genomes-from-pediatric-patients/.

3- http://www.childrenscentralcal.org/pressroom/publications/nx1/pages/nx-nursinginformatics101.aspx, 2011.

4- http://www.childrenshospital.org/clinicalservices/Site1860/mainpage S1860P0.html.

5- http://www.ncbi.nlm.nih.gov/pubmed/17924450.

6- http://www.northshorelij.com/ccmcny/ccmcny-our-services/ccmcny-urology-robotic-surgery.

Orem's Theory

Out lines

- Introduction

- Major Assumptions of Orem's Theory of Nursing

- Definitions of domains concepts

- Orem's general theory of nursing in three related parts:-

° Theory of self care

° Theory of self care deficit

° Theory of nursing system:-

  a. Wholly compensatory.

  b. Partly compensatory.

  c. Supportive-educative.

Introduction:

Who is Orem?

- Theorist : **Dorothea Orem** (1914-2007)
- Born 1914 in Baltimore, US
- Earned her diploma at Providence Hospital – Washington, DC
- She worked as a staff nurse, private duty nurse, nurse educator and administrator and nurse consultant.
- Received honorary Doctor of Science degree in 1976.
- Theory was first published in Nursing: Concepts of Practice in 1959, 1971, second in 1980, in 1995, and 2001.

Since 1959, Orem's self-care model has evolved as a conceptual framework for nursing education curriculum, clinical nursing practice, nursing administration, and nursing research. Dorothea Orem's concept of nursing as the provision of self-care was first published in 1959 & focused on the individual.

In the 1980 publication, she expanded the focus to include multi-person units (families, groups, or communities). The concept of self-care as a model for nursing practice has also been examined by the Nursing Conference Development Group of which she is Chair-person.

Major Assumptions of Orem's Theory of Nursing

- People should be self-reliant and responsible for their own care and others in their family needing care
- People are distinct individuals

- Nursing is a form of action – interaction between two or more persons
- Successfully meeting universal and development self-care requisites is an important component of primary care prevention and ill health
- A person's knowledge of potential health problems is necessary for promoting self-care behaviors
- Self care and dependent care are behaviors learned within a socio-cultural context

- DEFINITIONS OF DOMAIN CONCEPTS:-

Health

Orem defined health as a state where one is structurally and functionally wholeness or integrity. She further added that a healthy being is one who has the necessary self-care ability to meet his/her changing self-care demands. She supported the concepts of health promotion and health maintenance and claimed that it is not just the individual's responsibility, but also the society as a whole, including its members.

Environment

Orem viewed the environment as not just the elements external to man. She viewed man and environment as an integrated system. It includes conditions that can positively or negatively affect a person's ability to provide self-care. She enumerated certain conditions which are conducive for one's development and includes the following: opportunities to be helped; being with other persons or group where care is offered; opportunities for solitude and companionship.

Nursing

- To Orem, nursing arises through a mandate from society which defines scopes, limits, and credentials of nursing practice (agency).
- Through the nursing process, the nurse can select the nursing model appropriate for the patient.
- It is a community service, an art, and a technology.

Nursing as a Service:

- It is a service of deliberately selected and performed actions to assist individuals or groups to maintain self-care, including structural integrity, functioning, and development.
- It is the giving of direct assistance to a person when he is unable to meet his own needs.
- Requirements for nursing are modified and eventually eliminated when there is progressive favorable change in the state of health of the individual, or when he learns to be self-directing daily self-care.
- She also considered health service as an interpersonal process since it requires the social interaction of nurse with a patient and involves transaction between them.

Nursing as an Art:

- The ability to assist others in the design, provision, and management of systems of self-care to improve or maintain human functioning at some level of effectiveness.

- As an art, nursing has an intellectual aspect – the discernment of obstacles to care and planning how these obstacles can be overcome.

Nursing as a Technology:

- Nursing has formalized methods or techniques of practice, clearly described ways of performing specific actions so that some particular result will be achieved.
- Techniques of nursing must be learned and skill and expertness in their use must be developed by persons who pursue nursing as career.

<u>*Human being*</u>

Human beings are distinguished from other living things by their capacity to:

1. Reflect upon themselves and their environment.
2. Symbolize what they experience.
3. Use symbolic creation (ideas, words) in thinking, in communicating, and in guiding efforts to do and to make thinking beneficial for themselves or others.

Integrated human functioning includes *physical, psychological, interpersonal, and social aspects*. Orem believes that individuals have the potential for learning and development. The way an individual meets his self-care needs is not instinctual but is a learned behavior.

Factors that affect learning include: ***age, mental capacity, culture, society, and the emotional state*** of the individual. If the individual cannot learn self-care measures, others must learn the care and provide it.

Nursing process

- a system to determine (1)why a person is under care (2)a plan for care ,(3)the implementation of care

Orem's General Theory of Nursing

Orem's general theory of nursing in three related parts:-

- Theory of self care
- Theory of self care deficit
- Theory of nursing system

A. Theory of Self Care

This theory Includes:

- **Self care** – practice of activities that individual initiates and perform on their own behalf in maintaining life ,health and well being. Normally adults voluntarily care for themselves. Infants, children, the aged, the ill, and the disabled require complete care or assistance with self-care activities.
- **Self care agency**: is the human's ability or power to engage in self-care. The individual's ability to engage in self-care is affected by basic conditioning factors.

Basic conditioning factors are age, gender, developmental state, health state, socio cultural orientation, health care system factors, family system factors, patterns of living, environmental factors, and resource adequacy and availability. (Nursing theories, Julia George)

"Normally, adults voluntarily care for themselves. Infants, children, the aged, the ill, and the disabled require complete care or assistance with self-care activities." (Orem, 1991)

- Included Two agents:

  - **Dependent self-care agent** is a person other than the individual who provides the care (e.g. parent)

  - **Therapeutic self care demand** is the totality of self-care actions to be performed for some duration in order to meet known self-care requisites by using valid methods and related sets of operation and actions. is a human ability which is "the ability for engaging in self care" -conditioned by age developmental state, life experience socio cultural orientation health and available resources

- **Self care requisites** - action directed towards provision of self care. 3 categories of self care requisites are-

  o Universal self care requisites

  o Developmental self care requisites

  o Health deviation self care requisites

1. *Universal self-care requisites:*

Universal self-care requisites are associated with life processes and the maintenance of the integrity of human structure and functioning. They are common to all human beings during all stages of the life cycle and should be viewed as interrelated factors, each affecting the others.

Identifies these requisites as:

1) Air, water, food-—resources vital to the continuation of life, to growth and development, to repair of body tissue, and to normal integrated functioning.

2) Care associated with elimination processes and excrements — substances eliminated by the body for physiological reasons including regulation and control of these substances.

3) Activity and rest—a pattern of energy with a balance between respite and activities.

4) Solitude and social interaction—a balance between aloneness and being with others.

5) Prevention of hazards to human life, human functioning, and human well being—conditions that imperil the life and well-being of humans.

6) Normalcy—the state of being normal according to scientific theory (e.g., Piaget) and cultural and societal values.

2. *Developmental self-care requisites:*

Before 1980, Orem had included the developmental self-care requisites within universal self-care. Developmental self-care requisites comprise

maintenance of conditions to support life processes and *human development,* including needs in the various developmental stages and preventive care for adverse conditions affecting the developmental process (e.g., during the loss of significant others, possessions, or job).

3. *Health deviation self-care requisites:*

Health deviation self-care is required in conditions of illness, injury, or disease or may result from the medical measures required to diagnose and/or correct the condition (e.g., an individual who has a colostomy resulting from the correction of an obstruction must learn new self-care techniques for elimination).

The six health deviation self-care requisites are:

1- Seeking appropriate medical assistance for conditions of human pathology.
2- Attending to the effects of human pathology.
3- Carrying out medically prescribed measures effectively.
4- Caring for or regulating uncomfortable or deleterious effects of prescribed medical measures.
5- Accepting self in relation to a state of health in need of health care and modifying the self-concept.
6- Learning to live with effects of pathologic conditions.

B. Theory of self care deficit

- Specifies when nursing is needed

Nursing is required in the absence or limitation of the ability of the adult, or parent

 in the case of a child, to meet continuous self-care requirements as well as when the need arises to use special techniques and apply scientific knowledge in the design or provision of care.

The domain of nursing practice can be described in terms of activities in which nurses engage when they provide nursing.

- Orem identifies 5 methods of helping:
    o Acting for and doing for others
    o Guiding others
    o Supporting another
    o Providing an environment promoting personal development in relation to meet future demands
    o Teaching another

C. Theory of Nursing Systems

☐ Describes how the patient's self care needs will be met by the nurse , the patient, or both

☐ Identifies 3 classifications of nursing system to meet the self care requisites of the patient:-

b. Wholly compensatory.

c. Partly compensatory.

d. Supportive-educative.

1. The wholly compensatory nursing system:

The wholly compensatory nursing system is represented by a situation in which the patient has no active role in the performance of care. The nurse helps by acting for or doing for the patient.

- The patient has no active role in the performance of his care.
- The nurse acts for the patient.

- An individual requires total nursing care to fulfill self-care needs¬
- A patient's self-care agency is so limited that she or he depends on others for well-being.

- The nurse accomplishes patient's therapeutic self-care; compensates for patient's inability to engage in self-care; supports and protects patients.

►**An example** of a person needing care in the wholly compensatory system would be an individual who is nonresponsive. In this situation, the nurse must ensure that all needs are met, including oxygenation, nutrient intake, elimination, body hygiene, range of motion exercises, and sensory stimulation.

2. The partly compensatory nursing system

The partly compensatory nursing system is represented by a situation in which both the nurse and the patient perform care measures or other actions involving manipulative tasks or ambulation. Either the nurse or the patient may have the major role in the meeting of the needs.

►**An example** of a person needing nursing care in the partly compensatory system would be an individual who has had recent surgery. This person might need much assistance with oral hygiene, toilette, or ambulation.

3-The supportive-educative system

The supportive-educative system is a system where the person is able, or can and should learn, to perform the required self-care measure but cannot do so without assistance. The methods of helping or assisting in this system would include: support, guidance, the provision of a developmental environment, and teaching.

►**An example** of a person needing care in the supportive-educative system would be an adolescent with a metabolic disorder. When the community health nurse visits the home, the nurse would give support to the patient and his family by listening to their concerns. The nurse would then teach all pertinent members of the family the pathophysiology of the impairment, the need for exercise, the technical skills for medication administration, and foot care. The nurse would also guide them in the dietary regime and would encourage them to provide an environment where the adolescent can meet his physical and psychological developmental tasks.

Infection Control

Introduction

Hospital acquired infections are a major cause of morbidity and mortality in hospitalized children; particularly those in intensive care units.

Hospital nosocomial infection is infection acquired either by patients while they are in hospital or by member of hospital staff.

Definitions

Infection is a process involving an invasion and multiplication of pathogenic microorganisms that subsequent tissue damage (White, 2002).

Nosocomial infections An infection acquired in hospital by a patient who was admitted for a reason other than that infections after 48 hours. It occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission.

Infection control: practices and procedures that prevent the spread of infection. (Epstein, etal., 2008). It refers to the numerous measures that are taken to prevent infections from occurring in health care facilities and aims to destroy or remove sources of pathogenic organisms (Meyer, 2005).

Impact of nosocomial infections

nosocomial infections add to functional disability and emotional stress of patient that reduce the quality of life.

It also one of the leading causes of death.

The increased length of stay for infected patient is the greatest contributor to cost.

Who is at higher risk for infection?

Newborn babies

People with diabetes

Surgery patients

Poor general health care

People being treated for cancer

Patient hospitalized for long time

People with tubes for fluid or medications, urinary catheter and IV line.

Clinical manifestation of infection

1-General manifestation as: temperature instability, chills, fatigue, rash, not doing well

2-Respiratory manifestation as: signs of respiratory distress as tachyapnea, flaring or grunting, irregular respirations and sub costal retractions. (Gwin and Price, 2008).

3-Gastrointestinal manifestation as: may present with lethargy, poor feeding, decreased reflexes as poor sucking, abdominal distention and perhaps diarrhea. Hypoglycemia or hyperglycemia may result from the inability to maintain normal metabolic processes and impaired glucose metabolism. (Kenner and Lott, 2007).

4-Cardiovascular manifestation as: Vascular perfusion is typically decreased; tachycardia or bradycardia, prolonged capillary filling time, and hypotension. Thrombocytopenia is often present.

5-Central Nervous System as: Hypotonia, Seizures, poor spontaneous movement and irritability.

Infection Process

Infections are transferred from one person to another through disease-transmitting micro-organisms, known as pathogens. A complete chain of infection is necessary for infection to occur. The elements of chain includes; the infectious agent, the reservoir, the place of exit, the mode of transmission, the place of entry, and the susceptible host.

1) Causative Agent

♥Bacteria includes:

Commensally Bacteria as normal flora. Some bacteria cause infection if the natural host is compromised. For Example: staphylococci or E coli

Pathogenic bacteria

Anaerobic gram positive (Clostridium cause gangrene)

Gram positive bacteria as (staphylococcus aureus)cause lung, bone, heart and blood stream infection

Gram negative bacteria:(E coli, klebsiella, Enterobacter) cause serious infection as in surgical site, lung, bacteraemia and peritoneum infection

♥Viruses: including hepatitis B, C viruses, Rotavirus, HIV, Cytomegalovirus, influenza virus and herpes simplex virus

♥ Protozoa and Fungi: as (Giardia lamblia) and (Scabies)

Sources of infecting pathogens

Exogenous infection

When pathogens are acquired from another person, or from the environment.

Endogenous infection

When microorganisms colonize one site on the host and enter another site on the same person causing further infection.

2) Reservoir

Humans: as   ⇨ Patients   ⇨   Healthcare Workers

Animals as Insects, Rodents, Shell Fish

Environment ⇨ Patient Care Equipment ⇨ Environmental Surfaces

⇨ Food

3) Portal of Exit

The path by which the infectious organism (agent) leaves the reservoir

Respiratory Tract: by ⇨ Coughing   ⇨ Sneezing

⇨ Talking ⇨ Suctioning

Genitourinary Tract: by ➤ Foley Catheters

➤ Sexually transmitted diseases

Gastrointestinal Tract: by ➤ Feces ➤Vomiting

Skin/Mucous Membranes: by ➤Wounds ➤ Skin breaks

Transplacental

Blood: ➤ Needle stick ➤ Blood Transfusion

4) Mode of Transmission

The mechanism for transfer of an infectious agent from the reservoir to a susceptible host.

A) CONTACT

DIRECT CONTACT:

Person-to-person

Actual physical contact between source and patient

INDIRECT CONTACT:

Patient to contaminated indirect object or Droplets spread

B) AIRBORNE Transmission

Organisms contained within droplet nuclei or dust particles (i.e. droplet nuclei of tuberculosis)

Suspended in air for extended   periods, may be spread   through ventilation systems

C) VECTOR-BORN Transmission

External vector-born transmission; mechanical transfer of microbes on external appendages (feet of flies)

D) Common Vehicle Transmission

Involved disease spread through contaminated food, water, medications, devices and equipment.

5) PORTAL OF ENTRY

The path by which an infectious agent enters the susceptible host as:

Respiratory Tract

Genitourinary Tract

Gastrointestinal Tract

Skin/Mucous Membrane

Trasplacental (fetus from mother)

Parenteral (percutaneous, via blood

6) SUSCEPTIBLE HOST

A person or animal lacking effective resistance to a particular pathogenic agent

Factors Influencing N.I.

The microbial agent

Patient susceptibility

Environmental factors

1-Characteristics of microbial agents

Infective dose   -Pathogenicity

 Viability   - Resistance to antimicrobial

2-Patient Susceptibility

Age: infants and old age have decreased resistance to infection.

Immune status: Patients with chronic diseases as malignancy, leukemia, diabetes mellitus, renal failure or AIDS have increased susceptibility to infection.

Patients with Immunosuppressive drugs or irradiation have decreased resistance to infection.

Injuries to skin or mucous membrane bypass natural defense mechanism.

Many diagnostic and therapeutic procedures such as biopsies, endoscopic, catheterization, intubation / ventilation and suction increase the risk of infection.

3-Environmental Factors

 Healthcare settings are environment   where both infected persons and persons at high risk of infection congregate.

Crowded conditions within hospital, frequent transfers of patients from unit to anther and concentration of patients highly susceptible to infection in one area .

Universal precaution

Universal precautions are used to minimize the risk of exposure to blood and body fluids. They involve the use of personal protective equipment such as masks, gowns, eye wear and gloves, to create a barrier between the person and the microorganism and prevent transmission of microorganisms

Standard Precautions

Hand hygiene

Use of personal protective equipment (PPE)

Prevention of needle sticks/sharps injuries

Cleaning and disinfection of the environment and equipment

1)Hand washing

Hand washing is the most basic aspect of standard precaution. Thorough hand washing with adequate quantities of water and soap removes more than 90% of the transient flora including all or most contaminants.

2) Use of Personal Protective Equipment (PPE)

1) Gloves

2) Aprons and Gowns

3) Face, mouth/eye protection

3) Waste disposal

Types of Waste

1-Non-medical waste

2-Medical waste

 Infectious waste (wound dressing, used catheter or cannula)

Sharps waste (syringes, needles, disposable blades)

Chemical waste (diagnostic Kits, pharmacy chemical, cleaning agent)

Pharmaceutical waste (Expired drugs, unused drugs)

Heavy metals (Batteries, broken mercury thermometers)

CLEANING

Thorough cleaning will remove more than 90% of microorganisms.

Mechanical Cleaning

 There is minimal handling of dirty equipment by staff. The equipment is placed in trays ready for washing by washing machine, washer/disinfector and ultrasonicator.

Manual Cleaning

All items requiring disinfection or sterilization should be dismantled before cleaning. Cold water is preferred; it will remove most of the protein materials (blood, sputum, etc.)

Fig. 2: Decontamination Steps
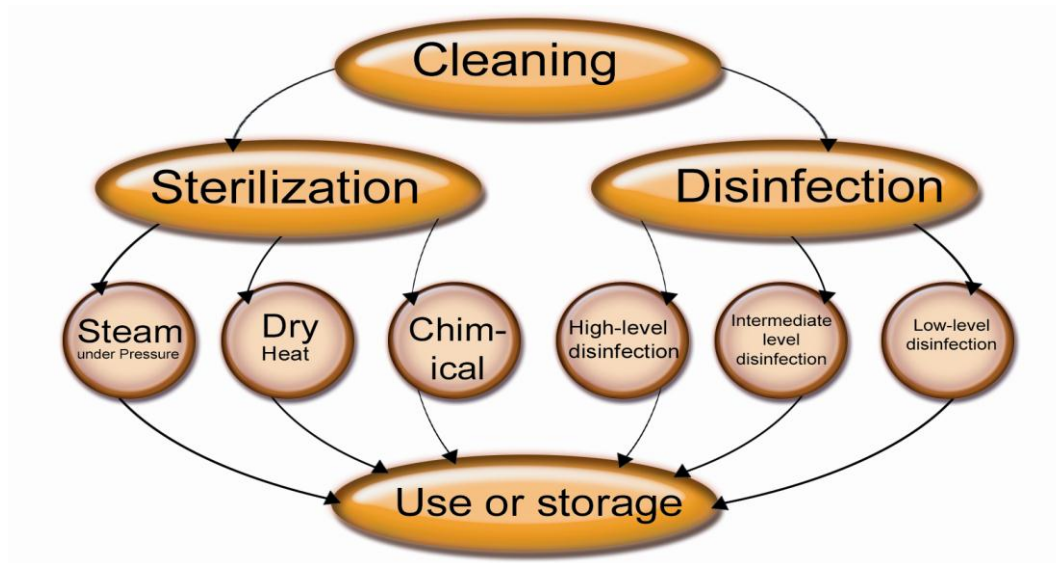
Sterilization

It is carried out by physical or chemical methods. Physical methods are based on the action of heat (autoclaving, dry thermal or wet thermal sterilization). Chemical means include gas sterilization with ethylene oxide or other gases, and immersion in a disinfectant solution

Disinfection

♦High-level disinfection: can be expected to *destroy all microorganisms, with the exception of large numbers of bacterial spores.*

♦Intermediate disinfection: inactivates Mycobacterium tuberculosis, vegetative bacteria, most viruses, and most fungi; *does not necessarily kill bacterial spores.*

♦ **Low-level disinfection**: can kill most bacteria, some viruses, and some fungi; cannot be relied on to kill resistant microorganisms such as tubercle bacilli or bacterial spores.

Immunization of Health Care Personnel

Occupational health programs (HCP) should maintain immunization records on all employees.

Infection Control Program

The nurse in charge of a ward is responsible for:

maintaining hygiene, consistent with hospital policies and good nursing practice on the ward

monitoring aseptic techniques, including hand-washing and use of isolation

reporting promptly to the attending physician any evidence of infection in patients under the muse's care

Initiating patient isolation and ordering culture specimens from any patient showing signs of a communicable disease, when the physician is not immediately available.

limiting patient exposure to infections from visitors, hospital staff, other patients, or equipment used for diagnosis or treatment

NOSOCOMIAL INFECTION SURVEILLANCE

Nosocomial infection rate in a hospital is an indicator of quality and safety of care.

Surveillance to monitor this rate is essential to identify problems and evaluate control activities

The ultimate aim is the reduction of infection rate and their costs.

Environmental control:

1. Including physical facility plans must meet quality and infection control measures. Patient equipment, positioning and installation, traffic flow.

2. Cleaning of hospital environment and disinfection according to policies.

3. Proper air ventilation.

4. Water pipes examination, check its quality.

5. Proper waste collection and disposal.

6. Cleaning and disinfection of equipment.

7. Proper linen collection, cleaning, distribution   8. Food: ensure quality and safety.

 9. Sterilization.

Staff health promotion and education:

1. HCW are at risk of acquiring infection, they can also transmit infection to patients and other employee.

2. Employee health history must be reviewed, immunizations recommendations to be considered.

3. Release from work if sick, occupation injury must be notified.

4. Continuous education to improve practice, better performance of new techniques.

Pediatric Nurse Role in infection control

Surveillance

Destroying and containing infectious agents

Promoting immunization against infectious disease

Strengthening each patient's capacity for recovery from infection

Clinical pathway

Out line:

1-Introduction

 2-Definition of clinical pathway

3-Components of Clinical Pathway

4-Benefits of Clinical Pathway

5-The aim of clinical pathway

6-Issues - potential problems and barriers of ICPs

7-Characteristics of care pathways

8- The importance of the Clinical nurse specialist

9- Selection Criteria

10-References

Objectives:

General objectives:

By the end of this seminar the student will able to discuss Clinical pathway.

Specific objectives:

At the end of this unit students will able to:

2- Define the clinical pathway.

3- Identify the components of Clinical Pathway.

4- Illustrate the benefits of Clinical Pathway.

5- Illustrate the aim of clinical pathway.

6- Discuss the issues - potential problems and barriers of ICPs.

7- List the characteristics of care pathways.

8- Discuss the importance of the Clinical nurse specialist (CNS) as a primary figure for ensuring proper pathway development, implementation, and ongoing evaluation.

Clinical pathway

Introduction:

Clinical / Care pathways, also known as critical pathways, care paths, integrated care pathways, case management plans, clinical care pathways or care maps, are used to systematically plan and follow up a patient focused care program.

Clinical Pathways were introduced in the early 1990s. The use of clinical pathways has increased over the past decade in the USA, the UK, Australia, and many other developed countries. However, its use in the developing nations and Asia has been sporadic (Cheah, 2000). Clinical Pathways are structured, multidisciplinary plans of care designed to support the implementation of clinical guidelines and protocols. They are designed to support clinical management, clinical and non-clinical resource management, clinical audit and also financial management. They provide detailed guidance for each stage in the management of a patient (treatments, interventions etc. ....) with a specific condition over a given time period, and include progress and outcomes details (Campbell, 2009).

Nurses work in collaboration with a number of health workers (physicians, pharmacists, social workers, child life specialists, occupational and physical therapists,….) to provide care for patients; thus it is important to have a multidisciplinary care plan to effectively care for the patients' many needs. The clinical pathway or care map is an example of multidisciplinary care plan that has as its central concept the prediction of

day-by-day care required to achieve outcomes for a specific patient's health problem within a given time frame (Alfaro-LeFever, 2005).

2- Definition of clinical pathway:

A clinical pathway is a printed guideline to usual care provided for a patient having a certain procedure done or a patient who has a certain illness. Since all patients are unique, everyone's care will be customized to meet their needs while keeping the guidelines in mind (Kearns S, 2003).

Another definition:

Clinical pathways are standardized, evidence-based multidisciplinary management plans, which identify an appropriate sequence of clinical interventions, timeframes, milestones and expected outcomes for a homogenous patient group (Queensland Health Clinical Pathways Board definition, 2002).

Another definition:

A care pathway is a complex intervention for the mutual decision making and organization of care processes for a well-defined group of patients during a well-defined period (Vanhaecht, et al, 2007).

A critical or clinical pathway defines the optimal care process, sequencing and timing of interventions by doctors, nurses and other health care professionals for a particular diagnosis or procedure. Clinical pathways are developed through collaborative efforts of clinicians, case managers, nurses, pharmacists, physiotherapists and other allied health care

professionals with the aim of improving the quality of patient care, while minimizing cost to the patient (Cheah, 2000).

Components of Clinical Pathway:

Clinical Pathways have four main components: a timeline, the categories of care or activities and their interventions, intermediate and long term outcome criteria, and the variance record (to allow deviations to be documented and analyzed).

Benefits of Clinical Pathway (Campbell, 2009):

1-Support the introduction of evidence-based nursing and use of clinical guidelines

2-Support clinical effectiveness, risk management and clinical audit

3-Improve multidisciplinary communication, teamwork and care planning

4-Can support continuity and co-ordination of care across different clinical disciplines and sectors;

5-Provide explicit and well-defined standards for care;

6-Help reduce variations in patient care (by promoting standardization);

7-Help improve clinical outcomes;

8-Help improve and even reduce patient documentation

9-Support training;

10-Optimize the management of resources;

11-Can help ensure quality of care and provide a means of continuous quality improvement;

12-Support the implementation of continuous clinical audit in clinical practice

13-Support the use of guidelines in clinical practice;

14-Help empower patients;

15-Help manage clinical risk;

16-Help improve communications between different care sectors;

17-Disseminate accepted standards of care;

18-Provide a baseline for future initiatives;

19-Not prescriptive: don't override clinical judgment;

20-Expected to help reduce risk;

21-Expected to help reduce costs by shortening hospital stays

The aim of clinical pathway:

The aim of a care pathway is to enhance the quality of care by improving patient outcomes, promoting patient safety, increasing patient satisfaction, and optimizing the use of resources. They help to provide quality and efficient patient care. The clinical pathway also purports to decrease patient length of stay and decrease the overall cost of health care (Kearns S, 2003).

Issues - potential problems and barriers of ICPs (Campbell, 2009):

Issues - potential problems and barriers to the introduction of ICPs

May appear to discourage personalized care

Risk increasing litigation

Don't respond well to unexpected changes in a patient's condition

Suit *standard* conditions better than unusual or unpredictable ones

Require commitment from staff and establishment of an adequate organizational structure

Problems of introduction of new technology

May take time to be accepted in the workplace

Need to ensure variance and outcomes are properly recorded, audited and acted upon.

Issues for discussion

The differences between clinical practice guidelines and care pathways

Paper-based ICPs versus electronic ICPs

Characteristics of care pathways:

According to Vanhaecht, et al, (2007) the characteristics of care pathways include:

(i) An explicit statement of the goals and key elements of care based on evidence, best practice, and patients' expectations and their characteristics;

(ii) the facilitation of the communication among the team members and with patients and families;

(iii) the coordination of the care process by coordinating the roles and sequencing the activities of the multidisciplinary care team, patients and their relatives;

(iv) the documentation, monitoring, and evaluation of variances and outcomes; and

(v) the identification of the appropriate resources.

The importance of the Clinical nurse specialist (CNS) as a primary figure for ensuring proper pathway development, implementation, and ongoing evaluation:

In 1996, the U.S. Congress developed the Agency for Healthcare Research and Quality; this lead agency is charged with sponsoring and conducting research that provides evidence-based information to aid health care providers in making more informed decisions to improve the quality of patient care (Stevens, 2002).

Evidence-based practice has led to the development of guidelines intended to assist practitioners in bringing research to the bedside. Investigation into this practice has yielded data suggesting that the use of clinical practice guidelines to describe appropriate patient care for specific clinical conditions will aid in quality improvement measures. These guidelines are reflected in critical pathways, also known as clinical pathways or care paths. The development of clinical pathways provides a

mechanism for health care practitioners to put evidence into practice to improve the quality of health care (Kinsman, 2004).

To promote evidence-based practice through clinical pathway use, health care institutions need to develop a process to develop, implement, utilize, and evaluate their use. A clinical pathway needs to be based on evidence-based guidelines, implemented utilizing a validated process, and revised periodically to ensure continuous quality improvement (Kinsman, 2004). This plan should include a clinical expert, who has the ability to look at the system as a whole and can facilitate learning and change. This role can be fulfilled by the CNS, a role that repeatedly and confidently demonstrates the skills necessary to impact the three spheres of influence, the system, nurse, and the patient, through the use of expert knowledge and a desire for collegial cooperation (Goudreau, 2006).

In terms of education, the CNS is a graduate-prepared individual, having received specialty training in a particular clinical area. It is in this area of specialization that the CNS becomes an expert in the knowledge and application of evidence-based standards of care. When transitioned to a clinical setting, this experience will permit the implementation of clinical pathways and protocols and allow the CNS expert to role model cutting edge specialty care. The CNS is uniquely qualified for this activity due to his or her educational preparation which includes advanced training in how to incorporate tools such as clinical pathways for cost-effective and safety-focused care and how to integrate theories of nursing practice with

evidence-based practice to ensure that patients receive interventions based on the best science (Goudreau et al., 2007).

The CNS continues to practice in the nurse-to-nurse sphere by bridging the gap between clinical practice and research and by translating research findings into practice. The expert CNS seeks to improve the workplace environment for the nursing staff by mentoring nurses to apply best evidence to practice, thus empowering nurses at the bedside. The expert CNS exhibits skill in analyzing cost-effectiveness of new programs, new products, and new interventions. Clinical pathways championed by the CNS will prevent complications such as patient falls, skin breakdown, hospital-acquired infections, and nutritional deficiencies which are costly to the system.

In some settings, the implementation of clinical pathways has been assigned to the clinical nurse leader or the clinical manager. Here, the CNS role is most aptly suited to the task of clinical pathway implementation by virtue of his or her clinical expertise in a specialty area, rigorous graduate education, and certification as an advanced practice nurse (Goudreau et al., 2007).

The CNS possesses a multitude of skills and competencies which can impact application of evidence-based practice guidelines through the use of clinical pathways. A main function of the CNS is the expert use of clinical judgment. The nursing characteristic of clinical judgment forms the foundation upon which the other characteristics are built. The CNS influences clinical pathway development, implementation, utilization, and

ongoing evaluation. The eight essential nursing characteristics as defined by the AACN's Synergy Model for Patient Care are outlined in this table, (AACN, 2002, and Hardin & Kaplow, 2005).

Eight Nurse Characteristics of the Synergy Model

1-Clinical judgment	The clinical reasoning utilized by a health care provider in the delivery of care. It consists of critical-thinking and nursing skills that are acquired through a process of integrating education, experimental knowledge, and evidence-based guidelines. The integration of knowledge brings about the clinical decisions made during the course of care provided to the patient.
2-Advocacy	Working on another's behalf when the other is not capable of advocating for himself or herself. The nurse serves as a moral agent in identifying and helping to resolve ethical and clinical concerns within the clinical setting.
3-Caring practices	The constellation of nursing interventions that create a compassionate, supportive, and therapeutic environment for patients and staff, with the aim of promoting comfort and healing and preventing unnecessary suffering. Caring behaviors include compassion, vigilance, engagement, and responsiveness to the patient and family.

4- Collaboration	The nurse working with others to promote optimal outcomes. The patient, family, and members of various health care disciplines work toward promoting optimal and realistic patient goals.
5-Systems thinking	Composed of the tools and knowledge that the nurse utilizes to recognize the interconnected nature within and across the health care or non-health care system. The ability to understand how one decision can impact the whole is integral to systems thinking. The nurse uses a global perspective in clinical decision making and has the ability to negotiate the needs of the patient and family through the health care system.
6-Response to diversity	The sensitivity to recognize, appreciate, and incorporate differences into the provisions of care. Nurses need to recognize the individuality of each patient while observing for patterns that respond to nursing interventions. Individuality can be observed in the patient's spiritual beliefs, ethnicity, family configuration, lifestyle values, and use of alternative and complementary therapies.
7-Clinical inquiry	The ongoing process of questioning and evaluating practice, providing informed practice, and innovating through research and experiential learning. Clinical

	inquiry evolves as the nurse moves from novice to expert. At the expert level, the nurse improves, deviates, and/or individualizes standards and guidelines to meet the needs of the patient.
8-Facilitation of learning	The nurse facilitates learning for patients, families, nursing staff, physicians and other health care disciplines, and community through both formal and informal facilitation of learning. Education should be provided based on individual strengths and weaknesses of the patient and family. The education level of the patient should be considered in the design of the plan of educating the patient and family to ensure patient and family comprehension.

9- Selection Criteria (Rosique, 2008):

The following signals may indicate that it may be useful to commit resources to establish and implement a clinical pathway for a particular condition:

Prevalent pathology within the care setting

Pathology with a significant risk for patients

Pathology with a high cost for the hospital

Predictable clinical course

Pathology well defined and that permits a homogeneous care

Existence of recommendations of good practices or experts opinions

Unexplained variability of care

Possibility of obtaining professional agreement

Multidisciplinary implementation

10-Motivation by professionals to work on a specific condition

- References:

1- AACN, (2002): AACN, Competency level descriptors for nurse characteristics, Aliso Viejo, CA, AACN Certification Corporation.

2-Campbell H, Hotchkiss R, Bradshaw N, and Porteous M (2009): Clinical Pathways: multidisciplinary plans of best clinical practice.

3- Cheah J (2000): Development and implementation of a clinical pathway programme in an acute care general hospital in Singapore . International Society for Quality in Health Care and Oxford University Press.

4- Goudreau, A. Clark, B. Lyon and J. Rust (2007): A vision of the future for clinical nurse specialists: Prepared by the National Association of Clinical Nurse Specialists, July 2007, *Clinical Nurse Specialist* **21**, pp. 310–320. Full Text via CrossRef | View Record in Scopus | Cited By in Scopus (7)

5-Goudreau, (2006): Notes from the board, *Clinical Nurse Specialist* **20**, pp. 215–216.

6-Hardin and Kaplow, (2005): Synergy for clinical excellence: The AACN Synergy Model for Patient Care, Jones and Bartleet Publishers .

7-Kearns S, (2003): Clinical pathway. **University of Ottawa Heart Institute**. Manager, Quality & Performance Measurement . sakearns@ottawaheart.ca.

8-Kinsman, (2004): Clinical pathway compliance and quality improvement, *Nursing Standard* **18** (2004), pp. 33–35. View Record in Scopus | Cited By in Scopus (9)

9-Queensland Health Clinical Pathways Board definition, (2002): Clinical pathway Clinical Practice Improvement Centre.

10-Rosique R (2008): "Care Pathways: The basics", Asian Hospital & Healthcare Management, 2008, Issue 17.

11-Stevens, (2002): Evidence-based practice resources on the World Wide Web Retrieved January 12, 2007, from http://www.acestar.uthscsa.edu/Resources_www.htm (2002).

12-Vanhaecht, K., De Witte, K. Sermeus, W. (2007): The impact of clinical pathways on the organisation of care processes. PhD dissertation KULeuven, 154pp, Katholieke Universiteit Leuven.

Evidence based nursing

Introduction

Nurses are responsible for the care they provide to their patients. Evidence-based nursing practice (EBN) means making decisions about patient care on the basis of current best available evidence. It helps the nurse provide high-quality care to her patients based on research and knowledge.

Evidence-based nursing, simply, it is the application of valid, relevant, and research-based information in nurse decision-making. Evidence-based nursing methods can be used to enhance patient care and improve outcomes.

Definition of evidence based nursing

Evidence based nursing is a process founded on the collection, interpretation, and integration of valid, important, and applicable research (DiCenso, et al, 2005).

The main concept of "Evidence-Based Nursing:

Evidence-Based Nursing is the process by which nurses make clinical decisions using the best available research evidence, their clinical expertise and patient value or preferences (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000).

Evidence-Based Nursing is a type of evidence-based medicine. It involves identifying solid research findings and implementing them in nursing practices (LoBiondo-Wood, and Haber, 2006).

The goal of evidence based nursing:

The goal of evidence based nursing is to provide the highest quality and most cost-efficient nursing care possible (LoBiondo-Wood, and Haber, 2006).

Benefits of evidence based nursing practice:

According to Oguejiofo, (2009) the Benefits of evidence based nursing practice are the following:

Benefits to the patient:

1-evidence-based nursing methods can be used to dramatically enhance patient care.

2-It provides practical clinical guidelines that are proven to produce positive patient outcomes. The patient will likely experience a better outcome when the care is based on researched and proven methods.

Benefits to the nurse:

1-Evidence-based Nursing is a vital resource for students and practitioners wanting to learn more about research based nursing methods.

2-Keeps practice current and relevant

3- Using evidence-based practice to provide care to patients increases the nurse's confidence. This is because she knows that she is basing her decisions about patient care on valid information that has been thoroughly researched.

4-Experience greater autonomy in practice

5-Increases level of job satisfaction

6-Evidence-based practice increases the efficiency of nurses.

7- Making decisions based on knowledge that is backed by research makes it easier for a nurse to choose what care to provide to her patient as opposed to trying something that may or may not be beneficial to her patient.

8-Saves the nurse time, which she can devote to patients who need more intensive care from her.

Benefits to organizations:

1-The majority patient care organizations are required to adhere to these best practices in nursing to meet today s stringent industry practice standards.

2- Evidence-based practice is a goal for all institutions and often an accreditation requirement.

3-Incorporating evidence-based practice into the nursing care at a hospital may help the hospital achieve Magnet status.

4-EBP often results in practice changes that allow significant cost savings or alternatively justify necessary additional expenditure.

Benefits to community:

1-Through the utilization of evidence base practice, finite resources are not wasted on the delivery of ineffective interventions.

2-Evidence base practice limits the amount of disability and suffering throughout the community by ensuring the most current and effective care provided.

Steps of the evidence based nursing:

Evidence based nursing is a five-step process (Flemming, 1998, and Schilling et al, 2009)

The 5 "A's" will help in remember the evidence based nursing process:

1-**Ask:** (formulating the clinical question). Information needs from practice are converted into focused, structured questions.

2-**Acquire**: (searching for evidence). The focused questions are used as a basis for literature searching in order to identify relevant evidence from research.

3-**Appraise**: (analyzing and comparing data). The research evidence is critically appraised for validity.

4- **Apply:** (applying the data). The best available evidence is used alongside clinical expertise and the patient's perspective to plan care.

5- **Assess:** Performance is evaluated.

Levels of the evidence based nursing:

(Hierarchy of evidence developed by the Oxford Centre for Evidence-Based Medicine) "Sue and Bill" is Copyrighted by Flickr user: jamesfischer (Jim Fischer) under the Creative Commons Attribution license.

The systematic review or meta-analysis of randomized controlled trials (RCTs) and evidence-based practice guidelines are considered to be the strongest level of evidence on which to guide practice decisions (Melnyk, 2004).

Barriers to promoting Evidence Based Practice:

There are many barriers to promoting evidence based practice.

1-Time, workload pressures, and competing priorities can impede research and development.

2- Another barrier is that the practice environment can be resistant to changing tried and true conventional methods of practice.

3- Another barrier to implementing EBN into practice is lack of continuing education programs, the staff will not have the opportunity to learn a new skill (Salmond and Susan, 2007).

4- Another barrier is the fear of "stepping on one's toes". New nurses might feel it is not their place to suggest or even tell a superior nurse that newer, more efficient methods and/or practices are available (Salmond and Susan, 2007).

5- Nurses face a real challenge when translating best evidence into clinical practice. For example, the relevant research-based databases are not comprehensive in many areas (Craig and Smyth, 2002).

6 – Another barrier is lack of technological skills to find evidence.

7- Lack of ability to read research

8- Lack of understanding of electronic databases to find evidence

Resources Evidence based practice (Hockenberry and Wilson,2007):

1-Cochrane Collaboration

2-The Cochrane Library

3- Pub Med

4-Medline

Other resources:

1- American Academy

2- American Association of Critical-Care Nurses

3- Centers for Disease Control and Prevention

Clinical scenario

You are a nurse working in Pediatric department, one of mothers of child with lower respiratory tract infection ask you a question about her daughter who has pneumonia. You have heard that vitamin A can help to relieve respiratory symptoms. You <u>formulate the question</u>; in children with pneumonia: Is vitamin A effective for relief of respiratory symptoms?

Searching terms and evidence source:

You do a search using a MEDLINE, Pub med to see if any systematic reviews are available on the topic. Using the search terms "Vitamin A" and "respiratory infections", you find 42 results.

You do an Advanced Search using the terms" vitamin A" and "respiratory infections"? And" child" and come up with 39 citations.

 You add the search term "pneumonia"* to your previous search and your search result is reduced to 10 citations.

You know that the best evidence to support a decision about treatment effectiveness usually comes from randomized controlled trials. So once more, you limit your search result by adding the term "randomized controlled trial"- 3 trials remain.

Read the article and decide,

Is the evidence from this randomized trial valid?

If valid, is this evidence important?

If valid and important, can apply this evidence in caring for newborn infant?

Nursing Informatics

Outline

1- Introduction

2- Definition of Nursing Informatics

3- The goal of nursing informatics

4- Foundation of nursing information

5- The importance of core informatics' knowledge

6- Benefits of Informatics Application

7- Sample Application Model of Nursing Informatics

8- Preparing Nurses for Computerization

9- Clinical information system

10- Computerized Patient Records (CPR)

Introduction

Ball *(2000)* staled that. The strength of nursing profession depends on its ability to take advantage of the best that technology can offer Therefore preparing nurse's to face the information challenges of the future require a solid grounding in information sciences.

Simply teaching computer application in nursing will provide nurses with skills to critically appraise their information needs and utilization of gathering information in patient care.

Informatics is derived from the French term informatique, as an area of nursing specialization; nurses with expertise in informatics are often referred to as nursing informaticians. (Graves and Corcoran1989)

Definition of Nursing Informatics

Nursing informatics defined as the application of computer technology to all fields of nursing-- nursing services, nurse education, and nursing research"

Nursing informatics facilitates the integration of data, information and knowledge to support patients, nurses and other providers in their decision-making in all roles and settings.

American Nurses Association (2008) defined the Nursing informatics is a specialty that integrates nursing science, computer

science, and information science to manage and communicate data, information , and knowledge, in nursing practice.

The specialty of nursing informatics offer strategies for using information and communications technologies to collect individual- and community-related data, store and retrieve this data for clinical decision making (through the process of converting raw data into nursing information and ultimately into nursing knowledge), and provide in-depth analysis of data for providing quality nursing care.

The goal of nursing informatics

It is to improve the health of populations, communities, families, and individuals by optimizing information management and communication. This includes

- Using technology in the direct provision of care;
- Establishing administrative systems;
- Management and delivering educational experiences;
- Supporting life-long learning,
- Supporting nursing research.

Foundation of nursing information

The foundation of nursing information based on the concepts of data, information, and knowledge as building blocks of nursing communication. Because information and knowledge are essential for nurses when interpreting data and making decisions. It is important to know the differences between these three concepts.

Data

These are discrete observations that are not interpreted, organized, or structured Examples of data are: Age, blood pressure, weight.

Information

It is data that has been interpreted, organized, or structured to provide meaning to the data. Examples of Information as prevalence of clients/ health center by this month compared by the last year.

Knowledge

Is the synthesis of information to identify relationships that provide further insight to an issue or subject area. Examples of knowledge, care plans for specific health problem and relationship between different nursing interventions and client outcomes.

While the concepts of data, information, and knowledge are different, all the three concepts are stored in computers and software programs to assist in the interpretation of the data and the development of nursing knowledge.

Data —> information—> knowledge —> decision making —> outcome

<u>The importance of core informatics' knowledge</u>

1-They are essential for all nurses to function effectively.

2- Managing clinical and administrative information.

3-Essential for nurses to delivered quality of care.

Benefits of Informatics Application

There are three categories of potential benefits that can be identified in relation to the quantitative, qualitative, and strategic benefits use of computers and electronic data processing in the health care sector. These are:

Quantitative benefits. For example the uses of electronic data interchange technology to transmit data in real time, and data exchange between systems which results in time and labor cost savings.

Accurate data, fast transfer of data, wider accessibility, and linking of data elements are benefits that are easily quantified.

Qualitative benefits. These benefits measured only in terms of the impact of technology on the performance of health systems and their efficiency.

Strategic benefits. Data collection and analysis bring immediate benefit to an organization, but in the long term, these data constitute the basis for health research and strategic planning.

Sample Application Model of Nursing Informatics

This application sample consists of the following elements;

Administration

- Analysis of reports generated from a spreadsheet software application

Clinical Practice

- Recording of client assessment data in an electronic health record

- Recording of workload and interventions as a by-product of electronic charting

  (software)

Education

- Distance learning/teaching via the internet

Research

- Use of knowledge bases via the internet in researches.

Preparing Nurses for Computerization

As the use of computer technology and information science increases in nursing practice, education, and administration, so will nurses need to be skilled and knowledgeable in the use of information technology. Computer competence is a nurse's ability to effectively use the computer systems available and adapt her use to a variety of settings.

How can nurses prepare themselves for computerization at work, and how can health care organizations facilitate this transition? This is a critical question when the majority of nurses in Egypt has had no experience with computers or feels uncomfortable and intimidated by them.

Computerized Patient Records (CPR)

Ideally the CPR will include all information about an individual's lifetime, health status and health care maintained electronically. The CPR is a replacement for the paper medical records as the primary source of

information for health care, meeting all clinical, legal, and administrative requirements.

The individual's lifetime including facts, observations, interpretations, plans, actions, and outcomes. Health data including facts, information on allergies, history of illness and injury, functional status, diagnostic studies, assessments, orders, consultation reports, and treatment records. Health data also include wellness information such as immunization history, behavioral data environmental information, demographics data, and legal data such as informed consents.

The who, what, when, and where of data capture are also identified.

Within a CPR an individual's health data are maintained and distributed over different systems in different locations, such as a hospital, Clinic, physician's office and pharmacy. Appropriate security measures are necessary to across these distributed systems

Data Capture

Refers lo the collection and entry of data into a computer system. Data capture also encompasses the author of entery and to ensure that the author has been granted permission to access system and change the CPR

Storage

It refers to the physical location of data. In CPR system health data are distributed across multiple systems at different sites. Access of data permit only authorized users to obtain data for legitimate uses.

Information processing

Processing the data into useful in formation. These include decision support tools such as alerts and alarms for drug interactions, allergies and abnormal laboratory result

Information communication

It is refers to the interoperability of system and linkages for exchange of data across disparate systems.

Security:

Computer-based patient record systems provide better protection of confidential health information than paper based systems because such systems support controls that ensure that only authorized users with legitimate uses have access to health information.

Information presentation

Forms of information presentation must be accommodated.

Information technology has dramatically changed the way nurses works:

1. Transformed consumer and professional access to information.
2. Patient will identify more health information online and will take more responsibility to their care.
3. Nurses and other health professionals will assist patient to assess the quality
of information.

4. Using evidence and, standardized nursing language embedded in information technology systems.

5. Allow nurses and other health care provider to act individually or collectively in performing wide array of information creation and processing activities.

6-Help health care professionals acquire and maintain the knowledge and skills

they need to care for clients/ patients.

7- Support performance improvement.

8- Satisfy research-related needs.

9- Educate clients/ patients and families.

Patient Safety

Definitions of patient safety:

1- Patient safety is the prevention of avoidable errors and adverse effects to patients associated with health care.

2- Patient safety is a new healthcare discipline that emphasizes the reporting, analysis, and prevention of medical and nursing errors that often leads to adverse healthcare events.

A definition for patient safety has emerged from the health care quality movement that is equally abstract, with various approaches to the more concrete essential components. Patient safety was defined as "the prevention of harm to patients.

Emphasis is placed on the system of care delivery that:

(1) Prevents errors;

(2) Learns from the errors that do occur; and

(3) Is built on a culture of safety that involves health care professionals, organizations, and patients.

- As the primary caregivers in hospitals, nurses are best positioned to improve quality and patient safety.

Patients' expectations have changed …

1-They want to know that they are safe.

2-They want to know that you are their advocate.

3-They want to know your "practice" is safe.

National Patient Safety Goals:

1- Improve the accuracy of patient identification

Elements of performance-

Used when administering medications, blood/blood products, collecting any type of specimen for testing, providing treatments or performing procedures.

Label containers used for blood and other specimens in the presence of the patient.

2- Improve the effectiveness of communication among caregivers.

– Report critical results of tests and diagnostic procedures on a timely basis.

3- Improve the safety of using medications.

Elements of performance-

- Label **ALL** medications and solutions that are not immediately administered.

- Labeling occurs when any medication or solution is transferred from the original packaging to another container.

- Label must include medication name, strength, quantity, volume, and date. If not used within 24 hours then an expiration date is needed.

- Verify all medications/solutions.

4- Reduce the risk of health care-associated infections.

- Comply with current WHO hand hygiene guidelines.

Element of performance-

- Hospital complies with the current WHO or CDC hand hygiene guidelines.

- Set goals for improving compliance with hand hygiene guidelines.

5- Accurately and completely reconcile medications across the continuum of care.

- Comparing the patient's current medications with those ordered for the patient while under the care of the hospital.

6- The organization identifies safety risks inherent in its patient population.

Elements of performance-

- Risk assessment includes identification of specific factors and environmental features that my increase the risk for suicide.

- Hospital addresses the patient's immediate safety needs and the most appropriate setting for treatment.

- Hospital provides information such as crisis hotline to individuals at risk for suicide and their family members.

Universal Protocol

- Intended to help prevent wrong-site, wrong-procedure, and wrong person surgery.

- Implement a pre-procedure process to verify the correct procedure, for the correct patient, at the correct site.

- Avoid poor handwringing.

Telehealth Technology

What is telehealth?

Telehealth is the use of technology to deliver health care, health information or health education at a distance.

or providing healthcare from a distance as the prefix tele means "at a distance.

Telehealth refers to a mode of delivery of medical care, health education, and public health services that utilizes information and communication technologies to connect multiple users in separate locations to enable the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care, as well as the transfer of medical data between providers responsible for that patient's care.

"Telemedicine can lower healthcare costs by reducing avoidable hospital visits and providing regular access to care in remote parts of the state, and it's more convenient for patients.

Telecommunication technologies can be utilized to assist the delivery of supply of health care to patients in remote and rural areas and also facilitate exchange of information between healthcare professionals (Sarhan, 2009). Telehealth is an emerging area of healthcare delivery that enables and then increases access to care, reduces utilization and has the potential to improve patient safety particularly in remote and rural areas. To ensure that the telehealth programs maintain current level of patient safety and further contribute to improve the same, requires standardization of the underlying

clinical, technology and business processes (Darkins, 2012). Telehealth is a diverse and comprehensive concept that includes exchange of medical information with the help of telecommunication technologies. Telehealth delivery can range from a simple phone conversation between two healthcare professionals to a comprehensive videoconferencing between healthcare providers in two separate countries or it can also include a complicated and complex robotic technology. Telehealth is actually an expansion of the term telemedicine. The approach and focus of telemedicine is narrower and focuses more on the curative aspect of treatment while telehealth includes curative, preventive.

Telemedicine, or telehealth, is the practice of patient caregiving through virtual office visits and virtual rounding. It encompasses the use of various information technologies and clinical applications that capture medically significant data, diagnoses, and consults. Numerous technologies are used in telehealth ranging from standard telephone connections, video conferencing, robotics, healthcare kiosks, PC webcams, iPads, and smartphones.

Common applications include: teleradiology, in which test results are forwarded to another facility for diagnosis; continuing professional education, including presentations by specialists to general practitioners; and home monitoring.

Telehealth services can make it more efficient to manage ongoing care, introduce a package of home telehealth services to help patients with chronic conditions that prefer to live at home, rather than in an assisted-

living setting. The program made available telehealth services, including videophones, digital cameras (for telewound care and teledermatology), and vital sign monitors

By 2007, the program had achieved a 19% reduction in hospital visits, in addition to other cost savings. By integrating health care into daily life, instead of limiting contact with the medical system to a few office visits, the dynamic of treatment changes to emphasize self-management.

Telehealth programs have demonstrated a beneficial outcome resulting from regular phone contact with a nurse in managing chronic conditions such as diabetes, depression, and hypertension.

Telehealth can be divided into two general types of applications:

1- Real-time communication, and

2- Store-and-forward.

Real-time communication may be a patient and a nurse practitioner consulting with a specialist via a live audio/video link, or a physician and a patient in an exam room communicating through an interpreter who is connected by phone or webcam. Another example might be a cardiologist holding a teleconference with internists about new best practices in treating angina.

Store-and-forward refers to the transmission of digital images, as in radiology or dermatology, for a diagnosis. All telehealth applications require health information technology (IT), but not every use of health IT can be called telehealth.

In general, telehealth can bring additional expertise to consult on a case, reach out to patients when they're at home or save travel time and expense for both practitioners and patients.

Telehealth shows great potential for advancing preventative medicine and the treatment of chronic conditions.

Telehealth in Nursing:

What is Telehealth or Telephone Triage nursing?

This is a service that nurses provide to a client or patient, assessing their needs by phone and determining if emergency care is needed.

- The Telehealth nurse interviews and assesses the condition of the patient/client to determine the appropriate intervention. The intervention may be counseling the patient to administer self-care at home.

- Advising the patient to go immediately to an urgent care or emergency room setting, or following a protocol (standardized procedure) that advises a client to perform a specific treatment.

- You, as a nurse, needs to be knowledgeable and competent in your nursing skills to be able to perform an over the phone assessment, evaluation, referral, or give advice to patients and/or family members.

It's just one more alternative nurses have when deciding on a specialty or making a career change.

TeleHealth Nursing Services

TeleHealth nursing is an ideal solution for elderly and homebound individuals who are suffering from chronic diseases or other illnesses.

With the TeleHealth monitoring services, seniors and individuals suffering from chronic diseases can achieve increased independence and peace of mind. By using this easy to use service, patients can have a nurse monitor their health from the comfort of their own home.

Why Individuals Choose TeleHealth Services:

TeleHealth nursing is the ideal choice for seniors and elderly patients suffering from chronic illnesses including diabetes, chronic heart failure, chronic obstructive pulmonary disease (COPD), depression, or post-traumatic stress disorder.

Children with special needs in rural areas were having difficulty getting access to specialty care.

For these individuals the need to have their symptoms and vital signs checked frequently can make it difficult for them to live on or to move into a nursing home for frequent health monitoring and medical care.

With TeleHealth services, physicians and nurses can easily and remotely monitor important vital signs including pulse, weight, and temperature, preventing serious health problems.

Therefore, these individuals can maintain their independence and are able to remain living at home while still receiving the necessary care.

Based on the information gathered from TeleHealth nursing, physicians can even change medications and other treatments as needed to respond to a patient's changing health conditions.

About TeleHealth Nursing Services

Using the TeleHealth nursing services is straightforward and simple enough for anyone to learn. In fact, Teleheath Homecare even provides the necessary training to show patients how to use the TeleHealth services. After the training and set up of the small TeleHealth monitor, the patients can then become connected directly to a nurse at the Homecare Central Station who will monitor their health regularly. These nurses are highly trained and educated and offer superior expertise.

The following is the simple step-by-step process that the pt., will encounter when using TeleHealth nursing services from the comfort of his own home.

- ***Vital Signs Check*:** Every morning, the easy-to-use TeleHealth monitor takes the vital signs including blood pressure, heart rate, oxygen saturation, temperature, and weight.
- ***Health Questions*:** In the next step, a friendly voice asks up to ten "yes" or "no" questions. Each of these questions will be individualized to the medication condition and situation. These questions are designed to allow Homecare to further evaluate the health and wellbeing.

- ***Nurse Review***: After the pt., complete this morning routine, the results are then transmitted electronically via this regular home telephone line to a nurse at the Homecare Central Station. The qualified TeleHealth nurses will review and monitor this data daily to ensure your health.

I.1   Benefits of Home TeleHealth Nursing:

The patient related advantages to using TeleHealth nursing include:

1- Immediate access to care, especially for patients living in rural areas

2- Access to direct, personal attention from a patient's health care provider without having to travel to a doctor's office.

3- Early detection of complications and changes to manage overall better health and reduce or eliminate the need for traumatic emergency room visits and hospitalizations.

4- Early discharge from hospitalized care.

5- The reassurance to patients and family members of easy access to care from the comfort of their home**.**

6- Reduced anxiety and an increased feeling of control

7- Increased independence for elderly patients and an alternative to being forced to move into assisted living situations

8- Improved feelings of empowered received from allowing patients to participate in their care program

9- Increased patient satisfaction with care

10- Reduced financial burden as compared to assisted living or nursing homes

Uses of nanotechnology in medical field

Nanotechnology is derived from the combination of two words Nano and Technology. Nano means very small or "miniature". So, Nanotechnology is the technology in miniature form. It is the combination of Bio- technology, Chemistry, Physics and Bio-informatics, etc.

Nanomedicine is the most important field of Nanotechnology. The nano level gadgets and materials are used for diagnosing and treatment of diseases. Nano-Pharmacology has generated a specific category of smart drugs that affect negligible side effects.

The use of nanotechnology in medicine offers some exciting possibilities. Some techniques are only imagined, while others are at various stages of testing, or actually being used today.

Nanotechnology is playing an increasingly major role in the healthcare industry. Examples include the use of nano-particles in cancer therapy and targeted drug delivery systems. Nanotechnology is also widely issued in tissue engineering applications.

Nanotechnology in Medicine Application: Drug Delivery

One application of nanotechnology in medicine involves employing nanoparticles to deliver drugs, heat, light or other substances to specific types of cells (such as cancer cells). Particles are engineered so that they are

attracted to diseased cells, which allow direct treatment of those cells. This technique reduces damage to healthy cells in the body and allows for earlier detection of disease.

Medical nanotechnology also makes cell repair on a molecular level possible, and provides a number of opportunities for medication administration. Drugs developed through nanotechnology could directly penetrate cells, for example, or nanoparticles could be designed to target cancer cells, delivering medication or providing a focal point for radiation.

Researchers at the University of Illinois have demonstated that gelatin nanoparticles can be used to deliver drugs to damaged brain tissue.

Also using nanoparticles to deliver vaccine. The nanoparticles protect the vaccine, allowing the vaccine time to trigger a stronger immune response.

Researchers are developing a method to release insulin that uses a sponge-like matrix that contains insulin as well as nanocapsules containing an enzyme.

When the glucose level rises the nanocapsules release hydrogen ions, which bind to the fibers making up the matrix. The hydrogen ions make the fibers positively charged, repelling each other and creating openings in the matrix through which insulin is released.

Researchers are developing a nanoparticle that can be taken orally and pass through the lining of the intestines into the bloodsteam. This should allow drugs that must now be delivered with a shot to be taken in pill form.

Researchers are also developing a nanoparticle to defeat viruses. The nanoparticle does not actually destroy viruses molecules, but delivers an enzyme that prevents the reproduction of viruses molecules in the patients bloodstream.

Nanotechnology in Medicine Application: Therapy Techniques

Researchers have developed "nanosponges" that absorb toxins and remove them from the bloodstream. The nanosponges are polymer nanoparticles coated with a red blood cell membrane. The red blood cell membrane allows the nanosponges to travel freely in the bloodstream and attract the toxins.

Researchers have demonstrated a method to generate sound waves that are powerful, but also tightly focused, that may eventually be used for noninvasive surgery. They use a lens coated with carbon nanotubes to convert light from a laser to focused sound waves. The intent is to develop a method that could blast tumors or other diseased areas without damaging healthy tissue.

Researchers are investigating the use of bismuth nanoparticles to concentrate radiation used in radiation therapy to treat cancer tumors. Initial

results indicate that the bismuth nanoparticles would increase the radiation dose to the tumor by 90 percent.

Nanotechnology in Medicine Application: Diagnostic Techniques

Researchers are developed a sensor using carbon nanotubes embedded in a gel; that can be injected under the skin to monitor the level of nitric oxide in the bloodstream. The level of nitric oxide is important because it indicates inflammation, allowing easy monitoring of inflammatory diseases.

Researchers have demonstrated a way to use nanoparticles for early diagnosis of infectious disease. The nanoparticles attach to molecules in the blood stream indicating the start of an infection. When the sample is scanned for Raman scattering the nanoparticles enhance the Raman signal, allowing detection of the molecules indicating an infectious disease at a very early stage.

A test for early detection of kidney damage is being developed. The method uses gold nanorods functionalized to attach to the type of protein generated by damaged kidneys. When protein accumulates on the nanorod the color of the nanorod shifts. The test is designed to be done quickly and inexpensively for early detection of a problem.

Nanotechnology in Medicine Application: Anti-Microbial Techniques

One of the earliest nanomedicine applications was the use of nanocrystalline silver which is as an antimicrobial agent for the treatment of wounds.

A nanoparticle cream has been shown to fight staph infections. The nanoparticles contain nitric oxide gas, which is known to kill bacteria. Studies on mice have shown that using the nanoparticle cream to release nitric oxide gas at the site of staph abscesses significantly reduced the infection.