**New trends in pediatrics**

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**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 30

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).**

**The ALIZ-E project : 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, 31

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

**Examples of Robotic Surgery**

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.

**Benefits of Robotic Surgery** Compared to traditional open surgical procedures, the da Vinci® robotic 32

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

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 **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 34

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. 35

**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/mainpageS1860P0.html.

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

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