International Journal of Professional Development
Vol.11,No.2, July-Dec.2022 ISSN: 2277-517X (Print), 2279-0659 (Online)
Impact Factor: 3.983(IFSIJ)

Innovations in Pediatric Health Care

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Abstract
The first decade of the new millennium will be remembered as the era of technology explosion. Technology has made its impact on paediatric nursing practice in the 21st century as well. Technology affects the way paediatric nurses deliver care, communicate with the health care team, and experience professional development. In addition, technology affects the morbidity and mortality of children and their caregivers. This article will review the impact that technology has had on paediatric nursing practice and the role of the paediatric nurse in response to technological innovations within the past decade.

Keywords: *Innovations, advance technology, monitoring, clinical nurse practitioner, DNA.*

Introduction:

The advancement of technology seems to move at such a rate that even before you blink a new innovation is already introduced. The smart phone was a breakthrough technology just a short time ago and now, it is fully integrated into life's everyday experience. It is almost a certainty that today's medical innovations will follow suit. The advanced technology can enhance the health of patients. Therefore, following are the trends and technology in paediatric health care.

Smart pills

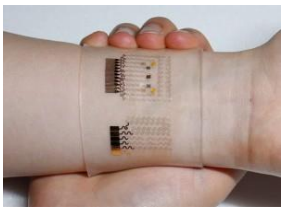
Smart Pill is an ingestible capsule that measures pressure, pH and temperature as it travels through the gastrointestinal (GI) tract to assess GI motility. The Smart Pill motility monitoring test can be performed at a clinic or physician's office to evaluate motility disorders like gastro paresis (a condition in which the contents of the stomach empty too slowly) and chronic constipation.

SmartPill also minimizes patient down-time by allowing patients to resume most normal daily activities while data are being collected by the capsule. SmartPill eliminates radiation exposure and is the only motility test that provides a complete transit profile of the GI tract.

Extender-based medicine

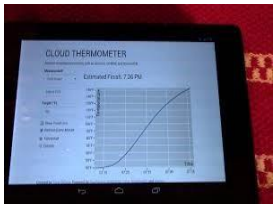
Health care extenders are non-physician health care professionals who interact directly with patients, including nurse practitioners, medical assistants, health educators, social workers and registered dieticians. And in today's world of paediatrics, they are playing a bigger role in caring for patients. "With standardized guidelines, next-generation EMRs and advanced data analytics, it shows that a physician's assistant or clinical nurse practitioner or other extenders can safely practice advanced medicine or specialty medicine with the guidance of a specialist physician.

Blood Glucose monitoring using digital tattoos looks to be a great solution to spare patients-both adult and children-the discomfort of monitoring glucose. Researchers have developed an amazing electronic skin patch (graphene patch) that detects a higher than normal level of glucose in the patient's sweat. It automatically releases drugs through heating up microneedles that enter the skin.



Cloud based Technology Thermometer:

New cloud-based technology is becoming increasingly popular these days. It includes a wireless thermometer and a stethoscope that attaches to a smart



phone. Parents are able to create a record of their child's temperature and breathing sounds from four places on the chest. These outcomes can be sent using a portal to their physician. Their physician can access these recordings and make recommendations of what further action should be taken.

Vaccinations

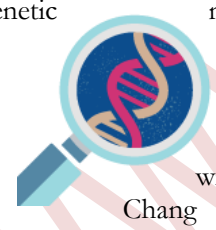
From eradicating age-old diseases like polio and the mumps, to preventing pneumonia and influenza—and now, cancer—vaccines have come a long way. Twenty years ago, Harald zur Hausen discovered the role of the human papillomavirus (HPV) in cervical cancer. The resulting vaccines for HPV—given during the teenage years to boys and girls—were first approved in 2006. It's estimated it may prevent up to 90 percent of cervical cancers.

Childhood cancer

As recently as the 1970s, the diagnosis of acute lymphoblastic leukemia (ALL) would carry a 20 percent to 30 percent mortality rate. Today, 95 percent of children diagnosed with ALL are cured, he says. "There are other tumors and cancers that are being managed, but ALL is a remarkable advancement.

Genomics

Genomics plays a role in many diseases, from cancer to heart disease, and experts in the field work to determine complete DNA sequences and perform genetic mapping to help understand, identify and even prevent illness.



"Genomic sequencing in the last 10 years and for the next 25 will be huge for pediatrics," Chang says. "Considering the number of patients with under-diagnosed or undiagnosed diseases, it's going to be meaningful in terms of diagnostics."

Stem cells

Stem cells have the potential to turn into anything—a skin cell, a liver cell, a brain cell. And stem cell transplants have the power to treat a wide range of diseases in children, from cancers like leukemia, lymphoma and neuroblastoma to blood disorders, immune system diseases and bone marrow syndromes.

ECMO

Extracorporeal membrane oxygenation (ECMO)—the use of a machine to take over the work of the

lungs, and sometimes the heart, as a rescue therapy—has given patients a second chance at life.

8. Telemedicine

With the growing use of tablets, smart phones and even home robots, telemedicine is changing the way people access care and engage with providers in real time. "It keeps patients closer to home, so they don't have to make a trip to their children's hospital to get specialty care.

Electronic medical records (EMR)

Digitizing a patient's medical history so it can easily follow him or her across all health care settings, EMR has advanced diagnosis and treatment of patients. And now with mobile-enabled EMRs, providers can access patient records at a moment's notice—any time.

Polymerase chain reaction (PCR)

PCR is a lab technique that reproduces small segments of DNA or ribonucleic acid (RNA) for testing. PCR is capable of diagnosing viruses, including everything from bronchiolitis and pneumonia to HIV, much faster. What used to take 24 hours now takes 90 minutes with PCR.

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