(R)evolutions in technology: Do they really matter for nurses?

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HUMANITY WILL CHANGE MORE IN THE NEXT 20 YEARS THAN IN THE PREVIOUS 300 YEARS
Understanding the Intersection of Humanity and Technology (1/3)

- Is Technology already here?
- How is Technology affecting our daily life?
Understanding the Intersection of Humanity and Technology (2/3)

3.8 million searches per minute

2.2 billion of monthly active Facebook users worldwide as of 2nd quarter 2018

According to 2nd quarter 2018 report, Apple sold 667,000 iPhones per day
Understanding the Intersection of Humanity and Technology (3/3)

Screen Time

Last 7 Days

iPhone

MOST USED

Mail

Google Calendar

WhatsApp

Safari

Google

Photos

LinkedIn

SHOW CATE...

PICKUPS

69 per day

Productivity
8h 59m

Creativity
2h 32m

Weekly Total
23h

Social Netw
4h 8m

3h 21m per day

Most Pickups
Friday: 120

Total Pickups
481

FIRST USED AFTER PICKUP

WhatsApp

Mail

ProCamera

Google Calendar
In a global survey of 1,000 business leaders, more than 60% believe that a cure for cancer is only 10 years away.

The vast majority are also confident that the world’s food supply challenges will be solved in less than 35 years.

A similar number expect nearly complete reliance on renewable energy in the same time frame.
• 47% of respondents, thinks that Medical breakthroughs for curing cancer will happen in 5 years.
• Respondents think that Medical and Computer sciences will lead future breakthrough discoveries (69% medical and 67% computer)
When asking which innovations will have the greatest impact on society and industry, the respondents put medical breakthrough for curing cancer in the second position (51%).
Tech-giants & start-ups entering healthcare

Amazon gets into healthcare with Warren Buffet and JPMorgan

Healthcare costs have become a "tapeworm" on the US economy, said Buffet.
Tech-giants & start-ups entering healthcare

Apple is launching medical clinics to deliver the ‘world’s best health care experience’

Apple is planning to launch health clinics for employees
Tech-giants & start-ups entering healthcare

Google DeepMind’s first mobile app addresses the failure to rescue AKI patients

DeepMind Health Streams application
Innovation in healthcare continues to be a driving force in the quest to balance cost containment and health care quality.

Innovation is considered to be a critical component to improve patient care.
Technological innovations present vast opportunities for:

- **Process Innovation**
  Enhancement of internal processes to improve patient care

- **Product Innovation**
  Introduction of new types of product improving safety
Digital is rapidly impacting the way how healthcare is delivered

- Healthcare budget restrictions
- Physician & nurse shortage
- Tech-giants & start-ups entering
- Patients going digital
Virtual Dialysis Assistance: Enable cost-efficient remote dialysis care

Nephrology Expert Center

Video Call for patients & staff

Messaging

Camera-surveillance

Smart-Glasses

Patient self-services

Sensors
MyKidneys: Improve health behavior via digital platform for CKD patients

Cutting Edge CKD Care Activation Tool

- Incentive-based activity program
  - Rewards for compliant behavior. Earn points for the completion of activities

- Virtual Health Coaching
  - Customizable care plans to treat individual comorbidities
  - Promotes self-management

- Seamless connected device integration
  - Easy integration of Blood Pressure, Scale, Dipsticks, etc.

- Medication adherence
  - Reminders for medications
  - Drug Checker for OTCs

- Medical record access
  - Access and share medical records

- CKD Patient Community
  - Allow patients to share their stories and coach/motivate each other

Final functionality to be defined after user needs assessment
The Health Care Innovation: Robotics can substitute manual work

Veebot is automating venipuncture through computer vision and robotics, making it safer for both patients and medical staff, and cost efficient for medical facilities.
The Health Care Innovation: accurate position of the needle in the vessel

Safe & accurate positioning and orientation

The nurse simply activates the JEM™ smart device. This turns on the LED lights at the skin level, an easy to see display that assists the nurse in guiding the needle to the desired location and entry angle in the vessel, thereby, eliminating puncture mistakes and optimizing blood flow.
Two example of technological changes in the last 60 years

Incredible facilitation of the nursing work in dialysis

A dialysis machine in the 50s

A modern dialysis machine
Two example of technological changes in the last 60 years

Incredible facilitation of the nursing work in dialysis

A dialyser in the 50s

A modern dialyser
The Health Care Innovation: Artificial Intelligence (AI)
In February 2013, IBM announced the Watson software for management decisions in lung cancer treatment at Memorial Sloan Kettering Cancer Center, New York City, in conjunction with health insurance company WellPoint. The software give guidance on examination and therapy. 90% of nurses in the field who use Watson now follow its guidance.
The Health Care Innovation AI: Predictive models

Predictive Model – response to anemia therapy*

- Iron supplement and especially Erythropoiesis Stimulating Agents (ESA) have become the treatment of choice for that anemia for CKD patients.
- A reliable Machine Learning approach to predict Hb values in patients undergoing secondary anemia to CKD.

Other Predictive Models:
- Mortality
- CKD progression
- Vascular Access failure
- Patient fall

*A new Machine Learning approach for predicting the response to anemia treatment in a large cohort of End Stage Renal Disease patients undergoing dialysis. Carlo Barbieri et Al. March 2015 Computers in Biology and Medicine DOI: 10.1016/j.compbiomed.2015.03.019
Will AI replace me? The short answer is NO.
The core of Nursing Care

- No one can disagree with the advanced achievements of medical technology and growing specialization. However, care is more than cure.
- Caring is more than being patient-centered. Care needs to recognize every person as human beings whose experiences affect health and wellbeing directly.
- Nurses need to develop the “head, hand and heart” approach, which incorporates practical know-how with empathic understanding and technical knowledge to provide humane and sensitive care. (Hemingway, 2013).

**WE CARE FOR A PERSON AND CURE A ILLNESS!**
The core of Nursing Care: Balancing Technology and Compassion

- Dialysis practice is a mixture of caring and technological activities. Therefore the balance between these two elements must be appropriate to avoid the risk of dehumanize the patient.
- **Technology makes nursing easier** in a fast paced, complex work environment—but it should not cloud judgment or become the final word.
- **Critical thinking is at the heart of being a good nurse.**
- Any act of caring starts with guidelines, theory that you know, use of technology and you build on that through your experience, but then **there’s the human factor.**
Nurses have two choices:

- Continue to work with a dependent role (e.g. execution of medical orders, physician-initiated treatment etc.)
- Find an interdependent role (e.g. communication, case management, coordination of care, monitoring & reporting etc.)

The high nursing education allow or even recommend nurses to reposition themselves in a more independent/interdependent role.

Technology can help: by reducing the manual work, the time required to perform routine tasks, efficiency can improve and costs can be optimised. Therefore nurses can find a different position in the health care sector.
The Health Care Innovation: Nursing Profession repositioning (2/2)

• Irvine think that working in a interdependent roles and functions can help the inter-professional collaboration to attain the common goal of quality care.
• Conceptual models were developed which relate the achievement of specific outcomes to nurses' independent, dependent, and interdependent roles and functions
• Peter Griffiths describes Nursing Sensitive Outcome as aspects of experience, behaviour and patients' health state determined totally or partially by nursing care with variations depending on the quality and quantity of nursing care.

*Nurs Econ.* 1998 Mar-Apr;16(2):58-64, 87. *Linking outcomes to nurses' roles in health care. Irvine D¹, Sidani S, Hall LM.*

National Nursing Research Unit (2008) - *State of the art metrics for nursing: a rapid appraisal* Peter Griffiths with Simon Jones, Jill Maben and Trevor Murrells
The Patients outcome evaluation: In which country is it done?

USA
1. National Database of Nursing Quality Indicators (NDNQI)
2. California Nursing Outcomes Coalition (CalNOC)
3. Military Nursing Outcomes Database (MiNOD)
4. Veterans Affairs Nursing Outcomes Database (VANDOD)

CANADA
1. Health Outcomes for Better Information and Care (HOBIC)

AUSTRALIA
1. Community Nursing Minimum Data Set (CNMDSA)

SWITZERLAND
1. Nursing Minimum Datasets (CH-NMDS)

BELGIUM
1. Nursing Minimum Datasets (B-NMDS)

THE NETHERLANDS
1. Nursing Minimum Datasets Netherlands (NMDSN)
Who was the Nurse yesterday?

• A person taught to follow the physicians’ orders or to be her handmaiden

• A person educated to focus on:
  ✓ Own virtues rather than knowledge
    • Honesty
    • Holism and humanism
    • Compassion
    • Caring
Who is (or can be) the Nurse today?

• Nursing is a package of medical, technical, caring, nursing know-how
• Nurses can work at Hospital bedside, Universities, Research Institutes, LAB, Industries, Parliament, Professional groups defining strategies and policies etc.

The Guardian: Views from the NHS Healthcare Network. “I despair at the public's perception of nurses as selfless or sexed up” June Girvin registered nurse and pro vice chancellor and dean, faculty of health and life sciences, Oxford Brookes University - Mon 14 Sep 2015
Modern Nursing must be open to Innovation, should be ready to use Technology, but should not forget that:

Nursing is First of All an Act of Caring
Thanks you very much for your attention