

# Chapter 20

## Conclusion and Outlook

**Loe Feijs**

*Eindhoven University of Technology, The Netherlands*

**Wei Chen**

*Eindhoven University of Technology, The Netherlands*

**Sidarto Bambang Oetomo**

*Máxima Medical Center and Eindhoven University of Technology, The Netherlands*

### ABSTRACT

*This chapter looks back to the other chapters of this book, briefly mentioning some of the highlights. At the same time, this chapter attempts to create a larger picture, showing where the field is going and how it fits into a larger societal context. In order to structure the presentation, this chapter considers six main trends which are important in health care and in neonatal care in particular.*

### INTRODUCTION

In order to structure the discussion we adopt a list of trends and see for each chapter whether there are certain trends confirmed or in conflict. The advantage of this approach is that it puts the work in a contemporary and societal setting. It will help outsiders to understand better why certain research is undertaken and it helps professionals in the field to better explain what they do and why.

The first four trends are taken from Congdon (2010). Congdon presents ten trends related to IT and the healthcare system. Of course there are more lists of trends, but we have chosen this particular list because it is based on IT. Indeed,

IT plays a major role in almost all chapters of the book, either through algorithms, or design lessons learned in ubiquitous computing, or clinical decision making. The advent and spreading of the computer and digital telecommunication such as mobile phones and the Internet is an industrial revolution currently happening. There are other big innovations underway such as genetic engineering, which also have the potential to redefine the essence of human existence, but they appear not to be a main theme of this book.

The ten trends presented by Congdon are:

- EMR Adoption Gains Momentum,
- PHRs Earn Legitimacy,
- Cost Containment Is Paramount,
- Alternative Care Delivery Models Emerge,

DOI: 10.4018/978-1-4666-0975-4.ch020

## Conclusion and Outlook

- War Waged On Medicare Fraud,
- Increased Focus On Outbreak Preparedness,
- Patient Safety Initiatives Intensify,
- Healthcare Professionals In Short Supply,
- Storage And Business Continuity Concerns Abound,
- Physician Groups Join Healthcare Systems.

These are not equally relevant for the field of neonatal monitoring so we reduce them to four by merging the first two, and selecting the third, the fourth (renaming it to patient centric care and tele-health) and the seventh. This leaves us with four trends:

- T1: electronic medical record and personal health record,
- T2: cost containment,
- T3: patient centric care and tele-health,
- T4: patient safety.

With respect to T1, the EMR is the patient's medical record, managed by the health care provider, while the PHR contains health-related information owned by the patient. The two do not coincide and are a topic of interesting political debate (which however is outside the scope of this chapter, which is why we merge them).

With respect to T2, Congdon mentions that The United States currently spends more than \$2.5 trillion annually on healthcare and this figure is expected to jump to \$4 trillion by 2015 if nothing is done to control escalating costs.

For trend T3 it is said that "home health services also will prosper, driven largely by adoption of tele-health and remote patient monitoring technologies." Although this does not apply to the present-day NICU, it is an interesting trend and this book contains chapters witnessing (elements of) this trend.

Trend T4 generally is taken to include preventing negative drug interactions or dosage errors and preventing missed, incorrect, or delayed diagnosis. Human error is always possible but

proper technology, proper organisation and good design can and should minimise the probability.

These four trends are important because neonatal care is not isolated but it is one component of a national health care system. Although there are certain differences between the different national health care systems, they are globally connected because technology and medical knowledge are not contained within national borders (nor are ethical and life style trends). Cost containment is essential because even the finest innovation in care will not happen if the people involved and the societal stakeholders cannot agree on who will pay for it.

We added two trends which are specific for neonatal care:

- T5: comfort,
- T6: bonding.

The topic of comfort for the baby is getting more attention because of two reasons. It was long believed that, due to neurological immaturity, neonates did not perceive pain but now we know they do. The extreme situation that newborns often did not receive analgesic or anaesthetic medication during invasive procedures, including surgery is long behind us, but still the transition from *focus on survival* to *focus on survival and quality of life* is not complete. In the same way parent-child bonding is an essential quality of life attribute. All six trends have become more important because of the progress in neonatal care during the past two decades. The survival rate of newborns has dramatically increased (fifty years ago a very premature child would most probably die and monitoring thus was irrelevant). At the same time, the critical gestational age has decreased and could even further decrease. Moreover there are innovations, such as in conception methods, which increase the risk of premature births. In other words, premature birth is not a rare and exceptional incidence but one of the conditions to be coped with systematically by an optimised health care system.

7 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/conclusion-outlook/65281](http://www.igi-global.com/chapter/conclusion-outlook/65281)

## Related Content

---

### Reconstruction of EIT Images Using Fish School Search and Non-Blind Search

Valter Augusto de Freitas Barbosa, David Edson Ribeiro, Clarisse Lins de Lima, Maíra Araújo de Santana, Ricardo Emmanuel de Souza and Wellington Pinheiro dos Santos (2021). *International Journal of Biomedical and Clinical Engineering* (pp. 89-103).

[www.irma-international.org/article/reconstruction-of-eit-images-using-fish-school-search-and-non-blind-search/272065](http://www.irma-international.org/article/reconstruction-of-eit-images-using-fish-school-search-and-non-blind-search/272065)

### Low Noise EEG Amplifier Board for Low Cost Wearable BCI Devices

Ravimand Suma K. V. (2016). *International Journal of Biomedical and Clinical Engineering* (pp. 17-28).

[www.irma-international.org/article/low-noise-eeeg-amplifier-board-for-low-cost-wearable-bci-devices/170459](http://www.irma-international.org/article/low-noise-eeeg-amplifier-board-for-low-cost-wearable-bci-devices/170459)

### Augmentative and Alternative Communication Devices: The Voices of Adult Users

Martine Smith and Janice Murray (2011). *Handbook of Research on Personal Autonomy Technologies and Disability Informatics* (pp. 46-59).

[www.irma-international.org/chapter/augmentative-alternative-communication-devices/48274](http://www.irma-international.org/chapter/augmentative-alternative-communication-devices/48274)

### Modeling Spatiotemporal Developments in Spatial Health Systems

Bjorn Gottfried (2009). *Mobile Health Solutions for Biomedical Applications* (pp. 270-284).

[www.irma-international.org/chapter/modeling-spatiotemporal-developments-spatial-health/26776](http://www.irma-international.org/chapter/modeling-spatiotemporal-developments-spatial-health/26776)

### Treatment Case Studies and Emissions Analysis of Wood in Yagya: Integrating Spirituality and Healthcare With Science

Rohit Rastogi, Sheelu Sagar, Neeti Tandon, Priyanshi Garg and Mukund Rastogi (2021). *International Journal of Biomedical and Clinical Engineering* (pp. 29-43).

[www.irma-international.org/article/treatment-case-studies-and-emissions-analysis-of-wood-in-yagya/282493](http://www.irma-international.org/article/treatment-case-studies-and-emissions-analysis-of-wood-in-yagya/282493)