

LogiDOC

the project that kick-started CHOIR

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AGENDA

- History of CHOIR before LogiDOC (2003-2007)
- STW LogiDOC project proposal (2007)
- Overview of results (2007-2013)
- Outlook (2013 -)

History of CHOIR before LogiDOC 2003 - 2007



Het kan écht: betere zorg voor minder geld

Sneller Beter - De logistiek in de zorg

Logistical improvements go hand-in-hand with quality improvements: patients that have to visit the hospital less often, have shorter waiting times, and may count on more attention from nurses and physicians.

Logistical quality improvements will yield some 3 to 3.5 billion EUR: almost a quarter of the entire hospital budget...

In other words:

improved care for less money!

CHOIR history 2003 - 2007

- MSc and BSc student projects initially in:
 - **Erasmus MC** prof.dr. Geert Kazemier, MD
 dr. Mark van Houdenhoven
 - **AMC Amsterdam** prof.dr. Piet J.M. Bakker, MD
 - **NKI/AVL** prof.dr. Wim H. van Harten, MD


- Focus mostly on single departments
- Various publications in media, scientific papers
- Start of collaboration between UT departments
- Rapidly expanding network of hospitals



Founding of CHOIR (2007)

Center for Healthcare Operations Improvement & Research

To help care providers to reach their goals w.r.t.

- 
- Improvement of productivity
 - Reduction of waste (time, costs, resources,...)
 - Improvement of quality of care, labor and safety
 - Reduction avoidable variability (workload, access time,...)

→ Using scientific approach,

→ with quantitative techniques and ICT,

→ together with care providers,

→ Such that the chance of implementation is maximal

Project proposal in 2007

- Open technology competition of Technology Foundation STW
- Title: Logistical Design for Optimal Care (LogiDOC)
- Partners / user committee:

ORTEC bv.

AMC Amsterdam
Deventer Ziekenhuis
HagaZiekenhuis
Isala klinieken
Leiden UMC
MST Enschede

NKI/AVL

ORBIS

Reinier de Graaf Groep
RIVAS / Beatrixziekenhuis
SKB Winterswijk
TNO/Universiteit Tilburg/RIVM
UMC Utrecht
ZGT Almelo/Hengelo

LogiDOC objectives

- *...to develop mathematical models and techniques to analyse and support the design of the optimal logistical layout of a hospital... in such a way that both the interests of the patient and of the hospital are addressed.*
- *...all levels of control...*
- *...optimization of the entire clinical course of patients...*
- *...to establish broad recognition in the healthcare application domain and application of the research results.*

PhD candidates

- Theresia van Essen (HagaZiekenhuis)
- Peter Hulshof (Reinier de Graaf Groep)
- Nikky Kortbeek (AMC Amsterdam)
- Peter Vanberkel (NKI/AVL)
- Egbert van der Veen (ORTEC bv)



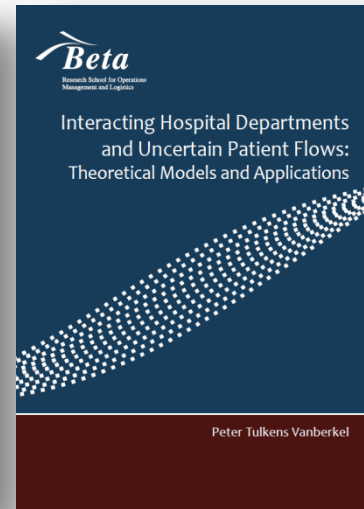
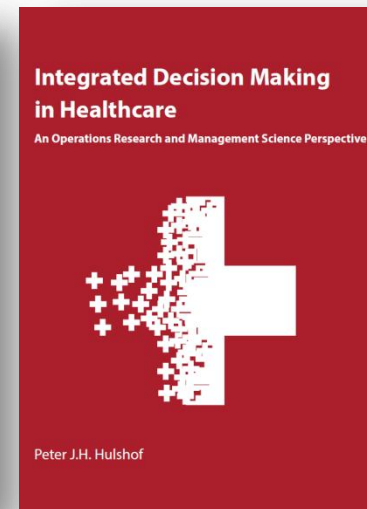
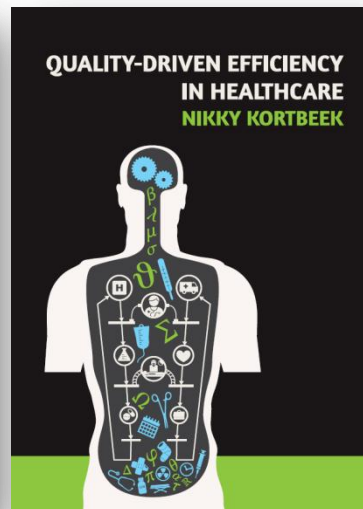
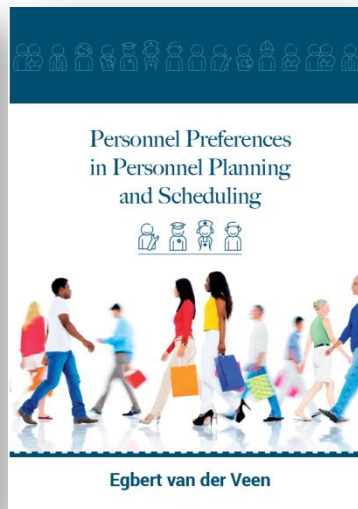
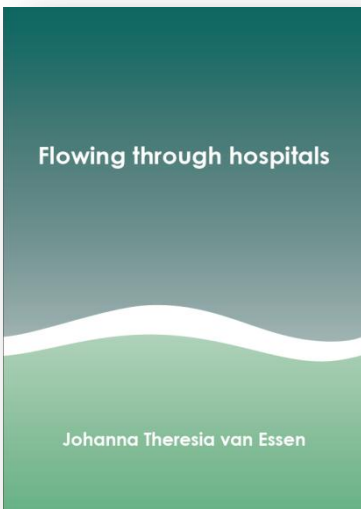
Research approach

- PhD students had appointment at both UT and hospital
 - 1 day a week: implementation / valorization
 - 4 days research
 - 1 - 2 days at UT, 3 - 4 days at hospital
- Inventory of actual problems from practice
- Allows involvement all the way until implementation of outcomes

- Involvement of approx. 100 BSc and MSc students for graduation projects
 - Continuation after graduation completion

Summary of outcomes

5 PhD theses



Summary of outcomes

- 5 PhD theses, 27 published, peer reviewed articles
- 16 articles still under review
- Seminars at hospitals
- Conference contributions in all relevant national and various international scientific societies
- Organization of the 2012 EURO-ORAHS international conference

Summary of outcomes

- Patient logistics course for healthcare managers
- ORchestra bibliography
- Many awards, a.o.
 - OR in practice awards (Canadian OR society; ORTEC)
 - Beta PhD award; Finalist Doctoral dissertation award (EURO-INFORMS 2013), for thesis Nikky Kortbeek
 - Poster awards (INFORMS, CTIT, Ned. Math. Congres)
 - Thesis prizes (UT, Menzis, VVS-OR, IBR)

We have...

- Studied almost all key departments in a hospital
- Developed various planning approaches to optimize patient flows across multiple departments
- Developed planning solutions for all levels of control
- Showed that “more capacity” is not the answer, and that even more demand can be handled with the available capacity
- Brought OR/OM researchers and clinicians closer together
- Demonstrated that personnel preferences can be taken into account in staffing and rostering
- Demonstrated that quality and efficiency can be jointly optimized

Outlook

- New PhD projects at:
 - HagaZiekenhuis (Nardo Borgman)
 - Jeroen Bosch Ziekenhuis (Maartje v.d. Vrugt)
 - AMC Amsterdam (Aleida Braaksma)
 - Sanquin (Sem van Brummelen)
 - LUMC (vacancy)
- Awaiting funding:
 - NKI/AVL (Arturo Perez Rivera)
 - AMC (Ingeborg Bikker)
- Collaboration with IT developers for developing ICT tools based on research outcomes

Thank you for your attention!



Center for Healthcare Operations Improvement & Research

Our website:

<http://www.utwente.nl/choir>

Online bibliography:

<http://www.choir-ut.nl/>



Topics addressed

- Wards (pooling, flex. staffing)
- Operating room planning and scheduling
- Outpatient clinic scheduling
- Operating rooms → wards
- Outpatient clinic → operating rooms
- Radiology department
- Laboratory / pharmacy policies
- Pre-operative screening
- Case mix optimization
- Oncology treatment
- Ambulance planning
- Staffing and rostering
- Rehabilitation treatment planning
- *And many more...*