# Clinical Planning and Coordination Module

*From concepts to prototype*

Christensen, Anders Skovbo; Vingtoft, Søren; Phanareth, Klaus; Nøhr, Christian

*Publication date:*
2013

*Document Version*
Early version, also known as pre-print

# Clinical Planning and Coordination Module: from concepts to prototype

Anders Skovbo CHRISTENSEN[a], Søren VINGTOFT[a], Klaus PHANARETH[b], and Christian NØHR[c]

[a]*IMT Corporation, Capital Region, Denmark*

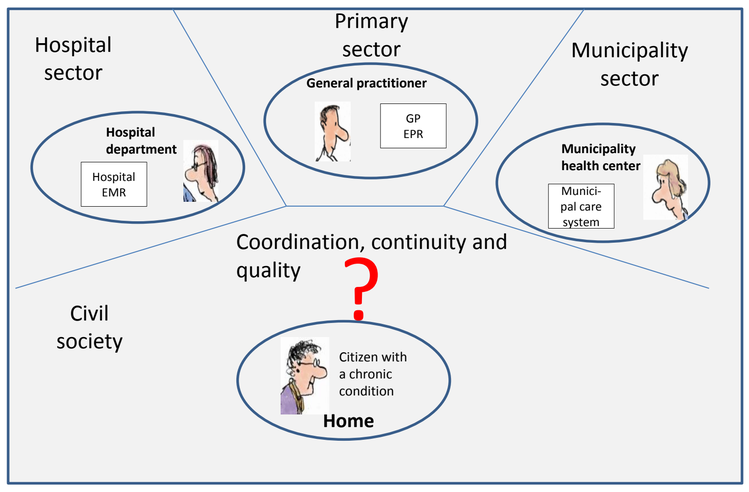
[b]*Frederiksberg Hospital, University of Copenhagen, Denmark*

[c]*Department of Development and Planning, Aalborg University, Denmark*

## From sector fragmented episodes of care to cross sectorial continuity of care

### Today

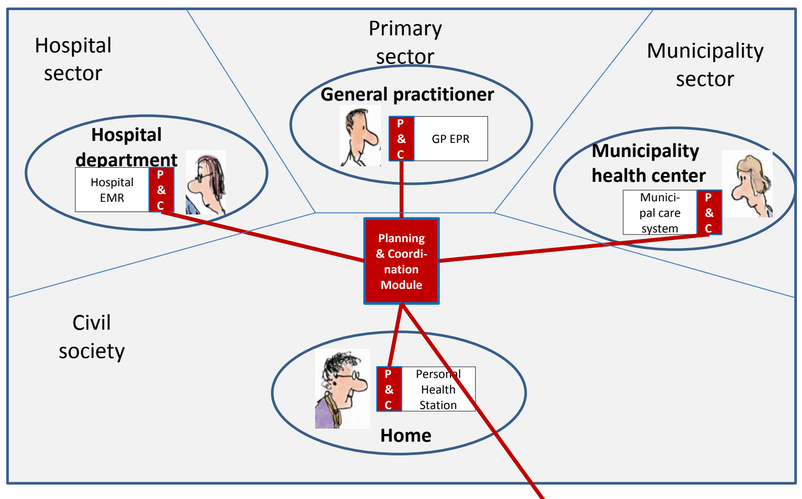
Fragmented healthcare services, no effective coordination




In Denmark, the government in 2010 launched a programme to improve the healthcare of patients with chronic conditions. One of the requirements was to support the "cross sectorial" patient experiences to improve the reported failures of communication and deliver better quality and continuity of care for patients with chronic conditions.

### Prototyping

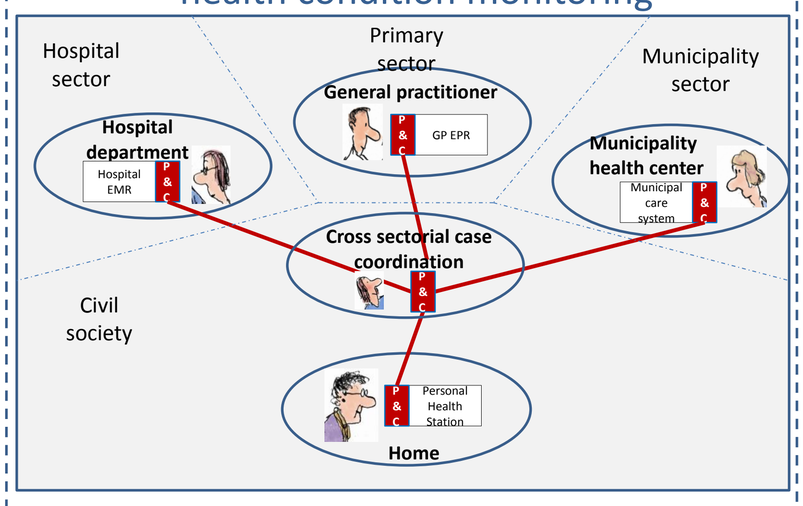
Shared plan provided by the plan & coordination module




As an answer to this programme, a cross sectorial analysis and design group was set up, consisting of clinical specialists, it architects and constructors, from municipality, GP and hospitals. Inspired by the case management and CRM industry and products, the Danish tradition of standardized digital handover protocols for patients transferred between sectors was lifted to the computer-based modeling and implementation of pre-standardized and formulated care management plans by prototyping as a start point for the implementation. The result was a shared individualized plan embedded in the planning and coordination module: "P&C"

### Redesign healthcare

New care model implementing coordination, healthcare services and health condition monitoring




The results from the from a clinical simulation study with the P&C prototype[1] identifies opportunities for designing the healthcare organization with embedded coordination functions to support the care processes in particular in relation to chronic conditions like COPD and diabetes. This includes new roles and healthcare business logics based on coordination and continuity in the case management ad empowerment of the patients.

## The plan & coordination module

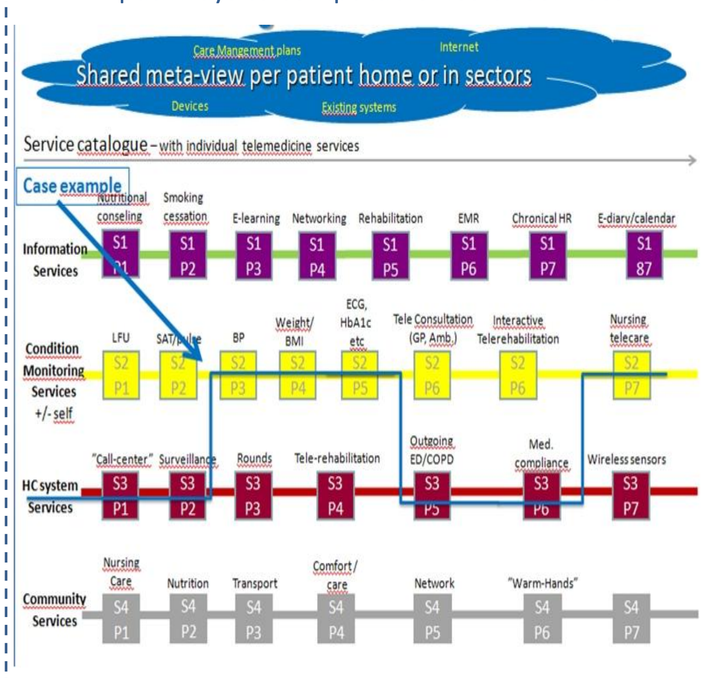
### Pathways

Text based standard pathway and guideline for COPD and diabetes


The Capital Region has developed standard pathways for COPD, Diabetes and other chronic conditions. These pathways are all text based documents, which are difficult to use in clinical practice at the point of care. They serve as reference material for clinical practice for the entire region, including 14 hospitals covering a population of 1.7 mio. citizens, 29 municipalities and 1000 general practitioners.

### Health service catalogues

Transforming textbased standard pathways to computable health services



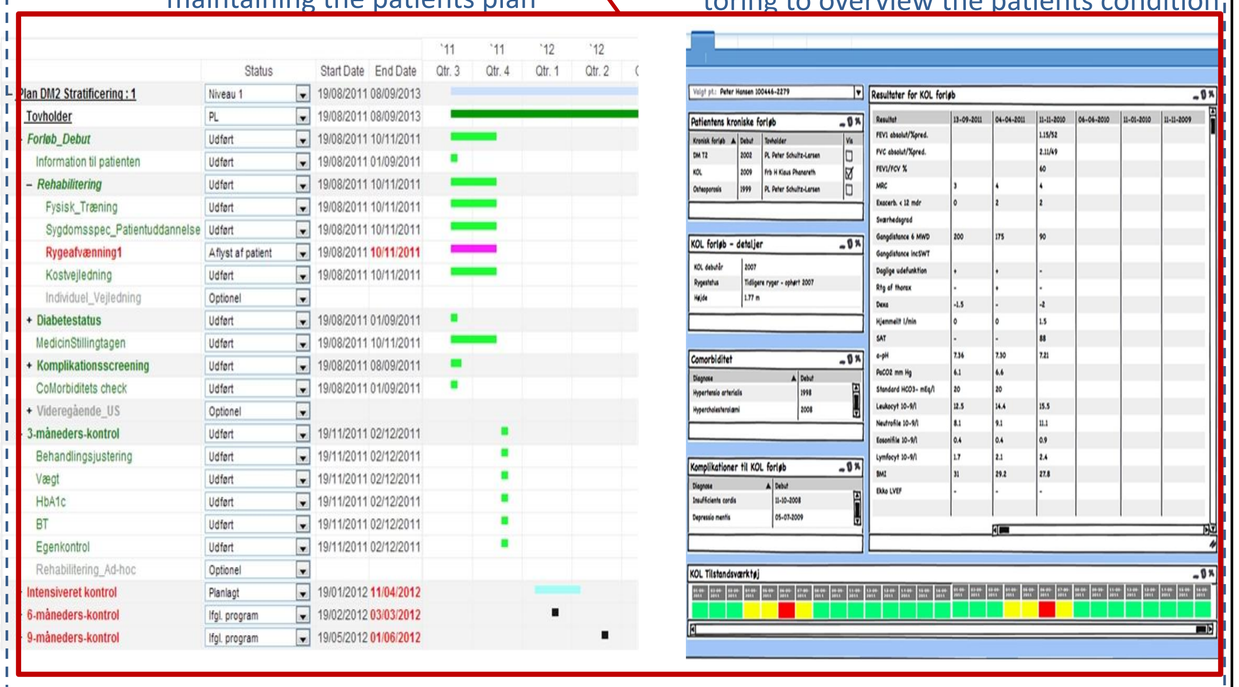

In the project, a model for health services was developed and used in the transformation of the text-based prevention and treatment health services for COPD and Diabetes II pathways into a data object model structure which was implemented, and embedded in an open source SugarCRM toolset

### Care Plan

Instantiating, individualizing and maintaining the patients plan

### Health Condition

Using data from measurements and monitoring to overview the patients condition




The purely clinical plans are instantiated as standard care management programs with patient details, services per stratification level, and leaves room for self-defined optional services. The plan is shown in 3 explodeable tree levels in a Gantt diagram. The services are designed as standard placeholders for concrete services, to be modeled into searchable service catalogues, owned and managed by the different users with the individual providers. A diagram of service states and shifts between them was defined, and made documentable on a per-service manner. These service state shifts are the core formulation of the it support of the coordination problem. The care programs are formulated in a manner such that it is possible to concatenate the instantiated plans over multiple health conditions, and the system holds a simulated results window with measurement results stemming from the execution of services

## Conclusions

This planning and coordination module is a first-of-a-kind in Denmark and represents a "missing link" in the Danish it infrastructure for healthcare. We have found requirements of such functionality in other literature, but have not been able to find references of a similar running module. The prototype opens up for new concepts in the care models and the healthcare organization including sector neutrality, patient centricity, self control, health service deployment and systemic health proactivity in the context of population management.

## References

[1] Sanne Jensen, Søren Vingtoft and Christian Nøhr, "Benefits of a Clinical Planning and Coordination Module: A Simulation Study", Proceedings ITCH Conference 2013, Victoria, Canada