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Using data to learn

Becoming a “data-driven organization”

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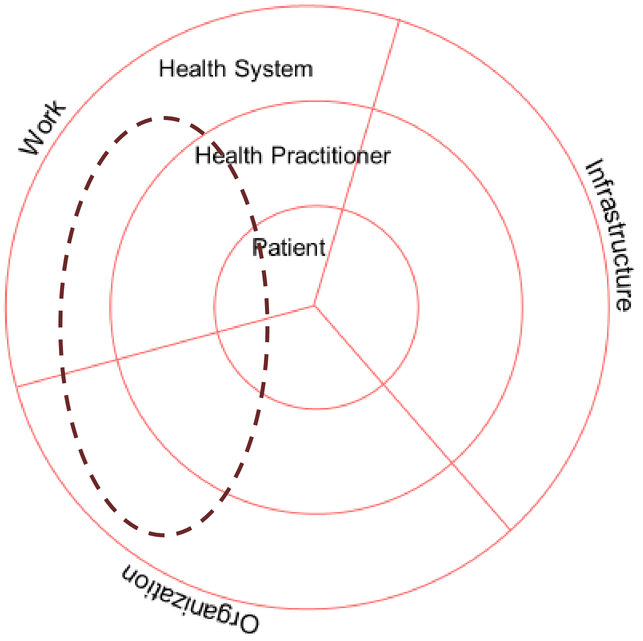
April 23rd 2024

Today's topic

- Earlier:
  - Primary use of health data (patient treatment)
  - Secondary use of health data (e.g., research, statistics)
  - Today: Secondary use of health data – internal to the organization
- Becoming a 'data-driven organization'
  - Using one's own data to learn from
  - Improve service wrt quality, safety, effectiveness, efficiency etc.
  - Sociotechnical change process – not straight-forward!
- More generally:
  - Novel data-driven service models (using new data/using data in new ways)
- Readings:
  - Raghupathi and Raghupati, 2014 (visions for data usage)
  - Schilling et al., 2011 (Kaiser Permanente, USA)
  - Øvrelid and Sanner, 2020 (Sykehuset Østfold)



Learning outcome

After completing the course, you

- Have an overview of information needs in the health sector and the main types of information systems in use
- Have an understanding of health information sharing needs and challenges within and between health care organizations and contexts
- Can discuss and problematize data driven restructuring, process improvement or behavior change in health care organizations
- Can demonstrate familiarity with specific health data standards and their role in integration of health data
- Demonstrate familiarity with theories and concepts relevant to understand information use practices in organization
- Can analyze and identify opportunities and challenges to utilize data and implement data driven decision making in the health sector
- Have an understanding of the organizational and socio-technical challenges and opportunities of big data and related AI approaches in healthcare
- Can describe and discuss legal, regulatory and ethical issues relevant to digitalization and data driven decision-making in health care organizations, including security, privacy and confidentiality

A central vision for the Health Informations Systems Programme has been «**Information for Action**»

DHIS – District Health Information System → focus on the local (district)

Visions of new forms of data usage in health

- Raghupathi and Raghupathi (2014): «Big data analytics in healthcare: promise and potential», *Health Information Science and Systems*
- Gives references to a number of interesting case reports, for example:
  - Improving hospital performance by analyzing clinical, financial, patient, and supply chain data
  - Assess treatment protocols, design more targetted protocols for subgroups
  - Realtime analysis of physiological data (stroke patients)
  - Discover adverse drug effects
  - Improve screening criteria

Sykehuset Østfold (Kalnes)

Opened November 30th 2015

Advanced digital infrastructure and tools

- Mobility (mobile phones, pads etc)
- Integration (digital whiteboards)

HIMSS level 6 certified in 2017 (as the first Nordic hospital)

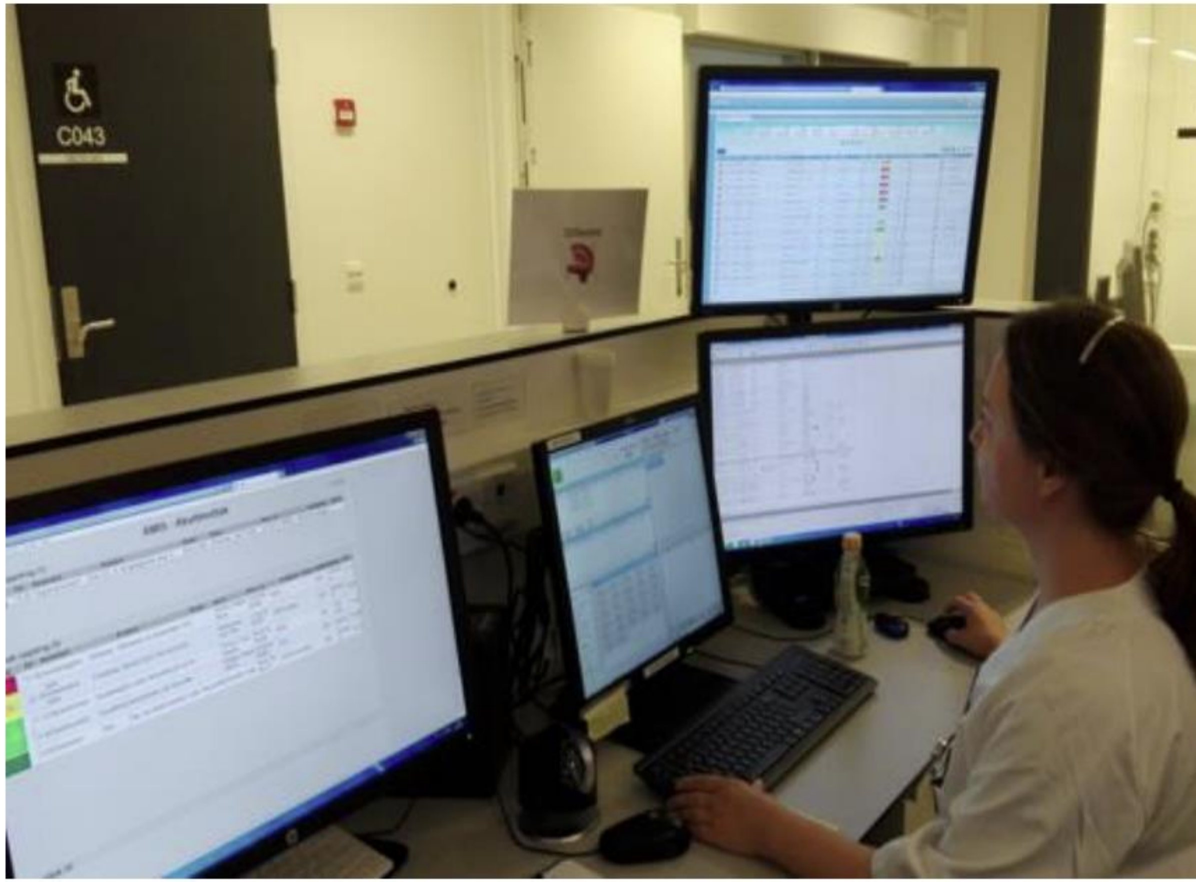
Patient transfers as a common problem

The **emergency unit** applies to **transfer a patient** to the **heart department**. The heart department **is full**, but two patients **can be transferred** to the **lung department**. The heart department **coordinator** calls the **lung department coordinator** who responds that they have **no available beds**. This is **not reported** back to the **emergency unit**. The patient at the emergency unit is still marked **"ready for ward"**. The **emergency unit** calls the **heart department** again, only to learn that **neither** of the departments have **available beds**. However, the coordinator at the emergency unit knows that the **lung department** has **unused beds in the corridor**. The emergency unit coordinator then **enforces the move of patients** from the heart department to the lung department so that the **emergency unit patient can transfer** to the heart department **six hours after the initial inquiry**.

(Internal workflow assessment, Emergency unit)

Some digitalization benefits

- Overview of incoming patients and admitted patients at the emergency unit
- “Silent reports” between emergency unit and hospital wards
- Overview of resources and digital booking
- Stronger integration and visibility of support services



Discussions

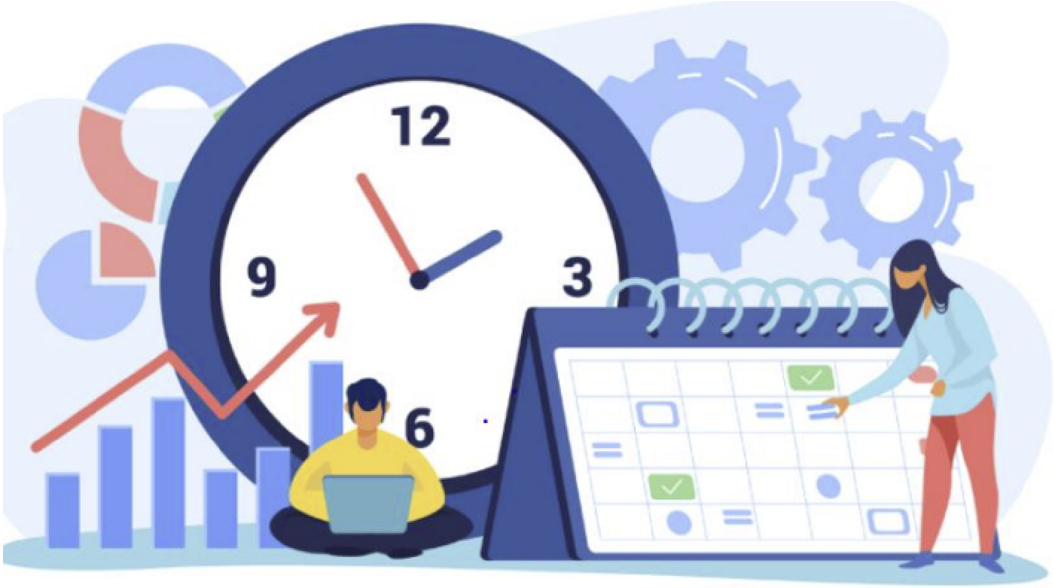
Case: a patient shall be moved from the emergency unit to a bed ward.

a) How would a traditional process unfold?

b) If the emergency unit has digital access to all information, how do you expect the patient transfer process would change?

Something like this?

- **Old process:** Moving patient from emergency unit to ward
  - Emergency unit call ward to ask for available room.
  - Ward checks, call back
  - Call porter to ask for portable bed
  - Prepare «movement» protocol (paper document)
  - Register «move» in electronic patient record
  - Move patient
- **New process** (digital coordination):
  - Check digitally if rooms are available.
  - Book move.
  - Ward & porter receives message.
  - Move patient



Data driven workflow coordination

"One year of process innovation had little impact on patient flow. We had to establish **patient flow seminars** and engage departments in **data analysis and discussion**" (process designer)

Weekly **transdisciplinary patient flow conference** with coordinators, department heads, clinicians and representatives of support staff

Focus on **workflow performance** such as length of patients' stay at the emergency unit and **waiting time**

Collective data analysis and planning of **patient flow improvements**

Institutionalization of data use

- Routine data use arenas established at Kalnes

Meeting	Frequency	Participants	Analytics
Capacity meeting	Every day	Managers at medicine and surgery depts.	Bed capacity
Top management team	Weeekly	Top managers	Trends
Cross-disciplinary improvement team	Weeekly	Managers	Patient flow and various indicators
Status with process director	Weeekly	Analytics team	Patient flow, data
Process improvement patient flow	Bi-weekly	Clinic managers	Patient flow

Example: hospital housekeeping and patient flow

Patient flow is a key productivity benchmark in hospital operations (healthcare quality, patient safety, costs)

Housekeeping contribute to patient flow through ***bed turnaround time*** – *the time from a hospital bed becomes vacant until the bed has been cleaned or replaced*

Bed turnaround time = <u>Cleaning routine + Coordination</u>

Digitalization of housekeeping at Kalnes

90 - 120 patients, arrive at Kalnes emergency unit every day – "peak hours" around 1:30 P.M.

- Patients stay in **single bedrooms**
- housekeeping with every patient transfer
- Cleaning takes **18- 25 minutes**
- Nurses / doctors **book housekeeping**

- Housekeepers access housekeeping tasks (mobiles)
- Housekeepers update task status
  - "ordered", "in progress" and "completed"
- Housekeepers register **wasted trips** (e.g., patient still in the room!)

- Housekeeping challenges

During the first year of operation, one housekeeping team would **run from room to room** while other housekeepers **had no tasks at all**

Doctors were **reluctant** to register patient transfer digitally
- Busy with morning visits and want to use patient journal

Nurses register rooms in need of housekeeping in **bulk**

Coordinative nurses upgrade the priority status of housekeeping tasks in **bulk**

Still manual coordination and phone calls, limited trust in workflow information

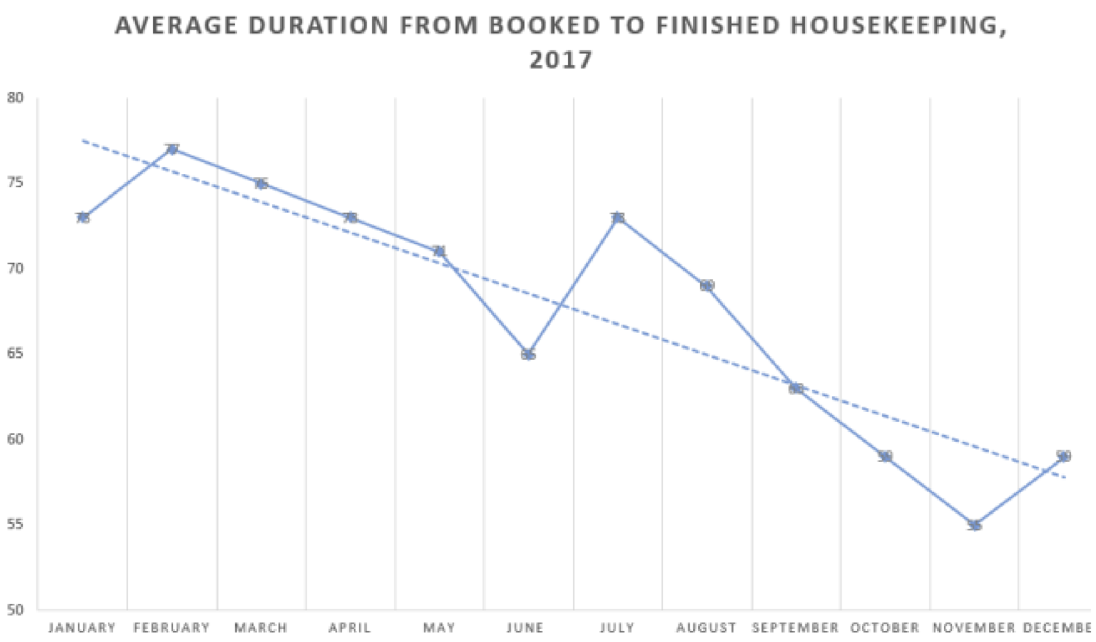
"I know the cleaning routines itself takes less than 30 minutes, but sometimes it takes three hours from a room is registered in IMATIS until the cleaning is performed"

Housekeeping: improved bed turnaround time

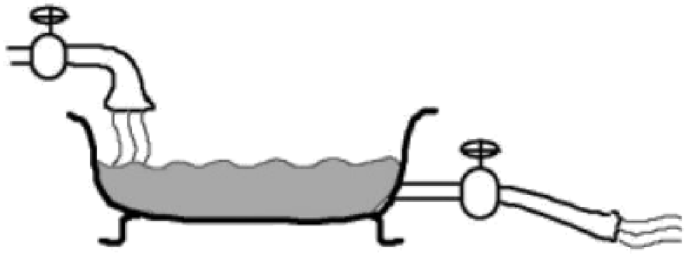
Workplans revised to **prioritize online bookings** and do **daily routine tasks** when **worklist is empty**

The **housekeeping department** changed **working hours** and **team compositions** based on data

- Housekeeping used data to show **erroneous bookings** and **misuse** of **task priority status**
- Housekeeping requested adjustments to the booking practices of **nurses**
- Rights to **upgrade housekeeping priority** restricted to the emergency unit coordinator



Systemic use and reuse of data at Kalnes



Integration allowed departments at Kalnes to share patient flow information, anticipate workloads, and schedule resources and services.

Real-time information allows the emergency unit to transfer patient more swiftly.

Errors mitigated though informed dialogue.

Department leaders motivated to improve patient flow.

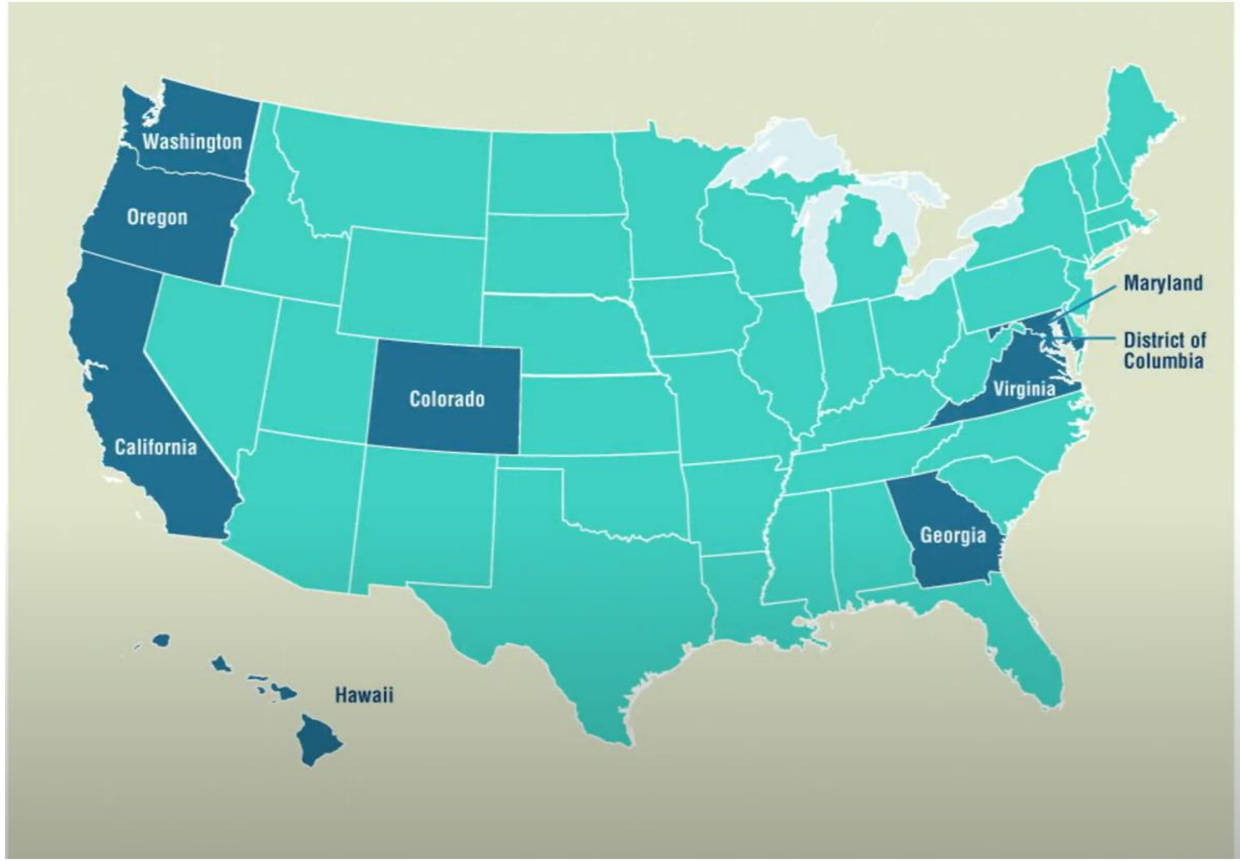
From **data for documentation**, to **data in coordinative practice,** to **analytics and cross-departmental discussions**

So, what can we learn about use and reuse of health data?

- Requires standardization, integration, and continuous work!
- At Kalnes: digital representation -> accessible information -> organizational learning -> inspiration and motivation - > requests for more data (**virtuous cycle**)

- Health South-East: Kalnes model still not «scaled» within the region.
- Other regions in Norway moving in other directions with other solutions
- Will we see coordination and standardization between regions as well?
- **What are the costs in terms of clinicians' time?**

Some examples from Kaiser Permanente



Integrated managed care organization – the physicians, hospitals, and insurer are all under one umbrella

- 12.2 million members across 8 states + D.C.
- 39 hospitals + 680 medical offices
- 250,000+ employees

$4 billion investment in an integrated Electronic Health Records system, which has been fully operational since 2010

Kaiser Permanente's Performance Improvement System, Part 3: Multisite Improvements in Care for Patients with Sepsis

Alan Whippy, M.D.; Melinda Skeath, R.N., C.N.S.; Barbara Crawford, R.N., M.S.; Carmen Adams, D.N.Sc., R.N.C.; Gregory Marelich, M.D.; Mezhgan Alamshahi, M.B.A.; Josefina Borbon, M.D.

Article-at-a-Glance

Background: In 2008, Kaiser Permanente Northern California implemented an initiative to improve sepsis care. Early detection and expedited implementation of sepsis treatment bundles that include early goal-directed therapy (EGDT) for patients with severe sepsis were implemented.

Methods: In a top-down, bottom-up approach to performance improvement, teams at 21 medical centers independently decided how to implement treatment bundles, using a "playbook" developed by rapid cycle pilot testing at two sites and endorsed by a sepsis steering committee of regional and medical center clinical leaders. The playbook contained treatment algorithms, standardized order sets and flow charts, best practice alerts, and chart abstraction tools. Regional mentors and improvement advisers within the medical centers supported team-building and rapid implementation. Timely and actionable data allowed ongoing identification of improvement opportunities. A consistent approach to performance improvement propelled local rapid improvement cycles and joint problem solving across facilities.

Results: The number of sepsis diagnoses per 1,000 admissions increased from a baseline value of 35.7 in July 2009 to 119.4 in May 2011. The percent of admitted patients who have blood cultures drawn who also have a serum lactate level drawn increased from a baseline of 27% to 97% in May 2011. The percent of patients receiving EGDT who had a second and lower lactate level within six hours increased from 52% at baseline to 92% in May 2011.

Conclusion: Twenty-one cross-functional frontline teams redesigned processes of care to provide regionally standardized, evidence-based treatment algorithms for sepsis, substantially increasing the identification and risk stratification of patients with suspected sepsis and the provision of a sepsis care bundle that included EGDT.

Table 1. Timeline for Sepsis Performance Improvement Planning and Implementation*

Spring 2008	May 2008	Early Summer 2008	Summer/ Fall 2008	Nov. 2008	Nov. 2008–Jan. 2009	Mar. 2009	Jun.–Jul. 2009
Mortality chart review	Mortality summit	Sepsis steering committee convenes and develops treatment algorithms.	Pilot at two sites	Sepsis summit	Medical centers assemble sepsis teams	Train-the-trainer session	Data collection begins on EGDT processes and outcomes.

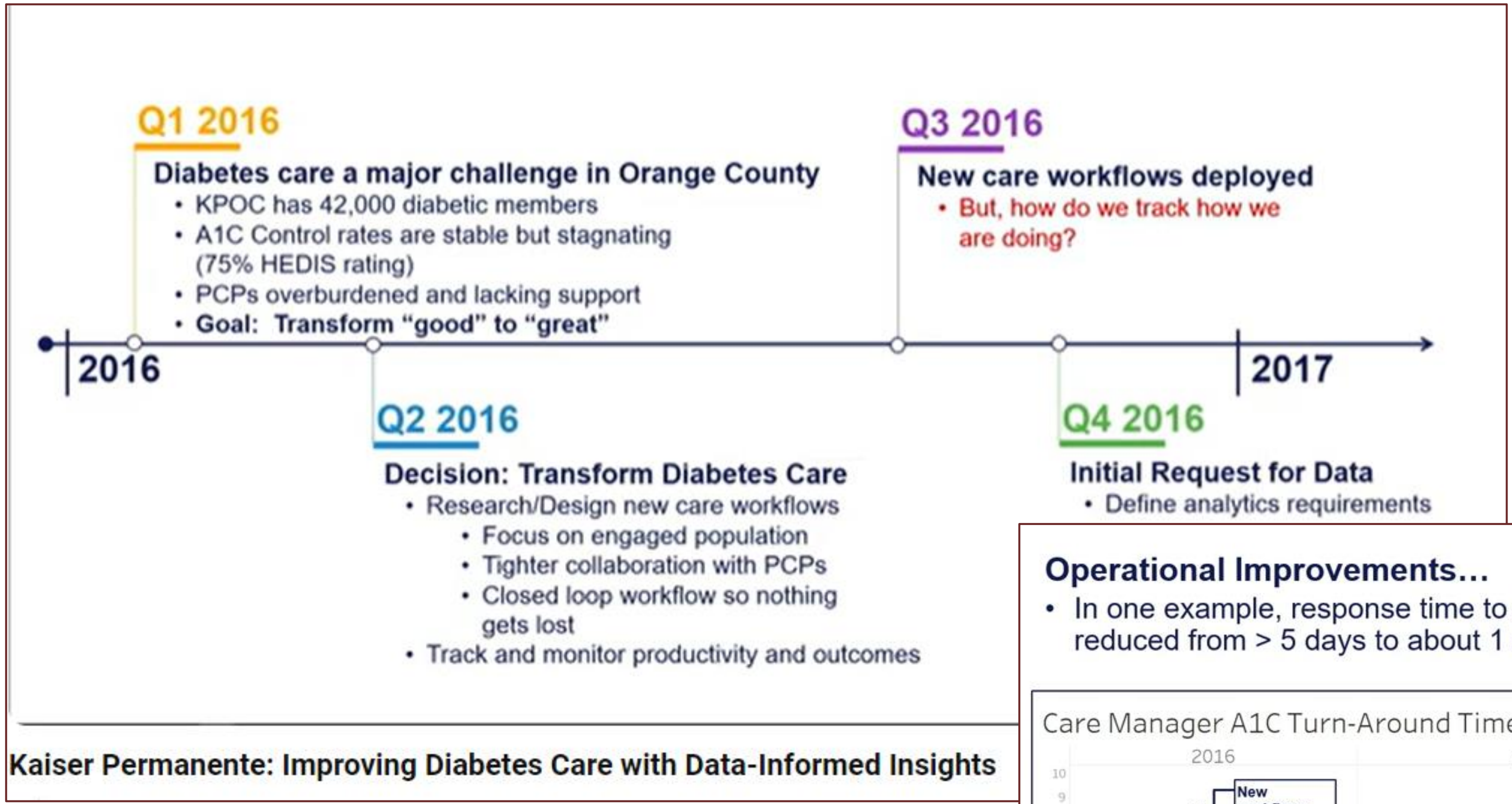
* EGDT, early goal-directed therapy.

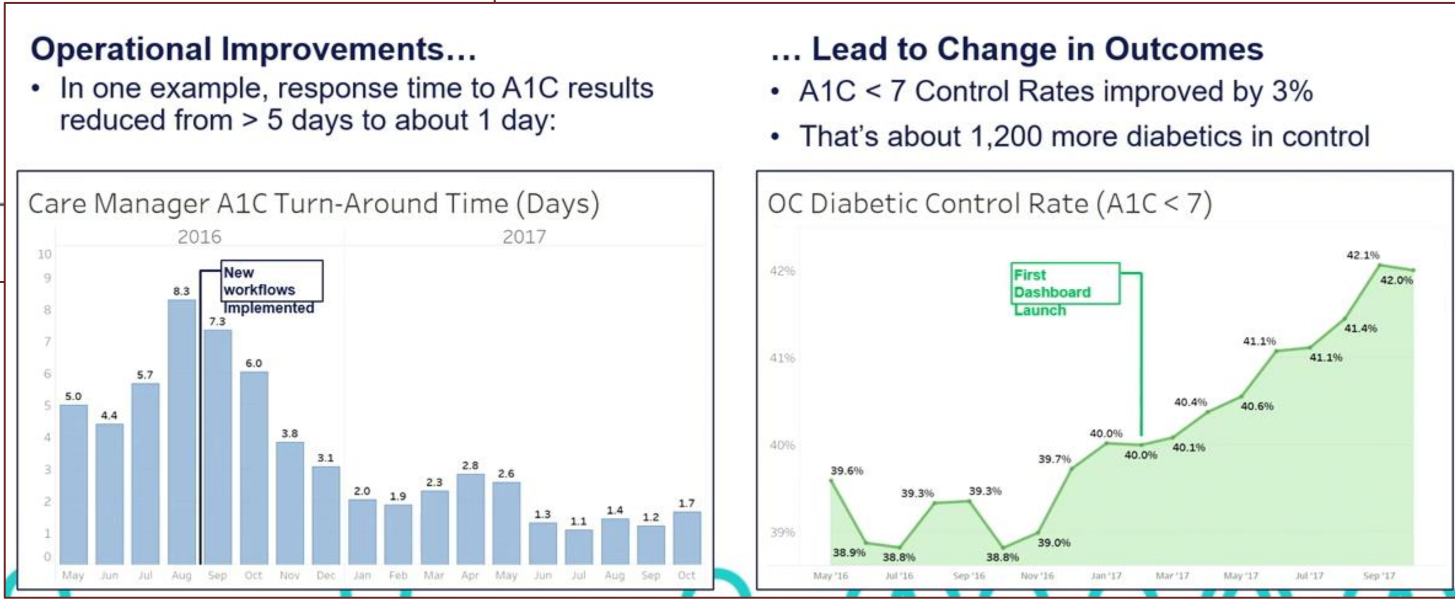
Table 2. Impact of a Sepsis Care Performance Improvement Initiative on Process of Care Measures, July 2009–May 2011*

Process of Care Measure	July 2009	July 2010	Dec 2010	May 2011
Sepsis diagnoses per 1,000 admissions	35.7†	75.6‡	98.5	119.4
Admitted patients with blood culture who had serum lactate drawn in the ED	27%§	97%‡	97%	97%
Patients with sepsis who received antibiotics within 1 hour of diagnosis	69.5%	87%	90.4%	88.6%
Patients with sepsis who had a CVP or ScvO2 recorded within 2 hours of diagnosis	41.5%	74%	78.6%	85.1%
Patients meeting clinical criteria for EGDT who met all 6 bundle elements	7.3%	36.7%	55.1%	60.5%
Patients receiving EGDT with hemodynamic values at target				
Mean arterial pressure	52%	85%	90.4%	93.9%
CVP	41.5%	69%	83.8%	86%
ScvO2	30.8%	66%	74.3%	75.4%
Patients receiving EGDT who had a lower serum lactate level within six hours	52%	85.8%	91.9%	92.1%

* ED, emergency department ; CVP, central venous pressure; ScvO2, central venous oxygen saturation; EGDT, early goal-directed therapy; n/a, data not available.
† Data are from 2006 through early 2008.
‡ Data are from November 2009 through July 2010.

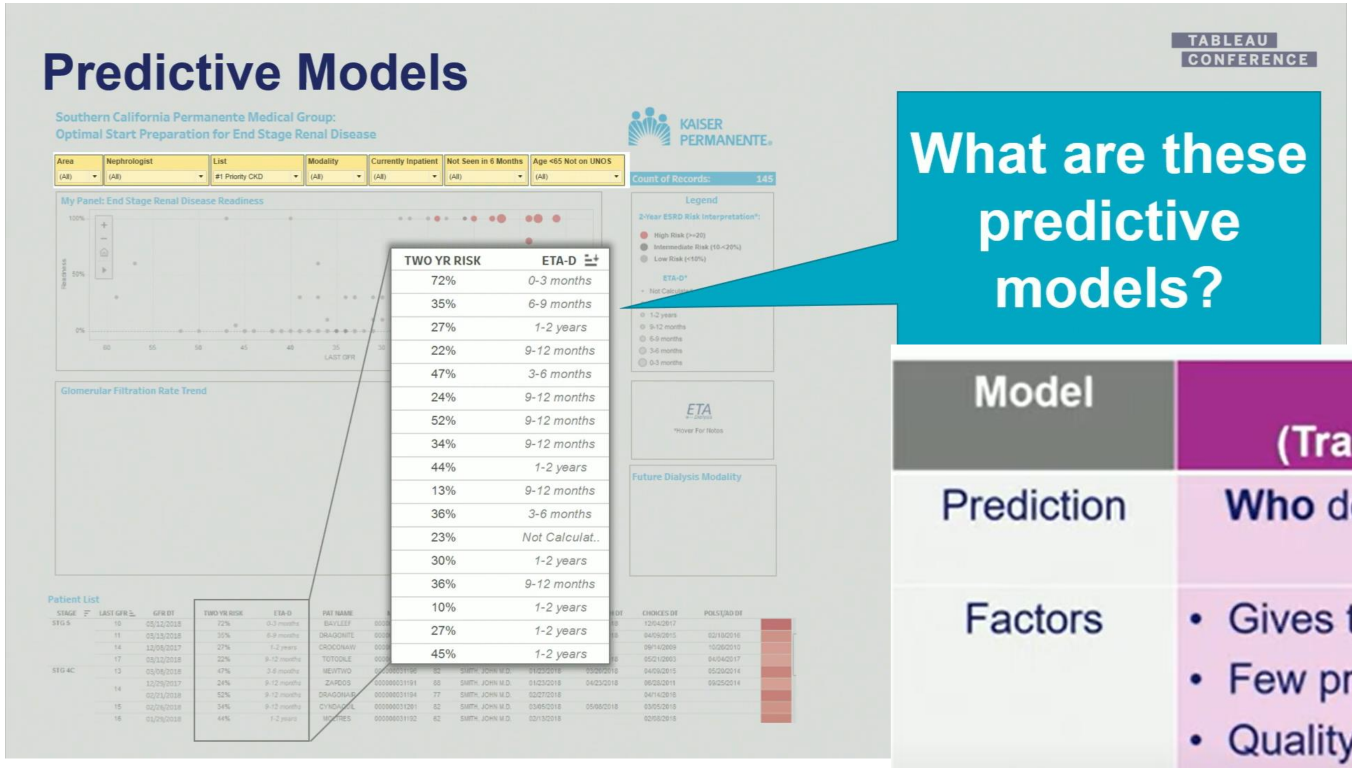
Kaiser Permanente: Improving diabetes care





Link ot 36 minute video

Kaiser Permanente: kidney disease care



Model	Tangri (Traditional Modeling)	ETA-Dialysis (Machine Learning)
Prediction	**Who** do we predict will start?	**When** do we predict a person will start?
Factors	• Gives two-year dialysis **risk** • Few predictors • Quality of model checked on import • Model estimated once	• Gives **days** until dialysis • More predictors, more robust • Real-time performance tracking on quality of model • Model changes (and improves) over time

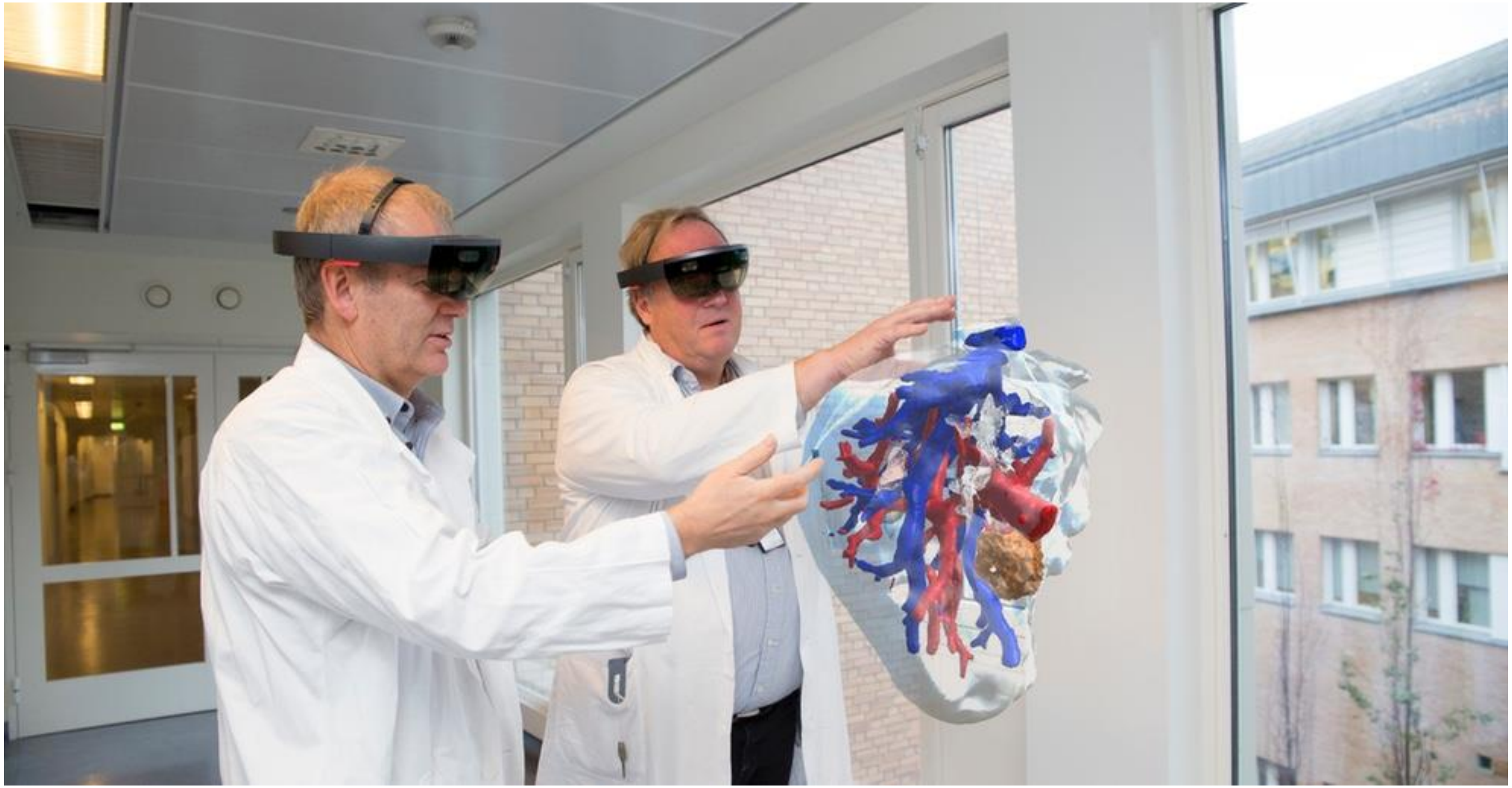
Link to video with multiple cases: (56 minutes)
Kidney case starts at 23 minutes

Schilling et al. (2010)

- About the change process to create «a learning organization»
- Six ‘building blocks’:
    - Real-time sharing of meaningful performance data
    - Formal training in problem-solving methodologies
    - Workforce engagement and informal knowledge sharing
    - Leadership structures, beliefs, and behaviours (table 2)
    - Internal and external benchmarking (see table 3)
    - Technical knowledge sharing
- (Last in a series of four articles)

Virtual prototyping

«Virtual prototyping» in surgery planning



«Digital twin»

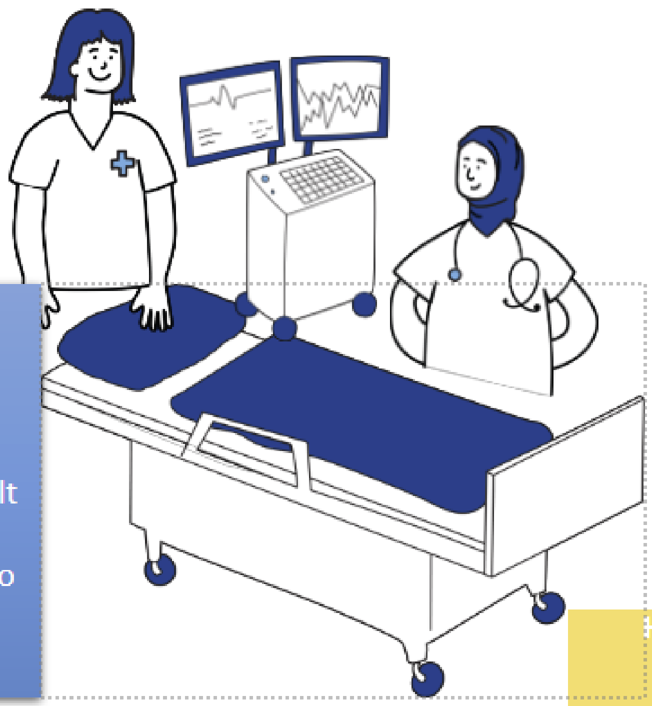
Ongoing project:

Data som samles på sengepost

Personalplanlegger, GAT: medarbeiderdata:
-bemanningsdata med roller og vaktlister

Pasientjournal (DIPS):
- sengepostlister
-journaldokumenter, visitt, vakt, tilsyn, tlfnotat mfl samt planer
-lab og radsvar (og henvisninger og rekvisisjoner)
-kritisk info og operasjonsdata (kirurgi)

ERP (Oracle e-business suite): logistikk av varer og forbruksmateriell:
- aktiv forsyningsrom (skap i korridor med strekkoder på hver hylleplass som kan skannes for påfyll)



Byggnær IKT (div): data om lokaler og klima:
- data om romtemperatur, fuktighet
- lys, energibruk (obs pågående anskaffelse for bygg- og eiendomsstyring)

Elektronisk kurveløsning (Metavision):
-medikamentliste (legeforordning, sykepleieutdeling)
- pasientmålinger som vitale parametre (blodtrykk, temp og puls, registrert manuelt og automatisk) urinproduksjon mm
-klinikerskåringer som sårvurderinger, risiko for fall, ernæringsplan, mm
- noen labsvar og noen operasjonsdata

Kostdatasystem
Bestilling av mat og servering

- Portørkommunikasjon (Portacomm):
- Bestilling av pasientreiser og syketransport

Helselogistikk (Imatis/Ascom): meldingsvarsler:
- alarmdata
-meldinger om info til f.eks. renhold
-tavledata for korridor og vaktrom

RIS/PACS/RMA (Sectra, Philips, Agfa) inneholder informasjon om avtaler og rådata for radiologiske og nukleærmedisinske bildeundersøkelser samt digitale patologirådata (digitale snitt)
LIMS inneholder informasjon om diagnostiske labprosedyrer og svardata

MTU-GW (Ascom): data fra medisinsk teknisk utstyr:
- overvåkningsdata, vitale parametre som kommer fra sensorer på pasienten

MTU standalone (div): medisinsk teknisk utstyr:
-data fra eksempelvis bedside ultralyd, dopplermåling, intrakraniell eller intrakompartementell trykkmåling

Data som samles på sengepost

Pasientjournal (DIPS):
- sengepostlister
-journaldokumenter, visitt, vakt, tilsyn,
tlfnotat
-lab og radsv
re
-kritisk info og

Elektronisk
-medikam
sy
- pasientmå
(blodtrykk, te
og autom
-klinikerskårin
for fa
- noen labs

RIS/PACS/RM
informasjon o
og nukleærmedisinske bildeundersøkelser samt
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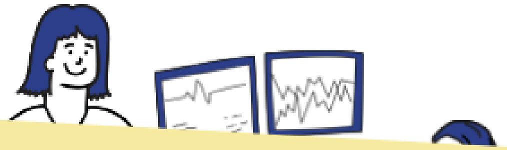

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BedreFlyt:
Kan noen av dataene utnyttes bedre?
Er de tilgjengelige?
Hvordan kan datasystemene snakke bedre sammen?
Er vi organisert på hensiktsmessig måte?
Unngå dobbeltregistreringer/tidstyver

teknisk utstyr:
- overvåkningsdata, vitale parametre som
kommer fra sensorer på pasienten

Personalplanlegger, GAT: medarbeiderdata:
-bemanningsdata med roller og vaktlister

ERP (Oracle e-business suite): logistikk av
varer og forbruksmateriell:
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okaler og klima:
r, fuktighet
e anskaffelse for
tyring)

m
servering

Portacomm):
g syketransport

eldingsvarsler:

renhold
aktrom

medisinsk teknisk
:
-data fra eksempelvis bedside ultralyd,
dopplermåling, intrakraniell eller
intrakompartementell trykkmåling

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Other concepts and trends:

- From the health data debates
  - Real-world evidence
  - Personalized/precision medicine

- From industry:
  - Condition-based maintenance/Predictive maintenance

Real World Evidence (RWE)

- *Real-world evidence (RWE) is clinical evidence on a medical product's safety and efficacy that is generated using real-world data (RWD) resulting from routine healthcare delivery.*
- Much used for post-marketing surveillance (pharmacovigilance data)
- But RWE has additional applications in different stages of the drug approval cycle, and can be used to optimize the design of randomised controlled trials (RCTs)
  - (Source: Dang, Real-World Evidence: A Primer. Pharmaceut Med. 2023; 37(1): 25–36)
- Example:
  - U.S. Food and Drug Administration: Framework for FDA's real-world evidence program

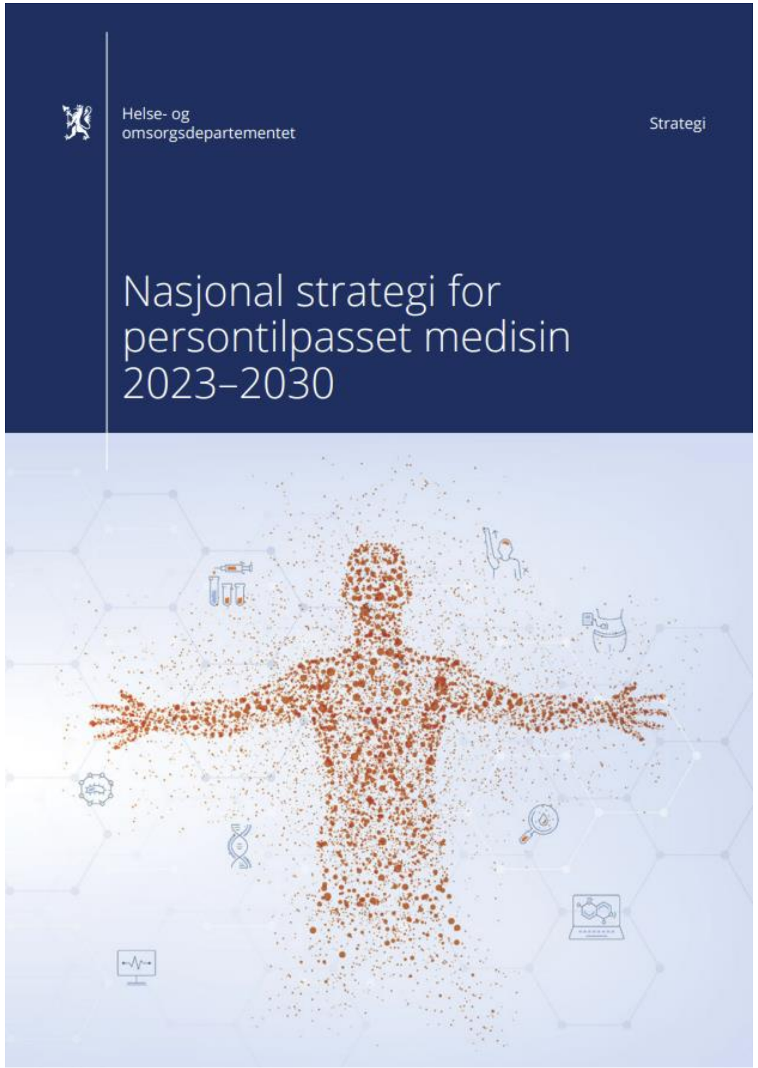
Personalized medicine

«All patient care is, to some degree, personalised. The more specific discipline of personalised medicine is typically characterised by the use of large-scale analytical tools to identify biological characteristics in an individual as a basis for prevention or treatment» (p.7)

Other commonly used concepts:

- Precision medicine
- Stratified medicine

Builds on various “-omics” technologies



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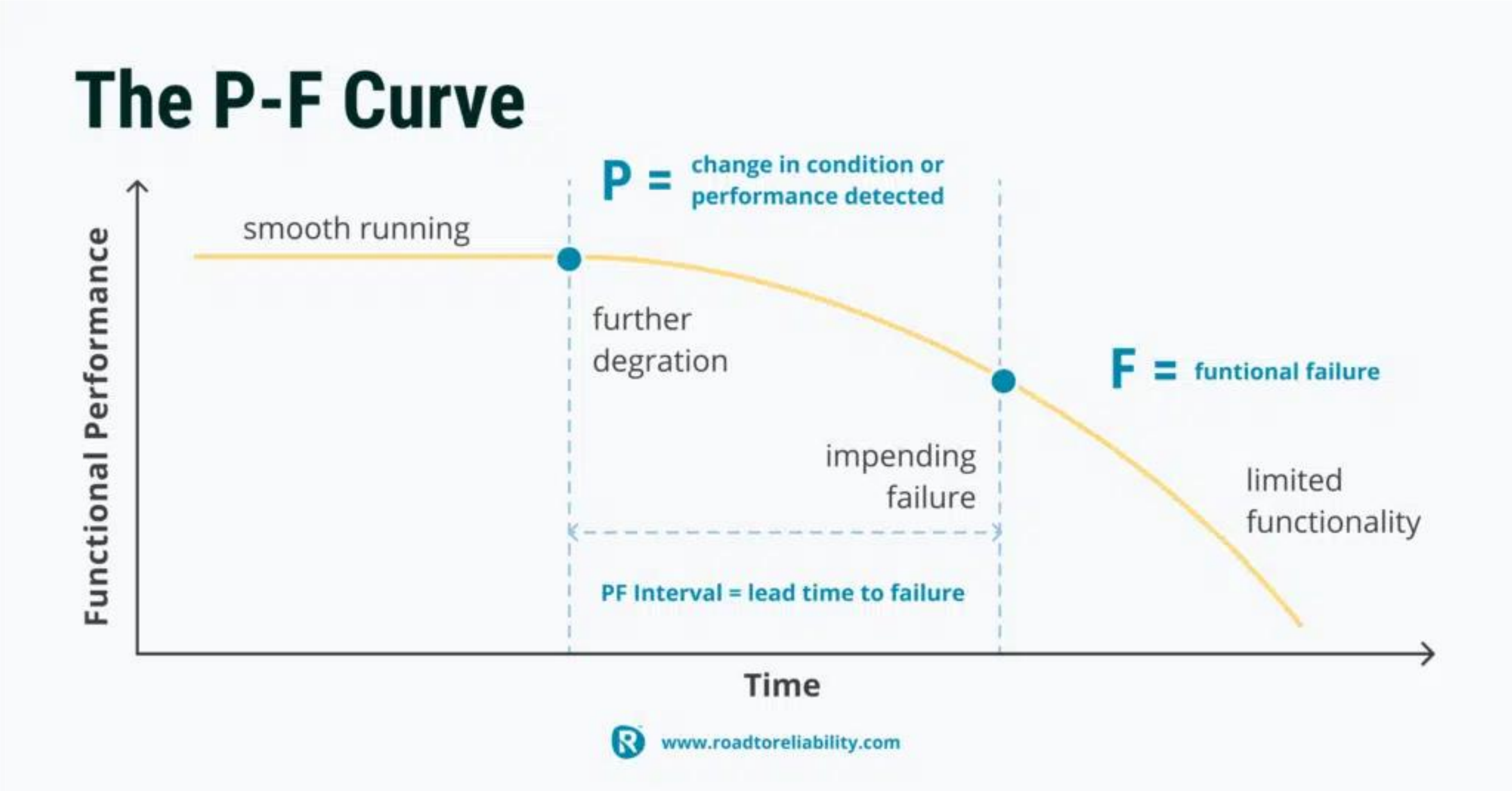
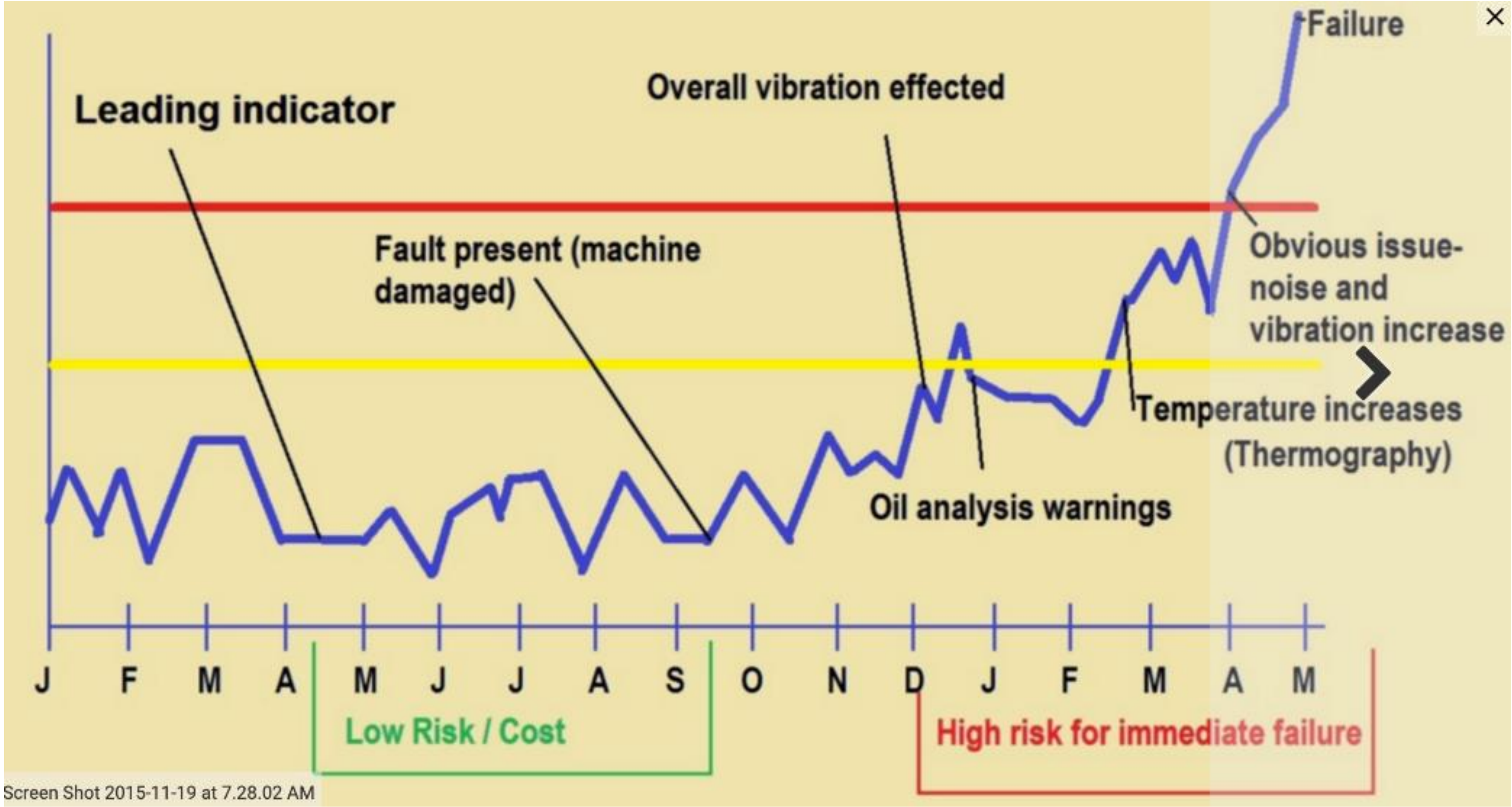
Link to document



[The 9 Types of Maintenance: How to Choose The Right Strategy (reliabilityacademy.com)](https://reliabilityacademy.com)

Maintenance



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Predictive Maintenance vs Condition Monitoring Maintenance

Predictive Maintenance	*Condition Monitoring Maintenance*
Anticipates When Asset Failure Can Occur	Alerts the Team Only When KPI are Decreased
Utilizes Data History & Searches for Patterns	Utilizes Sensors
Data has a Key Role in Defining Rules	Humans Define Rules of Maintenance
Focuses on the Early Detection of Problems in Advance	Shows Real-time Information Lets Know Then and Now

[Predictive Maintenance Vs. Condition Monitoring: Which Is Best for Your Business? (assetinfinity.com)]

Healthcare examples of ‘conditions-based maintenance’

Pasienter med hiv og ME styrer selv poliklinikken i Kristiansand

VESTRE VIKEN

Forside > Om oss > Nyheter > Digital oppfølging av pasienter sparer tid og gir et bedre tilbud

Digital oppfølging av pasienter sparer tid og gir et bedre tilbud

Vestre Viken helseforetak er først ute i Norge med brukerstyrt oppfølging av epilepsipasienter. – Nå blir kontakten med sykehuset enklere i hverdagen, sier pasient Lise Lotte Steen, som har hatt epilepsi siden hun var 12 år.

Publisert 09.12.2019 / Sist oppdatert 09.12.2019

Prosjektleder Amund Leinaas, pasient Lise Lotte Steen og fagansvarlig Mette Roa Syvertsen er glade for at Vestre Viken nå er i gang med brukerstyrt oppfølging av epilepsipasienter.

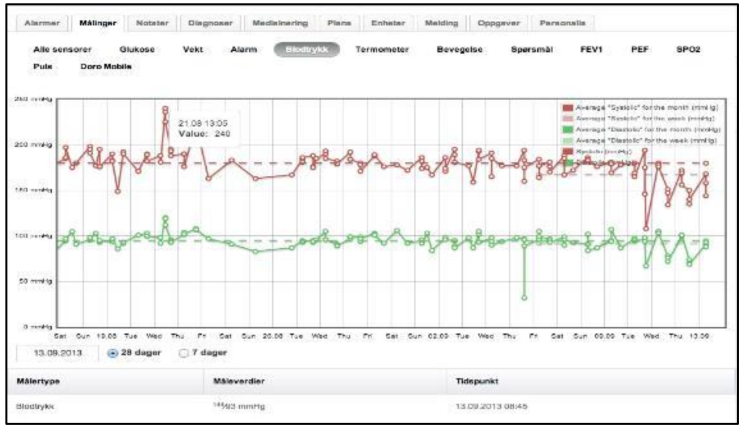
https://sykepleien.no/2021/04/pasienter-med-hiv-og-me-styrer-selv-poliklinikken-i-kristiansand

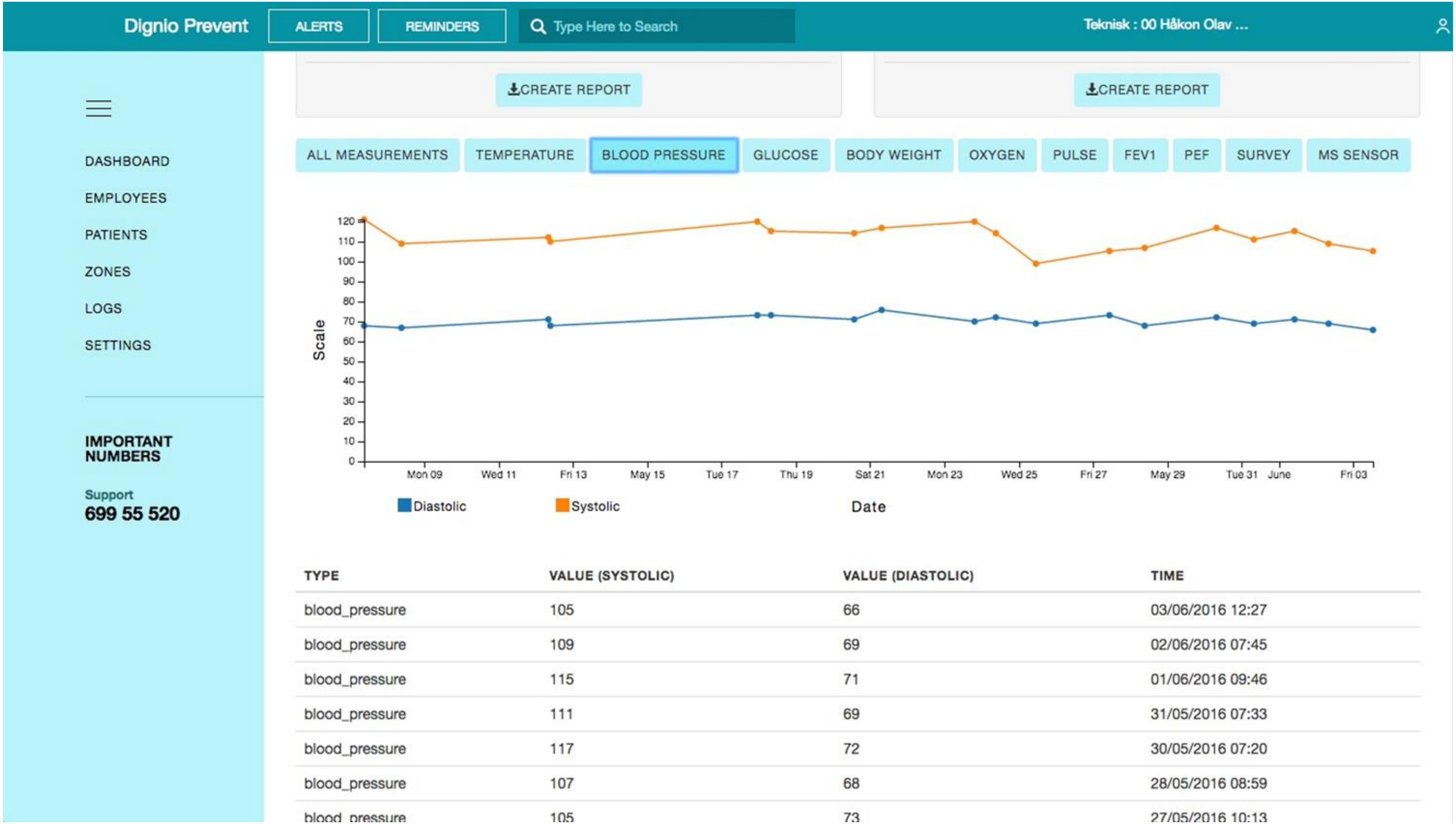
Group discussions:

What is the parallel between these health services and the industrial idea of ‘condition-based maintenance’?

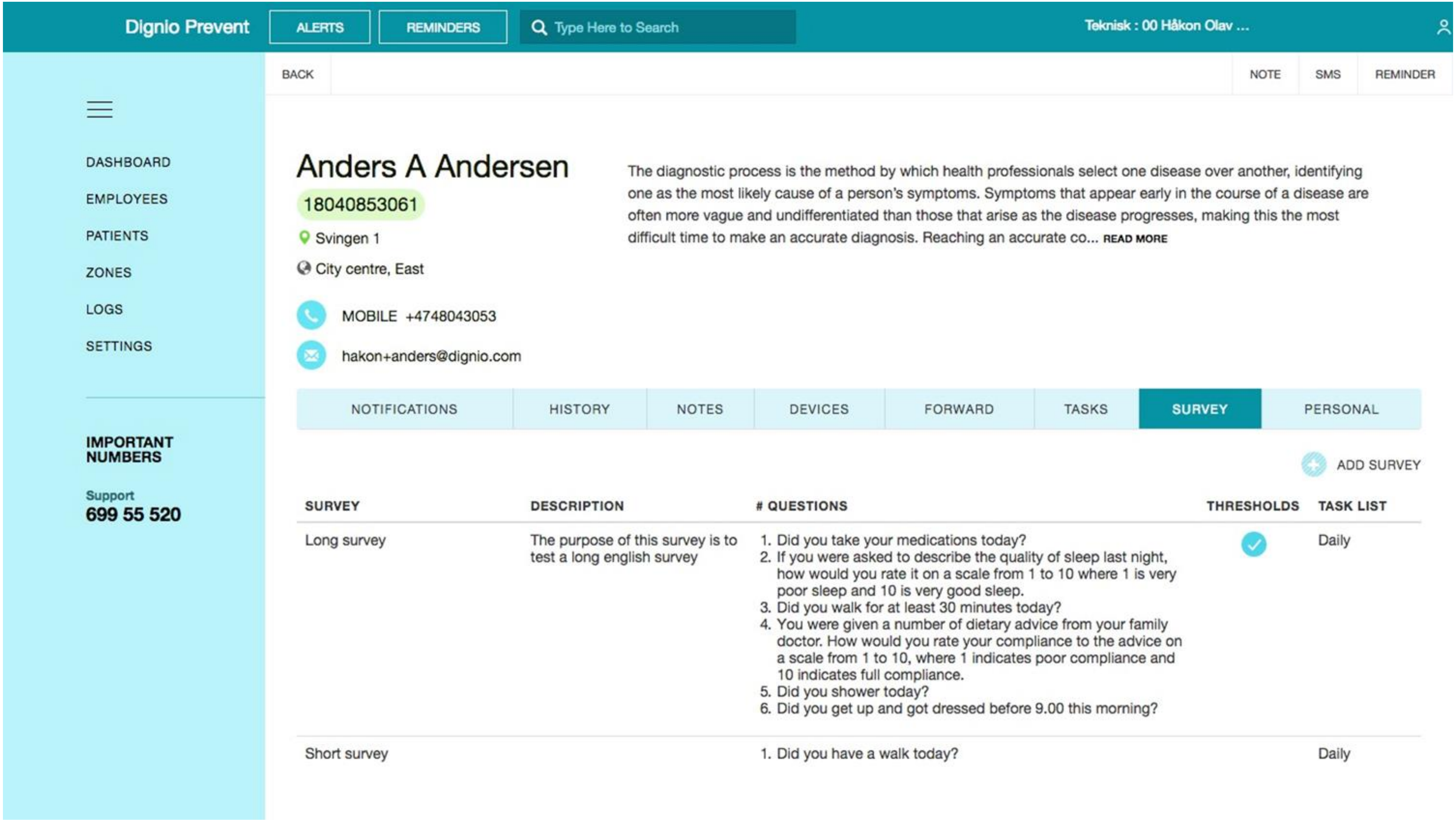
Remote patient care/digital homecare (digital hjemmeoppfølging)

Service concept





TYPE	VALUE (SYSTOLIC)	VALUE (DIASTOLIC)	TIME
blood_pressure	105	66	03/06/2016 12:27
blood_pressure	109	69	02/06/2016 07:45
blood_pressure	115	71	01/06/2016 09:46
blood_pressure	111	69	31/05/2016 07:33
blood_pressure	117	72	30/05/2016 07:20
blood_pressure	107	68	28/05/2016 08:59
blood_pressure	105	73	27/05/2016 10:13


Dignio Prevent
ALERTS
REMINDERS
Type Here to Search
Teknisk : 00 Håkon Olav ...
BACK
NOTE
SMS
REMINDER
DASHBOARD
EMPLOYEES
PATIENTS
ZONES
LOGS
SETTINGS
IMPORTANT NUMBERS
Support
699 55 520
Anders A Andersen
18040853061
Svingen 1
City centre, East
MOBILE +4748043053
hakon+anders@dignio.com
The diagnostic process is the method by which health professionals select one disease over another, identifying one as the most likely cause of a person's symptoms. Symptoms that appear early in the course of a disease are often more vague and undifferentiated than those that arise as the disease progresses, making this the most difficult time to make an accurate diagnosis. Reaching an accurate co... READ MORE
NOTIFICATIONS
HISTORY
NOTES
DEVICES
FORWARD
TASKS
SURVEY
PERSONAL
ADD SURVEY
SURVEY
DESCRIPTION
QUESTIONS
THRESHOLDS
TASK LIST
Long survey
The purpose of this survey is to test a long english survey
1. Did you take your medications today?
2. If you were asked to describe the quality of sleep last night, how would you rate it on a scale from 1 to 10 where 1 is very poor sleep and 10 is very good sleep.
3. Did you walk for at least 30 minutes today?
4. You were given a number of dietary advice from your family doctor. How would you rate your compliance to the advice on a scale from 1 to 10, where 1 indicates poor compliance and 10 indicates full compliance.
5. Did you shower today?
6. Did you get up and got dressed before 9.00 this morning?
Daily
Short survey
1. Did you have a walk today?
Daily

Group discussions:

How/why can we call this a “data-driven service model”?

How does this service mode change work?

- Nursing at a distance – nursing 'via data'
- Empirical material:
  - Observations and interviews from Dignios servce center (2017)
  - Sarpsborg, ca. 145 patients (COPD, diabetes, CVD)
  - (The service focused on 'patient mobilization')
- Analysis – thre types of work performed by nurses:
  - Preparatory work: setup, training, starting
  - Continuous adjustment: adjustment of threshold values, frequency (personalization)
  - Fine-tuning of how questions are formulated/sequenced

Health Informatics Journal

Special Issue Article

Health Informatics Journal
2019, Vol. 25(3) 608–616
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DOI: 10.1177/1460458219833110
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Data-work for personalized care: Examining nurses' practices in remote monitoring of chronic patients

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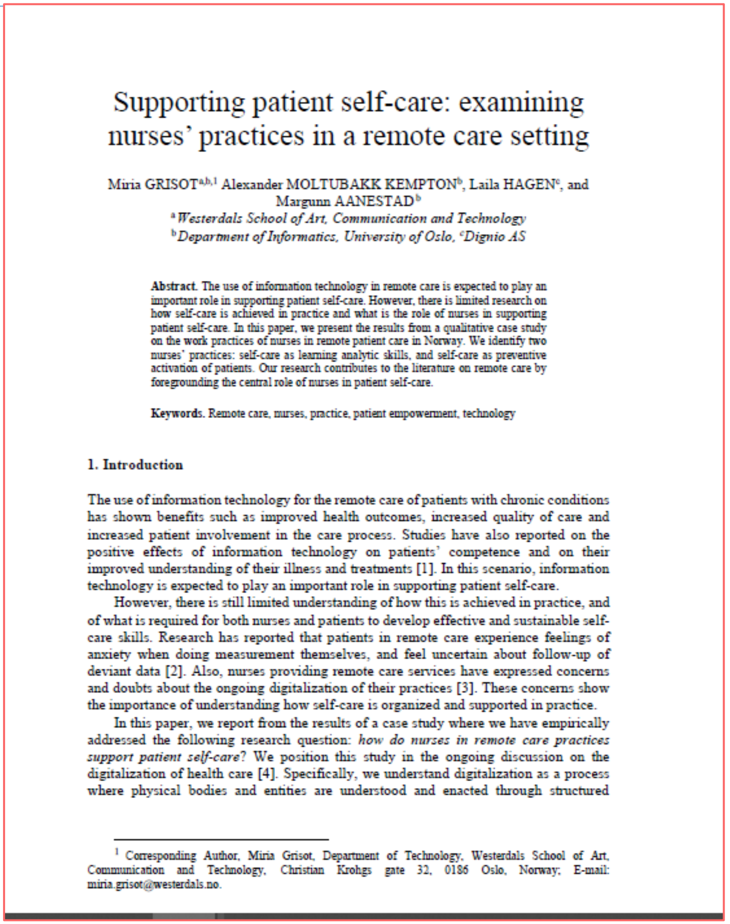
Abstract
Healthcare professionals are increasingly working with data in their care delivery practices. However, there is limited understanding of how data work is enabling novel practices. This study focuses on novel nursing practices emerging in the context of remote monitoring of chronic patients. Specifically, we analyze how personalization of care is achieved in practice through data work. The study is based on a case of a pilot center in Norway where nurses provide remote care to patients by using a specialized system. We examine the practices of the nurses and how data in the form of graphs, alerts, questionnaires and messages are used to personalize care. We identify three main practices of data work for personalization: preparatory work, continuous adjustment and question fine-tuning. Finally, we discuss the pivotal role of nurses' data work for personalized care in remote care.

Keywords
data work, information systems, nurse, personalization, remote care, telemonitoring

PART OF THE CURRICULUM!

Continued..

- How can nurses contribute to patients taking ‘ownership’ and responsibility over their own disease?
- Same case (as previous articlle), but focus on the nurses’ communikation with the patients
- Two types of «training work»:
  - Teaching patients to understand own data (analytical skills), through providing explanations and justifications for assessments and decisions
  - «Mobilize» them to act/take resonsibility:
    - Directly: recommendations/advice, making plans...
    - Indirectly: feedbakc, questions: *“we ask about sleeping, not because we want to know if a patient has slept or not, but because we want them to realize that there is a relation between how they sleep and their condition and use of medications”.*



Supporting patient self-care: examining nurses’ practices in a remote care setting

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Abstract. The use of information technology in remote care is expected to play an important role in supporting patient self-care. However, there is limited research on how self-care is achieved in practice and what is the role of nurses in supporting patient self-care. In this paper, we present the results from a qualitative case study on the work practices of nurses in remote patient care in Norway. We identify two nurses’ practices: self-care as learning analytic skills, and self-care as preventive activation of patients. Our research contributes to the literature on remote care by foregrounding the central role of nurses in patient self-care.

Keywords. Remote care, nurses, practice, patient empowerment, technology

1. Introduction

The use of information technology for the remote care of patients with chronic conditions has shown benefits such as improved health outcomes, increased quality of care and increased patient involvement in the care process. Studies have also reported on the positive effects of information technology on patients’ competence and on their improved understanding of their illness and treatments [1]. In this scenario, information technology is expected to play an important role in supporting patient self-care.

However, there is still limited understanding of how this is achieved in practice, and of what is required for both nurses and patients to develop effective and sustainable self-care skills. Research has reported that patients in remote care experience feelings of anxiety when doing measurement themselves, and feel uncertain about follow-up of deviant data [2]. Also, nurses providing remote care services have expressed concerns and doubts about the ongoing digitalization of their practices [3]. These concerns show the importance of understanding how self-care is organized and supported in practice.

In this paper, we report from the results of a case study where we have empirically addressed the following research question: *how do nurses in remote care practices support patient self-care*? We position this study in the ongoing discussion on the digitalization of health care [4]. Specifically, we understand digitalization as a process where physical bodies and entities are understood and enacted through structured

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Grisot, M., Moltubakk Kempton, A., Hagen, L., & Aanestad, M. (2018). Supporting Patient Self-Care: Examining Nurses' Practices in a Remote Care Setting. In *Building Continents of Knowledge in Oceans of Data: The Future of Co-Created eHealth* (pp. 601-605). IOS Press.

Digitally mediated care – what is lost and what is gained?

- *Homecare nurse on a conference on telecare:*
  - *I think, as a nurse you have a kind of 6th sense. When you visit patients at home, you immediately sense when something is wrong. It is very hard to put into words, but it is pivotal for your work. If you use a webcam, you wouldn't, for instance, be able to smell the dishes that are there for a long time. What happens if you take that away? Wouldn't you destroy the heart of that it means to be a nurse? That is what I am worried about.*
- More intensive og more specialized follow-up
- Compensatoric practises, new insights
- Multi-dimensional change, not just "better"/"worse"

Health Care Anal (2010) 18:374–388
DOI 10.1007/s10728-009-0140-1

ORIGINAL ARTICLE

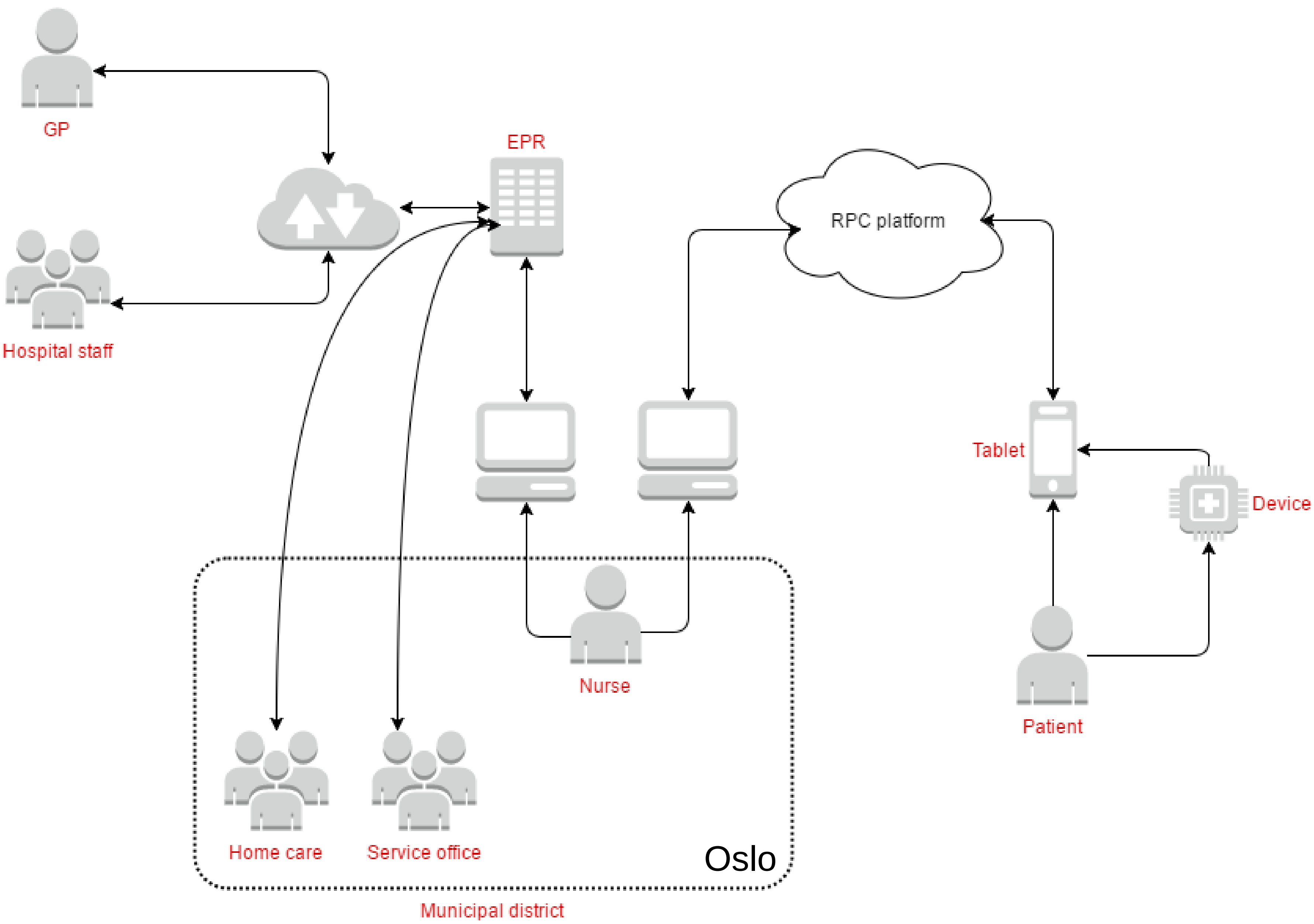
The Heart of the Matter. About Good Nursing and Telecare

Jeannette Pols

Published online: 10 January 2010

Abstract Nurses and ethicists worry that the implementation of care at a distance or telecare will impoverish patient care by taking out 'the heart' of the clinical work. This means that telecare is feared to induce the neglect of patients, and to possibly hinder the development of a personal relation between nurse and patient. This study aims to analyse whether these worries are warranted by analysing Dutch care practices using telemonitoring in care for chronic patients in the Netherlands. How do clinical practices of nursing change when telecare devices are introduced and what this means for notions and norms of good nursing? The paper concludes that at this point the practices studied do not warrant the fear of negligence and compromised relations. Quite the contrary; in the practices studied, telecare lead to more frequent and more specialised contacts between nurses and patients. The paper concludes by reflecting on the ethical implications of these changes.

Keywords Good nursing · Empirical ethics · Telecare · Clinical practice · Health care technology · Ethnography



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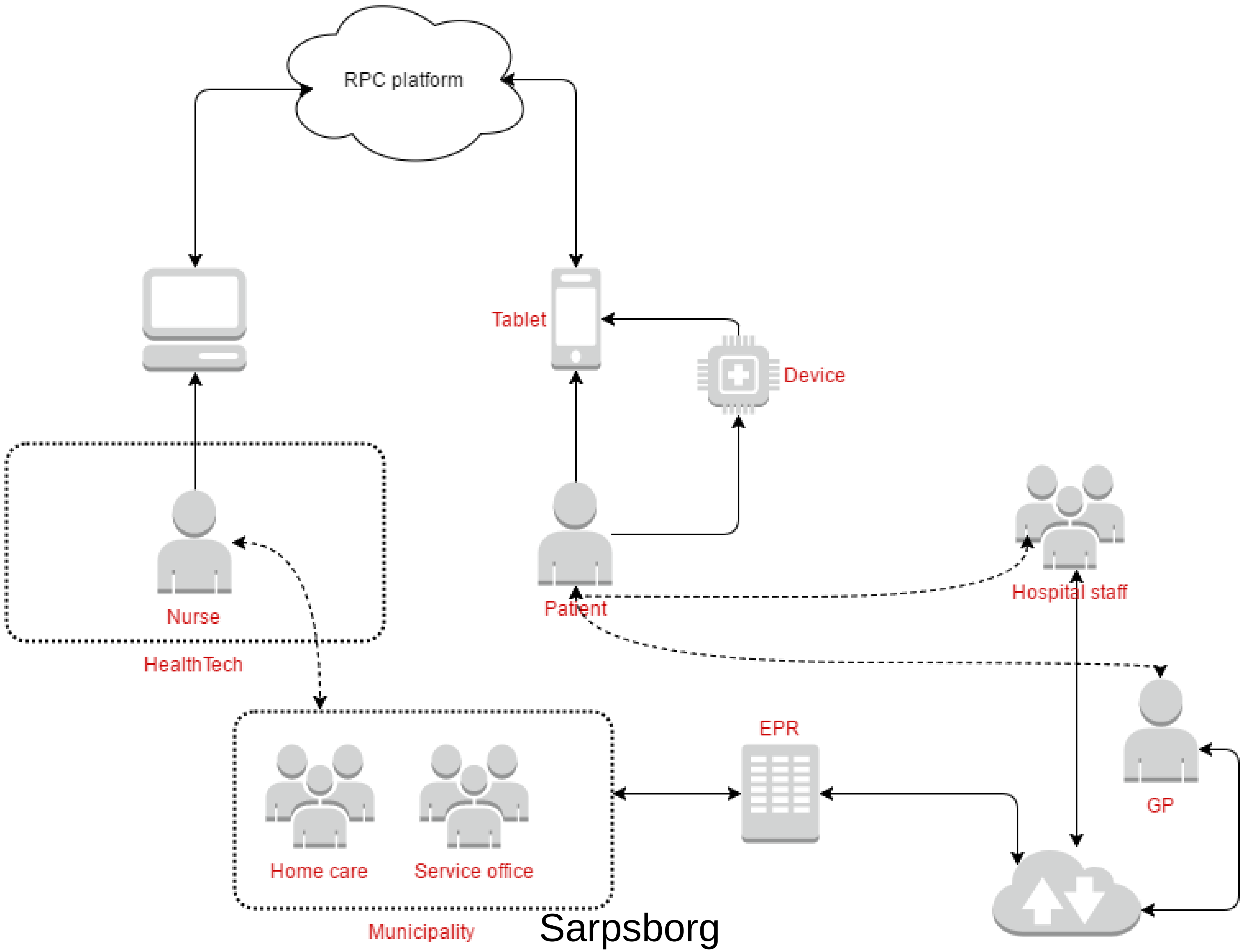

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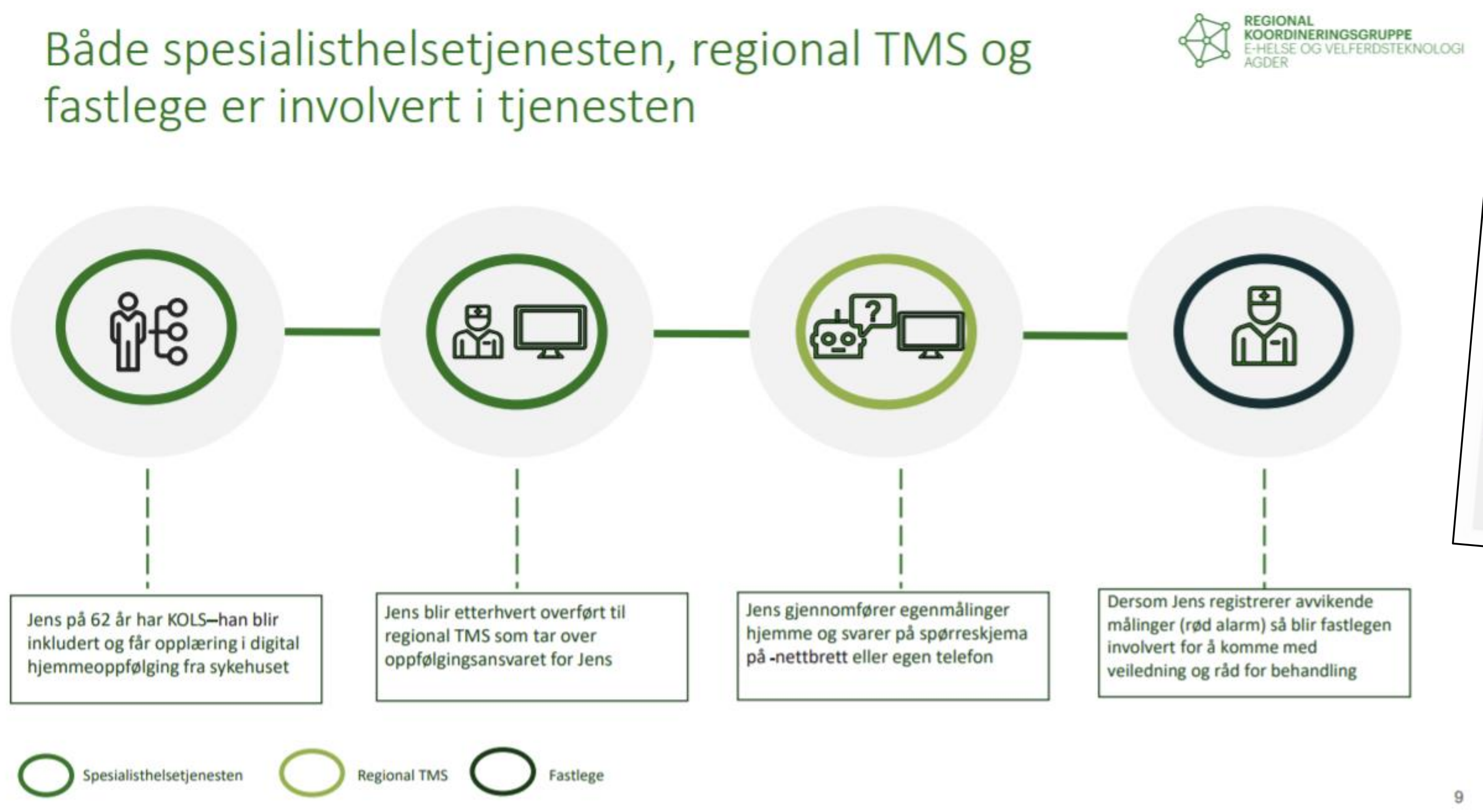
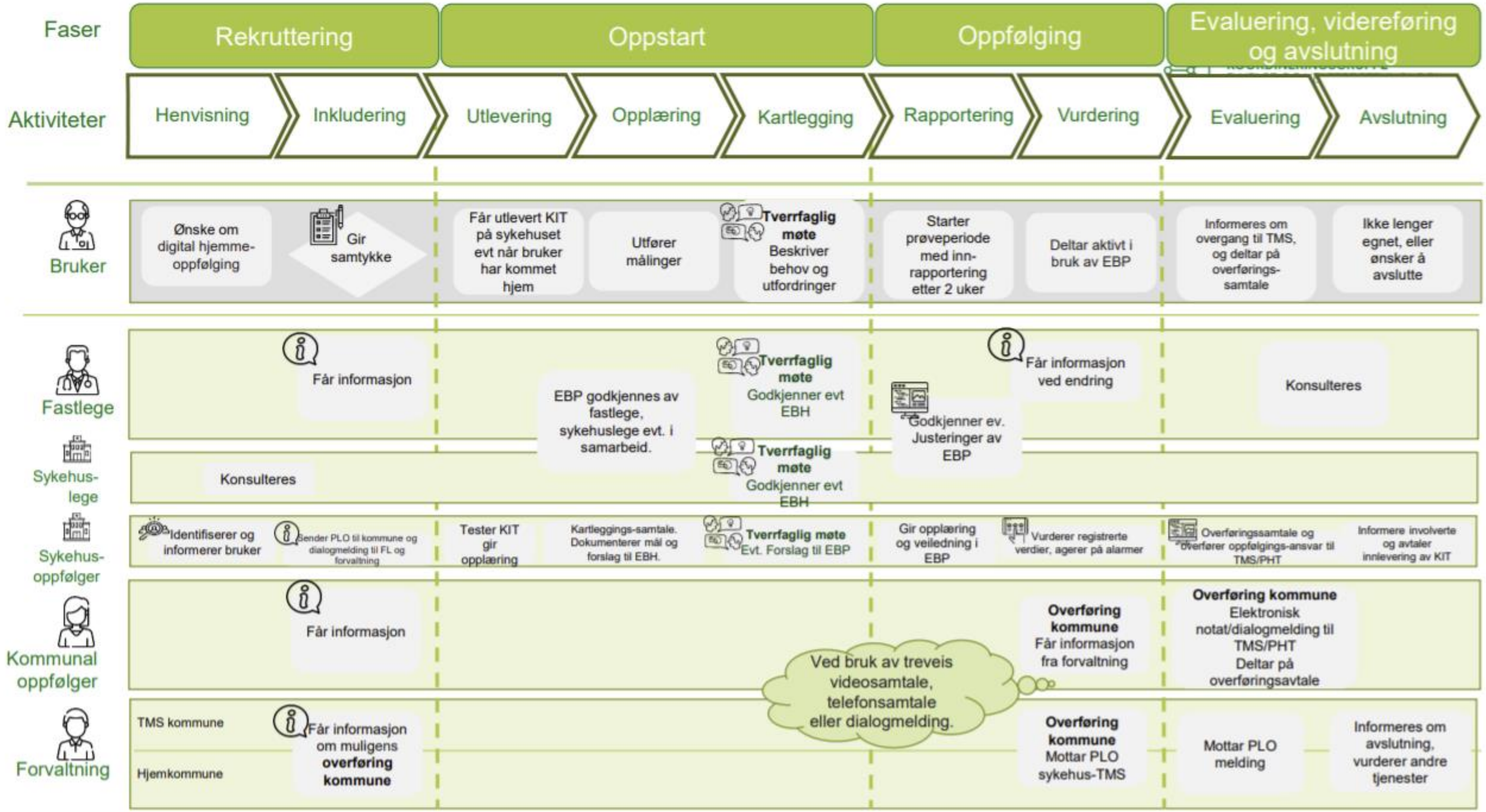
Digital home care

- DHC challenges the established organisational structures:
- Who should be responsible for the care offerend in the home?
  - The General Practitioner (fastlege)?
  - A telemedicince central (municipal or vendor-operated?)
  - Distributed (to the ambulant nurses in the homecare service?)
  - A hospital department?
- Ideally digital homecare should be organized in an integrated system (by the organizational structure called ‘helsefelleskap’)
- Possible assymetry related to investment (costs) and savings (gain)
- Tensions around decisons about which patients to include:
  - Who should be able to ‘prescribe’ digital homecare?
  - Should it be based on diagnose, prevention potential or need? (Forebyggende vs. nødvendig helsehjelp)
  - Transfers, handover of responsibility, cost coverage

Example from Agder



https://www.ehelseagder.no/wp-content/uploads/2021/05/2021_04-Vedlegg-Erfaringsrapport-DHO-sykehuspilot-.pdf



Faser
Rekruttering
Oppstart
Oppfølging
Evaluering, videreføring og avslutning
Aktiviteter
Henvisning
Inkludering
Utlevering
Opplæring
Kartlegging
Rapportering
Vurdering
Evaluering
Avslutning
Bruker
Ønske om digital hjemme-oppfølging
Gir samtykke
Får utlevert KIT på sykehuset evt når bruker har kommet hjem
Utfører målinger
Tverrfaglig møte Beskriver behov og utfordringer
Starter prøveperiode med inn-rapportering etter 2 uker
Deltar aktivt i bruk av EBP
Informeres om overgang til TMS, og deltar på overførings-samtale
Ikke lenger egnet, eller ønsker å avslutte
Fastlege
Får informasjon
EBP godkjennes av fastlege, sykehuslege evt. i samarbeid.
Tverrfaglig møte Godkjenner evt EBH
Godkjenner ev. Justeringer av EBP
Får informasjon ved endring
Konsulteres
Sykehus-lege
Konsulteres
Tverrfaglig møte Godkjenner evt EBH
Sykehus-oppfølger
Identifiserer og informerer bruker
Sender PLO til kommune og dialogmelding til FL og forvaltning
Tester KIT gir opplæring
Kartleggings-samtale. Dokumenterer mål og forslag til EBH.
Tverrfaglig møte Evt. Forslag til EBP
Gir opplæring og veiledning i EBP
Vurderer registrerte verdier, agerer på alarmer
Overføringssamtale og overfører oppfølgings-ansvar til TMS/PHT
Informere involverte og avtaler innlevering av KIT
Kommunal oppfølger
Får informasjon
Ved bruk av treveis videosamtale, telefonsamtale eller dialogmelding.
Overføring kommune Får informasjon fra forvaltning
Overføring kommune Elektronisk notat/dialogmelding til TMS/PHT Deltar på overføringsavtale
Forvaltning
TMS kommune
Hjemkommune
Får informasjon om muligens overføring kommune
Overføring kommune Mottar PLO sykehus-TMS
Mottar PLO melding
Informeres om avslutning, vurderer andre tjenester

Det er skissert en fordeling av ansvar for aktiviteter tilknyttet digital oppfølging fra sykehus med overgang til kommune

REGIONAL KOORDINERINGSGRUPPE
E-HELSE OG VELFERDSTEKNOLOGI
AGDER

Aktivitet	Bruker / pårørende	Fastlege	Sykehus-oppfølger	Sykehus-lege	Kommunal Oppfølger	Forvaltning TMS / Forvaltning Hjem
Identifisering/henvisning			A			
Inkludering			A U	R		R
Tildeling av utstyr			A U			
Opplæring	U		A U R			
Kartlegging (EBP)	U R	R A	U R	A R		
Rapportering	A		U			
Vurdering	U	R	A		R	
Evaluering	R	A	U R		U R	R
Avslutning	R	A	U R		U R	R

A = Ansvarlig U = Utførende R = Rådgivende

Group discussions:

Remote digital monitoring:

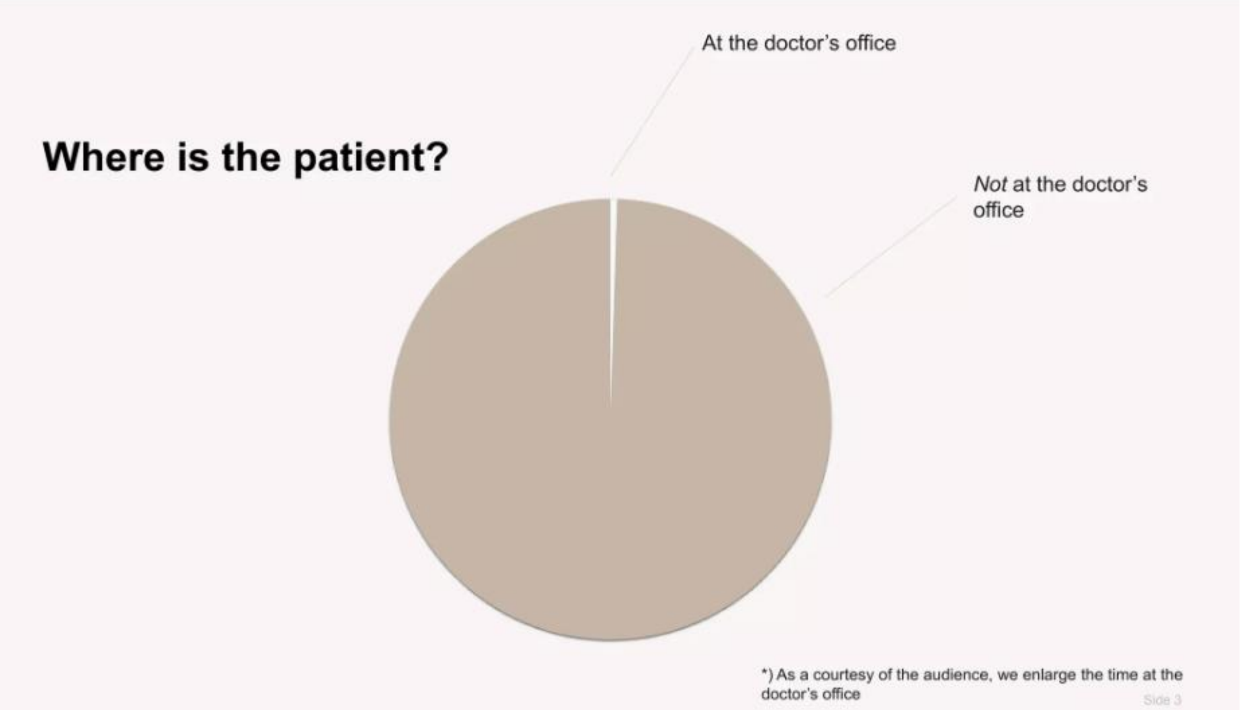
What would it take to offer these health services in the form of ‘predictive maintenance’?

Medical devices for mobile phones

https://starfishmedical.com/blog/smartphones-as-a-medical-device/

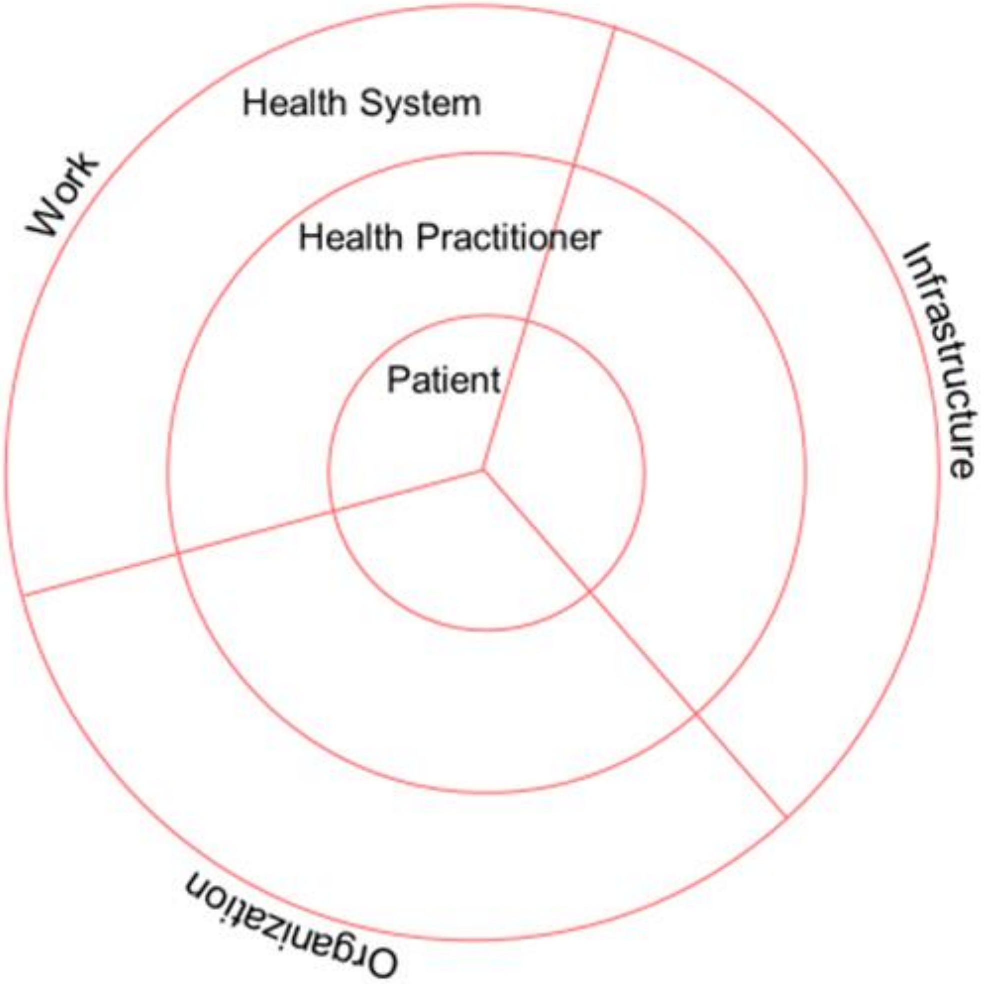
Person-generated health data

«Mobiltelefonen registrerer bevegelsene våre, og den måler skrittene vi tar. På hånden har vi smartklokke med pulsmåler og 2-avlednings EKG. Implanterbare sensorer måler kontinuerlig blodsukker og hormoner. Sensorene måler kjente markører, men også markører vi aldri før har brukt som grunnlag for beslutninger»



[Kronikk i Dagens Medisin 2019]

Ole K. Losvik: «Sharing health data with the patient»
https://www.slideshare.net/losvik/sharing-health-data-with-the-patient


Health System
Work
Health Practitioner
Infrastructure
Patient
Organization