

UNIVERSITY OF OSLO

Data, work and organization

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IN5090, 17 February 2025



Agenda for today:

Information production and use in primary healthcare work

- Focus: documentation practices (writing/reading in EPR systems)
- (Examples of what a 'practice'-orientation means)

Individual practices (documentation) must be understood in relation to the work with the patient and in relation to the collective (the readers/users of the information)

- How 'near' or 'far away' are these other readers or information users?
- How different are the information needs and practices?

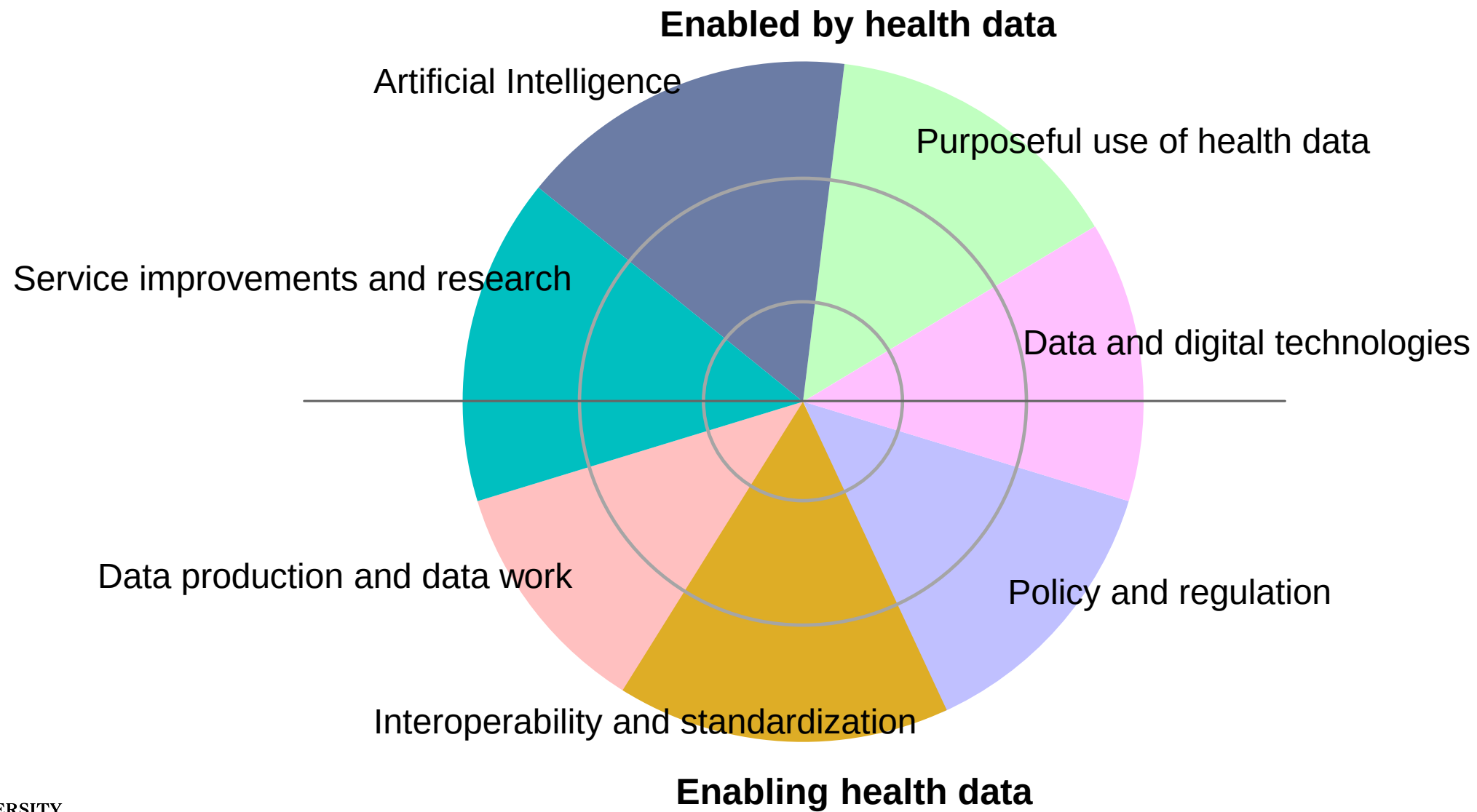
Implications for design of digital technologies, for standardization etc.

Readings:

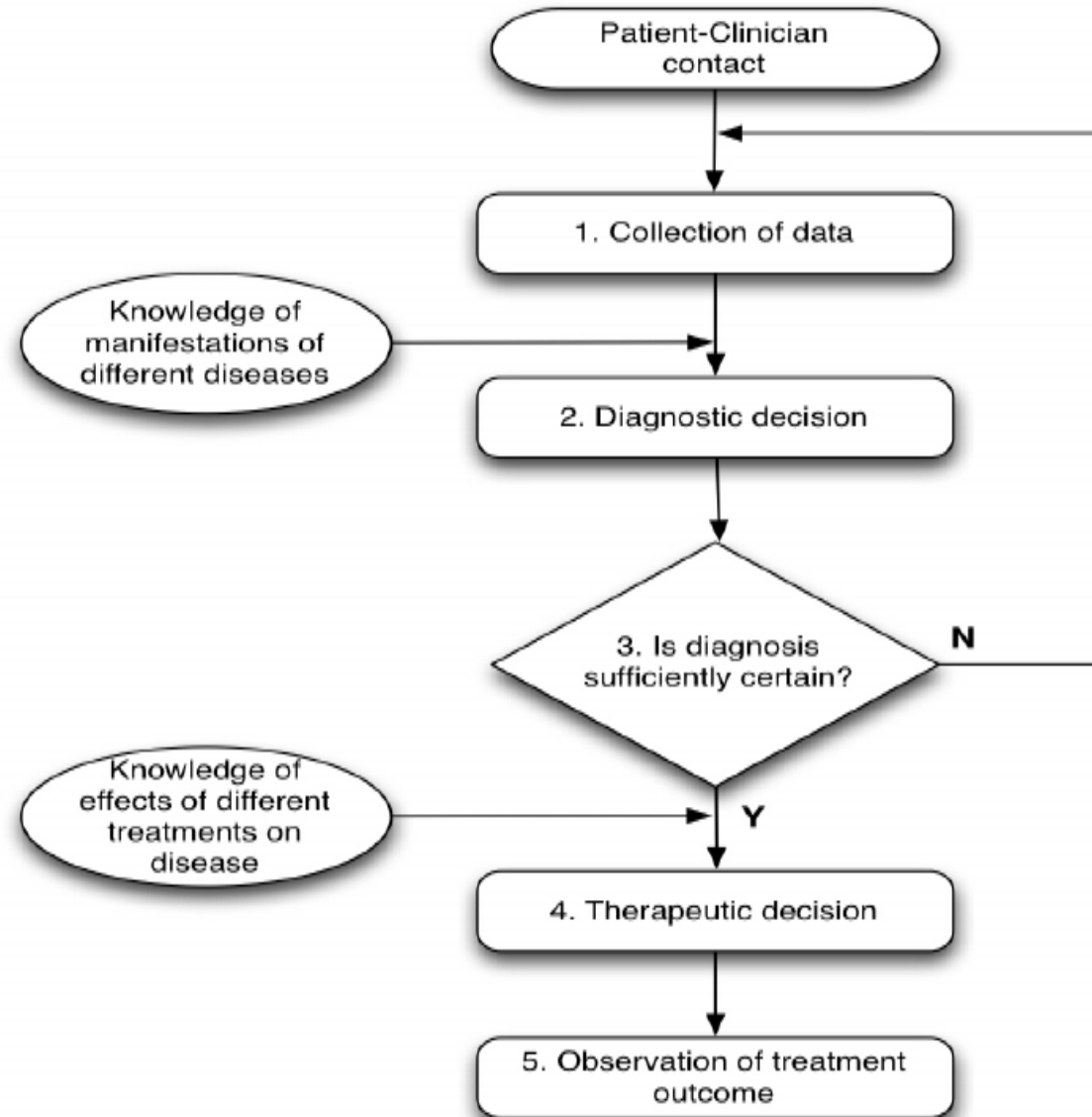
Berg, M. (2004). Health information management: integrating information technology in health care work.

- “Health care work and patient care information systems”. Chapter 3
- “The contextual nature of information”. Chapter 4

Oborn, E., Barrett, M., & Davidson, E. (2011). Unity in diversity: Electronic patient record use in multidisciplinary practice. *Information Systems Research*, 22(3), 547-564.



Data/Information is central for healthcare work



Broadening the discussion:

Individual → collective

Clinical only → more aspects

Concrete examples in the rest of the lecture:

- Data and documentation for different purposes:
 1. Conveying clinical information to colleagues
 2. Managing healthcare work
 3. Coordinating work (within a team and/or over time)
 4. Collaboration beyond immediate colleagues («arms-length collaboration»)

1) Documentation for collaboration with colleagues
(conveying clinical information)

Marc Berg: «The contextual nature of information»

Health care information can be used for different purposes. Primary purposes are those purposes directly linked to the work of professionals (and patients) around the patient's trajectory. Secondary purposes include all those purposes that are one step removed from the primary care process, such as administrative, research, accountability, management purposes and so forth.

Berg, Marc: "The contextual nature of information». Chapter 4 in Berg m.fl. (2003): Health Information Management Integrating information technology in health care work, side 62 – 78.

See also:

Berg, M., & Goorman, E. (1999). The contextual nature of medical information. *International journal of medical informatics*, 56(1-3), 51-60.

Marc Berg: «The contextual nature of information»

Example: Agnes in the ICU

Cardiac
Heart rate: ____ Rhythm: ____ Murmurs: ____
Tension (sys/dias): ____ mmHg CVD: ____ mmHg PWAP: ____ mmHG PAP (sys/dias/mean): ____ mmHg
Remarks: _____

- This was a stable, routine case – not appropriate to conduct extensive exams/document too much (situation determines economy)
- Data entries mutually elaborate on one another (also temporally)
- Agnes is an experienced physician (information is assessed in light of the source's credibility)

More on documentation practices (1)



General Practitioners (GPs) in the UK

Concern: how to not 'destroy' existing work practices when digitalizing the EPR

«seemingly individual activities, such as reading and writing, rest upon complex and systematic social practices”

Heath, C., & Luff, P. (1996). Documents and professional practice: “bad” organisational reasons for “good” clinical records. In Proceedings of the 1996 ACM conference on Computer supported cooperative work (pp. 354-363).

Heath & Luff (1996):

- Aren't these records inadequate?
- Information content:
 - Time + place
 - The patient's complaint
 - The GP's diagnosis/assessment
 - Treatment

28/9/85	c.	Vomited x2 in night Maxolon 10bd (300m)
11.8.95	c.	Not good- irritable Pain better, but drowsy in morning restart diary
22.5.95	a.	Diary OK for 1wk R elbow pain -less tender ^ Doth to 150
12/1/86	v.	Died 12.30 am
3/12/86	c.	Dog bite Rf (.....) Tetanus Toxoid 0.5 ml
22/4/86	c.	cold also rheumatism cert 1/52 Paracetamol
24.2.95	a.	all tests normal feeling low tearful fragile start prozac see 10d for inj R tennis elbow

Heath & Luff (1996):

Writing should make sense to other GPs

- Information given vs information omitted
- Entries written wrt other entries
- Economic writing, still understandable

3/12/80 c eye now appears virtually normal
Neospurin

The absence of potentially relevant information within the entry, would encourage any general practitioner to turn to the previous entry to see whether it casts light on the consultation. In the case at hand we find:

26/11/80 c conjunctivitis
Albacid 10%

10/2/73 c. Tonsillitis
Apsin (30) 250 mg)

14/3/84 c. 'fed up'

13/2/73 c. feeling sick
Depressed.
Valium (15) (5 mg)

14/4/83 c. 'badly bruised'
cert 1/4
r/f Brook Centre

12/6/74 c. can't get up
Librium (30) (10mg)
r/f AA

2/11/82 c. tired and weepy
r/f GC

More on documentation practices (2)

S. Bedker, N. O. Bouvin, W. Lutters, V. Wulf and L. Cioffi (eds.)
ECSCW 2011: Proceedings of the 12th European Conference on Computer Supported Cooperative Work,
24-29 September 2011, Aarhus, Denmark
© Springer 2011

The Use of Narratives in Medical Work: A Field Study of Physician-Patient Consultations

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Abstract. Medical reasoning involves more than just summarizing clinical data and guidelines. Illness trajectories of chronic patients are often long, complex and full of uncertain information that requires interpretation. Understanding the complex interrelations is an important aspect of medical reasoning that displays narrative rather than scientific characteristics. While the qualities of the medical record as a repository of information or as a coordinative tool are well known, the role it plays in the unfolding of narratives in medical reasoning is less discussed. This paper examines this issue through a case study of patient consultations that take place as part of a distributed treatment of chronic heart patients. We found that the record, even though fragmented and to some extent incomplete, enables the physician to construct an *ad hoc* narrative. During the actual consultation, physicians and patients unfold a more detailed narrative, which we refer to as the *re-emplotted narrative*, that includes additional information and entails a collaborative exploration of uncertainties. While this may point to some inadequacies of the medical record as a supportive tool for the process of unfolding narrative, we suggest that it is in fact a crucial component of the medical reasoning activity that must be considered in design of supportive systems.

Focus: not just on single entries, but on the construction of narratives. The evolution from ad-hoc narratives, to later re-plotment

«Medical reasoning involves more than just summarizing clinical data and guidelines. Illness trajectories of chronic patients are often long, complex and full of uncertain information that requires interpretation. Understanding the complex interrelations is an important aspect of medical reasoning that displays narrative rather than scientific characteristics. While the qualities of the medical record as a repository of information or as a coordinative tool are well known, the role it plays in the unfolding of narratives in medical reasoning is less discussed.»

(Mønsted et al. 2011)

Some progress notes contain very concise data on the patient's current condition and state of the treatment. This type of progress notes report on a narrow set of issues concerning the particular consultation:

As of today, patient attended a consultation with a nurse in the heart failure clinic.

The patient's son took part in the consultation.

See HjerterPlus under standard forms.

Blood pressure 120/60. Weight 65,9 kg NYHA 1.

Pt is in a good state of health.

Plan: Cres Caps. Odric 2mg x 1 vesper.

Ct. other medicine unchanged.

Pt. have appointed with physician at 8/10 09.

Pt. gives consent to the above mentioned.

(Mønsted et al. 2011)

However, some progress notes have a more narrative character and reveal fragments of the patient's past illness trajectory, particular findings that influence the treatment plan, and uncertainties that must be taken into consideration. These progress notes, therefore, not only provide the reader with clinical facts, but also provide parts of the context surrounding the medical reasoning performed at a particular consultation.

Pt was admitted with incompensation for 6 months ago, presumably with secondary to paroxysmal atrial fibrillation.

EF was 25% and there was light mitral insufficiency and severe pulmonary hypertension. KAG was attempted, but could not be accomplished due to severe calcification of a. femoralis. It has been decided to complete the medical treatment alone. Pt has tolerated the treatment well under NYHA class 1-2, no chest pain or syncope. Blood samples not abnormal. Blood pressure 140/60, pulse 75 beats per minutes.

(This was followed by a comprehensive medicine list)

(Mønsted et al. 2011)

More on documentation practices (3)

Harold Garfinkel: «Good» organizational reasons for «bad» clinic records. In: Studies in ethnomethodology, p. 189-207.

When any case folder [medical record] was read as an actuarial record its contents fell so far short of accuracy as to leave us puzzled as to why "poor records" as poor as these should nevertheless be so assiduously kept. On the other hand, when folder documents were regarded as unformulated terms of a potential therapeutic contract, ie as documents assembled in the folder in open anticipation of some occasion when the terms of a therapeutic contract might have to be formulated from them, the assiduousness with which folders were kept, even though their contents were extremely uneven in quantity and quality, began to "make sense".

Intermediary sum-up:

- Healthcare documentation may appear to be 'inadequate'
- The documentation practice is shaped by:
 - Situational factors (it is pragmatic and 'economic')
 - Established social practice for reading and writing
 - Evolution of patient trajectories (so is provisional, tentative)

Which problems can this cause?

2) Documentation for management, research etc.

Secondary data usage (in local context/within hospital)

- Within the hospital, information is used both for coordination of work and for other administrative purposes
- Some examples of administrative purposes:
 - Patient administrative information, e.g. admissions, discharges give insight into the utilization of resources, length of waiting lists, etc.
 - Clinical information, e.g. diagnoses, procedures must be 'coded' (E.g., ICD-codes → reports to the NPR → DRG-groups → payment)
 - Clinical information, e.g. on complications, infections is important for quality improvement work and compliance with guidelines (e.g. monitor antibiotics usage)

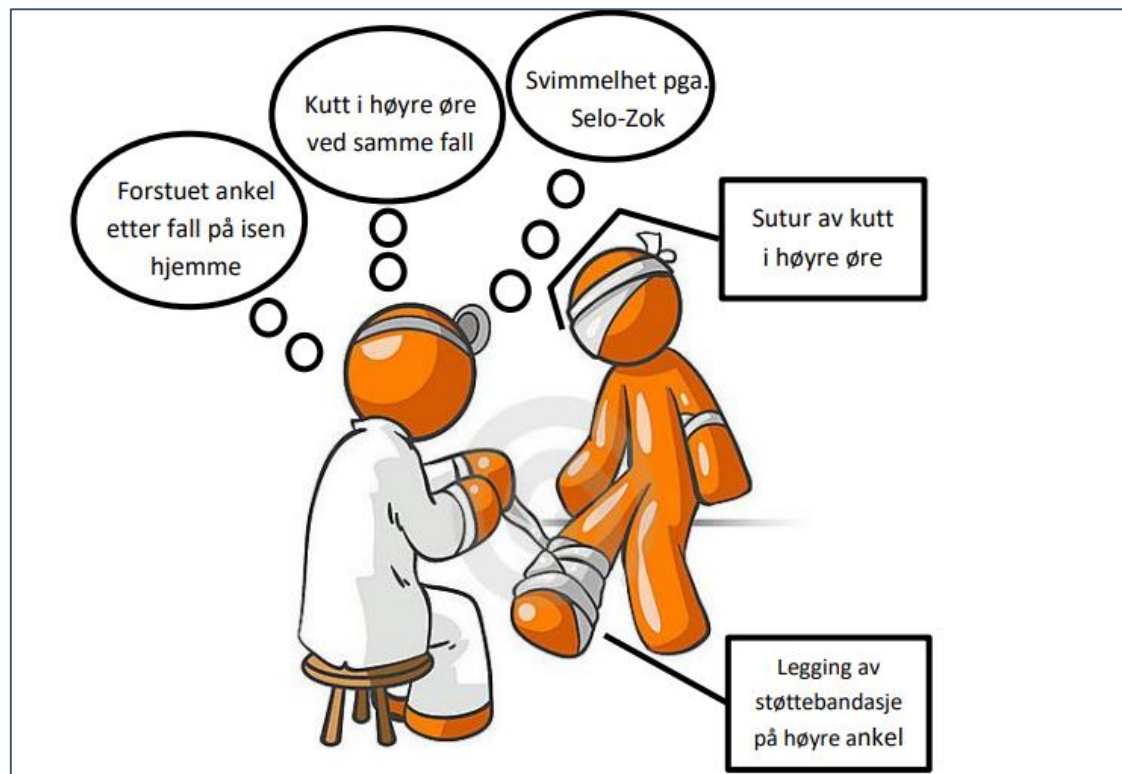
Secondary data use (beyond local context)

- Governmental / State administrative reporting
 - Population register and other civil registries (birth, death)
 - Report to regional/global bodies – e.g., WHO, OECD, other ...
- Ministry of Health and Care – supporting and overseeing the service
 - National Patient Register – DRG points → financing
 - Performance (e.g. waiting times, satisfactions, quality aspects)
- Public health-related reporting:
 - Infectious diseases (MSIS): HIV/AIDS, TB, etc.
 - Vaccination status (SYSVAK)
- Various health registries (medical procedures, specific diagnoses/patient groups)
- For research purposes

Back to Berg's argument (chapter 4):

- When data are so entangled with their context – how can they “travel”?
- → It requires extra work!
- Examples of “non-perfect”, but useful information for ‘local’ use:
 - The fluid balance sheet
 - Prescribe medication/ICPC
 - Select candidates for vaccination from patient list
- Usage beyond the immediate context (for the primary use purpose) may require extra work in order to be sufficiently precise.
 - “Disentangle from the context”
- Who should do the extra work?

The practice of coding is non-trivial



Tilstand nr. 1, hovedtilstanden

Kode nr. 1 **S93.4 Forstuing og forstrekking av ankelligament**

(Kode nr. 2 **W0n0r Fallulykke i bolig eller boligområde under annen aktivitet**)

Tilstand nr. 2, annen tilstand (enn hovedtilstanden)

Kode nr. 1 **S01.3 Åpent sår i øre**

(Kode nr. 2 **W0n0r Fallulykke i bolig eller boligområde under annen aktivitet**)

Tilstand nr. 3, annen tilstand (enn hovedtilstanden)

Kode nr. 1 **R42 Svimmelhet**

Kode nr. 2 **Y4n Terapeutiske legemidler eller biologiske substanser i terapeutiske doser som årsak til bivirkning eller annen uønsket virkning**

Kode nr. 3 **C07A B02 Metoprolol**

Prosedyre nr. 1

Kode nr. 1 **NHX 30 Myk bandasje på ankel eller fot**

Kode nr. 2 **ZXA 00 Høyre side**

Prosedyre nr. 2

Kode nr. 1 **QAB 00 Sutur av hud på hode eller hals**

Kode nr. 2 **ZXA 00 Høyre side**

Regler og veiledning for kliniske kodeverk i spesialisthelsetjenesten (ICD-10, NCSP, NCMP og NCRP) – ehelse

<https://www.ehelse.no/kodeverk-terminologi/regler-og-veiledning-for-kliniske-kodeverk-i-spesialisthelsetjenesten-icd-10-ncsp-ncmp-og-ncrp>

DEBATT

Hva skal vi gjøre med koleraepidemien i Norge?

TEKNOLOGI

Petter Hurlen, Espen Dietrichs Om forfatterne

Statistikken viser at kolera er en hyppig innleggelsesgr norske sykehus. Kan vi løse dette med store mengder v elektrolytter, eller er det mer hensiktsmessig å kode os koleraepidemien?

Ifølge Norsk pasientregister (NPR) har 854 personer med kolera vært in norske sykehus de siste fem årene (1). Har vi oversett en nasjonal kolera Har covid-19-pandemien overskygget en annen alvorlig helsetrussel? Fo verken fagpressen eller dagspressen rapportert om!

Tidsskrifte for DnLF 25.8.2023



Kolerabakterien sprer seg som regel med skittent drikkevann. (Foto: Kateryna Kon / Shutterstock / NTB)

Tallene viste en kolera-epidemi i Norge, men sannheten var en helt annen

Skal vi tro et av våre viktigste helseregistre, kan det se slik ut. Men trolig har tallene en helt annen forklaring, ifølge to overleger.

 Eldrid Borgan
JOURNALIST, FORSKNING.NO

PUBLISERT 15.09.2023 - 04:32

«Har vi oversett en nasjonal koleraepidemi?» spør Petter Hurlen og Espen Dietrichs i et debattinnlegg i Tidsskriftet for den norske legeforening.

Det hadde i så fall vært oppsiktsvekkende.

Tarminfeksjonen, som oftest stammer fra forurenset drikkevann, herjer fortsatt i deler av verden. Men i Norge har vi ikke hatt en koleraepidemi siden 1873, ifølge Store norske leksikon.

854 personer innlagt med kolera?

Bakgrunnen for spørsmålet er tall fra Norsk pasientregister.

Ifølge registeret skal nemlig 854 personer ha vært innlagt med kolera ved norske sykehus de siste fem årene.

Men de to forfatterne har en annen teori.

Når leger må registrere pasientens diagnose til dette nasjonale registeret, må de nemlig finne den riktige koden.

Forskning.no 23.9.2023



Det er gjort flere beregninger av hvor mange som har ME. Sintef har nylig publisert en studie basert på tall fra Norsk pasientregister. (Illustrasjonsfoto: Dima Berlin / Shutterstock / NTB)

Hvor mange har ME i Norge?

Flere har forsøkt å regne seg fram til svar.

 Nina Kristiansen
JOURNALIST

PUBLISERT 21.02.2023 - 04:30

Diskusjonen går blant forskere, leger og pasienter. Har ME en ukjent biologisk årsak som ingen har funnet fram til enda? Eller er det psyken og kroppen som sammen gjør folk syke?

Det alle derimot er enige om, er at ingen vet hvor mange som er rammet av kronisk utmattelsessyndrom – ME i Norge i dag.

Nylig kom en studie fra forskere på Sintef. De har sett på tallene for nye tilfeller av ME – også ofte kalt ME/CSF.

Forskerne brukte tall fra Norsk pasientregister.

I dette registeret finnes helseopplysninger om alle som har fått behandling i spesialisthelsetjenesten, som er sykehus, spesialister og lignende.

Forskerne fant ut hvor mange personer som har fått ME-diagnose, i perioden 2016 til 2018.

Mer enn 5.000

Det var 5.556 personer med nye ME-diagnoser i disse årene.

Det var aller flest kvinner. Det stemmer med andre studier som viser at opptil 80 prosent av de med ME er kvinner.

Forskning.no 21.2.2023

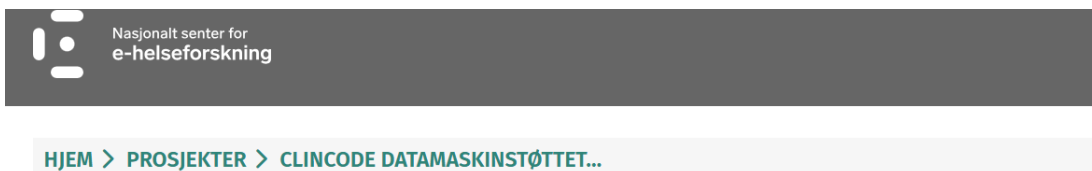
DISCUSS

- 1) Do you recognize the challenge of 'inadequate' documentation (situational, pragmatic, social practice, tentative)

- 2) What is your opinion:
 - Should healthcare personnel document 'better' because someone else will later use the data?
 - Or should they be allowed to document 'minimally'?
 - Are there other solutions?

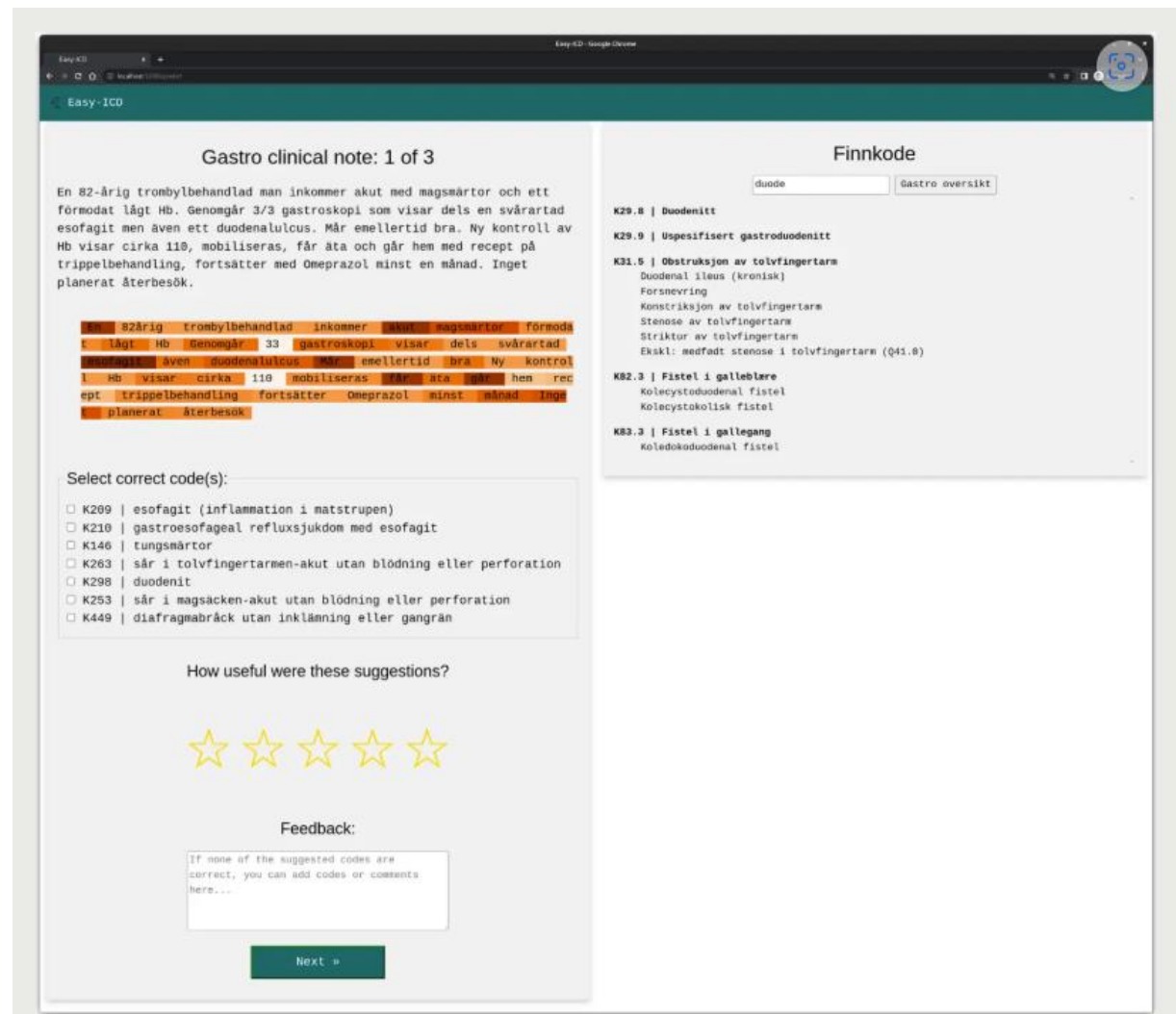
AI-support for coding

Research project: ClinCode



ClinCode Datamaskinstøttet klinisk ICD-10 koding for å forbedre effektiviteten og kvaliteten i helsetjenesten

[Link](#)



[Link](#)

Berg:

“First Law of Medical Informatics: ‘Data shall be used only for the purpose for which they were collected. If no purpose was defined prior to the collection of the data, then the data should not be used’ (van der Lei 1991).”

“We might phrase this as a second ‘law of medical information’: the more active the accumulation will be, the more work needs to be invested.”

3) Documentation for coordination and managing the work tasks

Coordination of work

- Within the hospital, information is used both for coordination of work and for other administrative purposes
- Examples of coordination of work:
 - *A drug is prescribed – has it been given to the patient?*
 - *The patient should have an MR today – when?*
 - *The patient will be discharged today, has the nursing home been informed?*
- Also these data usages would often draw on data registered in the Electronic Patient Record and other systems:

Example



Dr. Nima Shidende
Dodoma University
Tanzania

Information tools and practices in maternal
and child health services in Tanzania

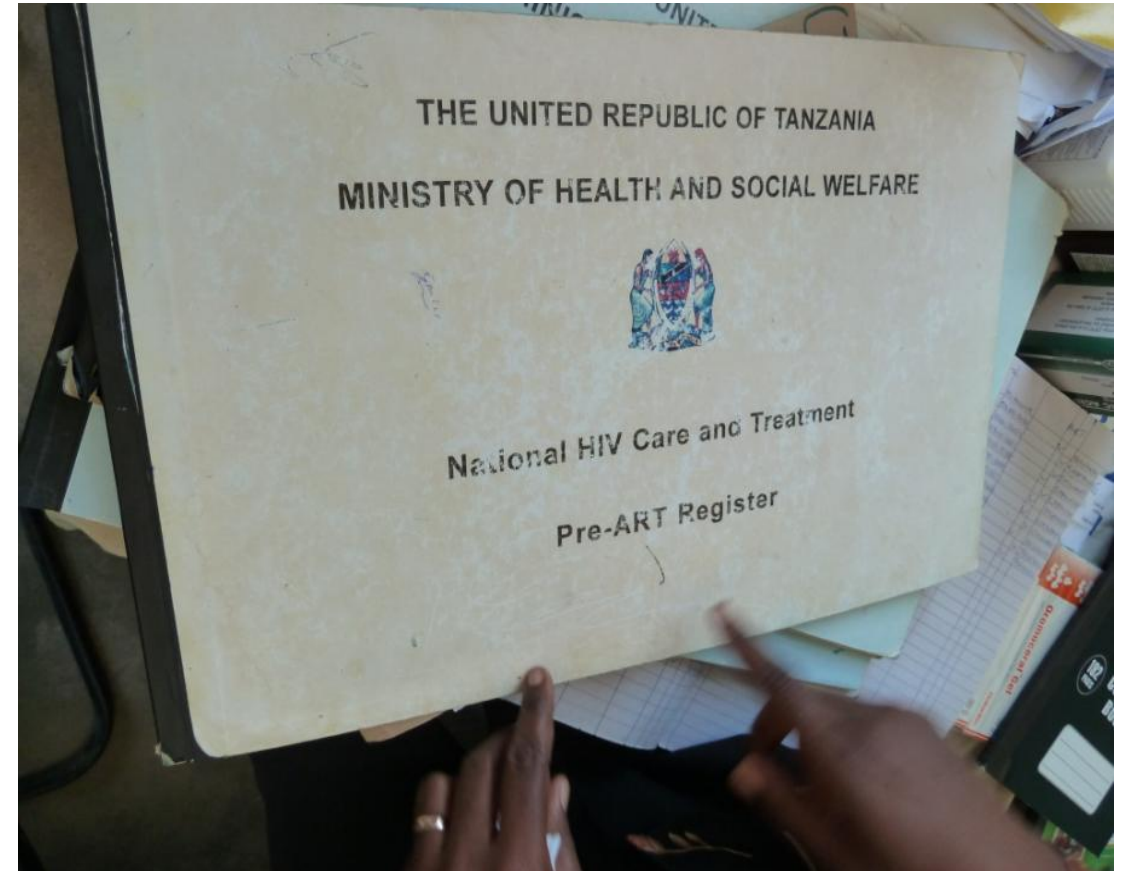
Problem: «Top-down» design of information system

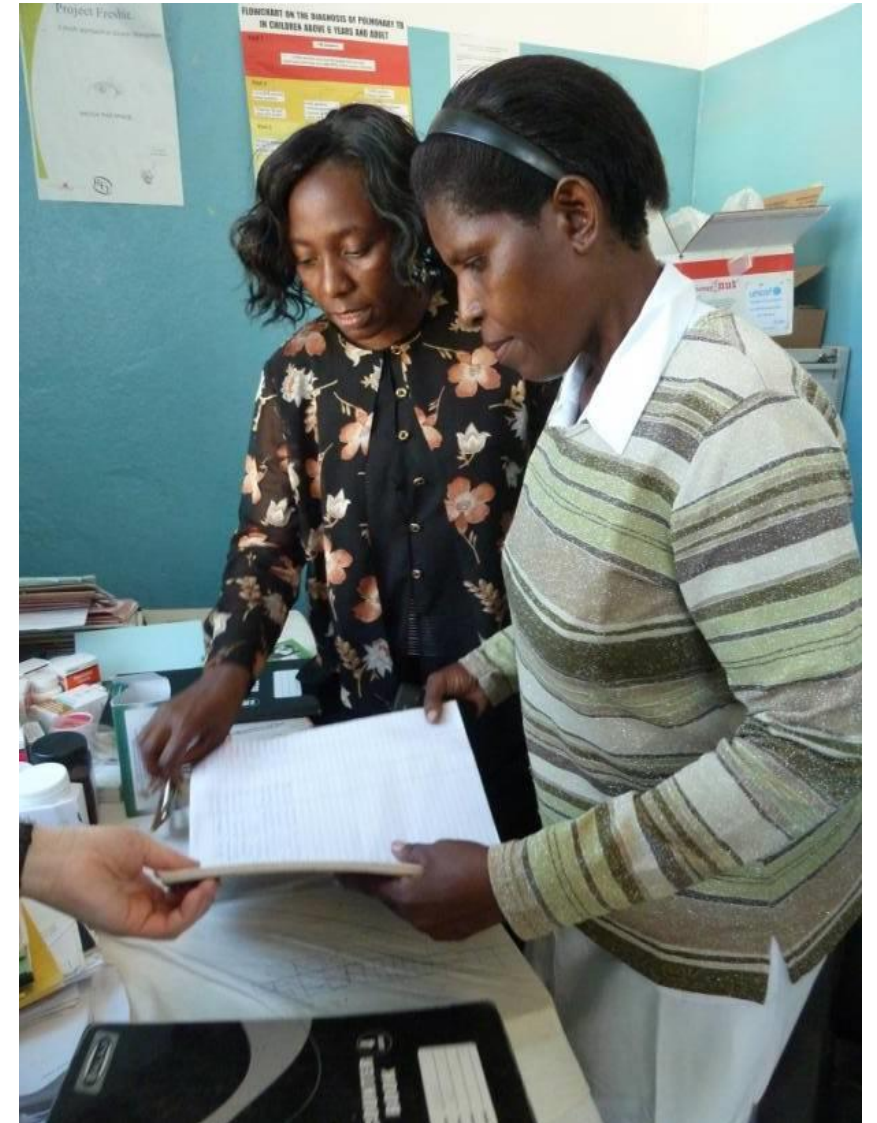
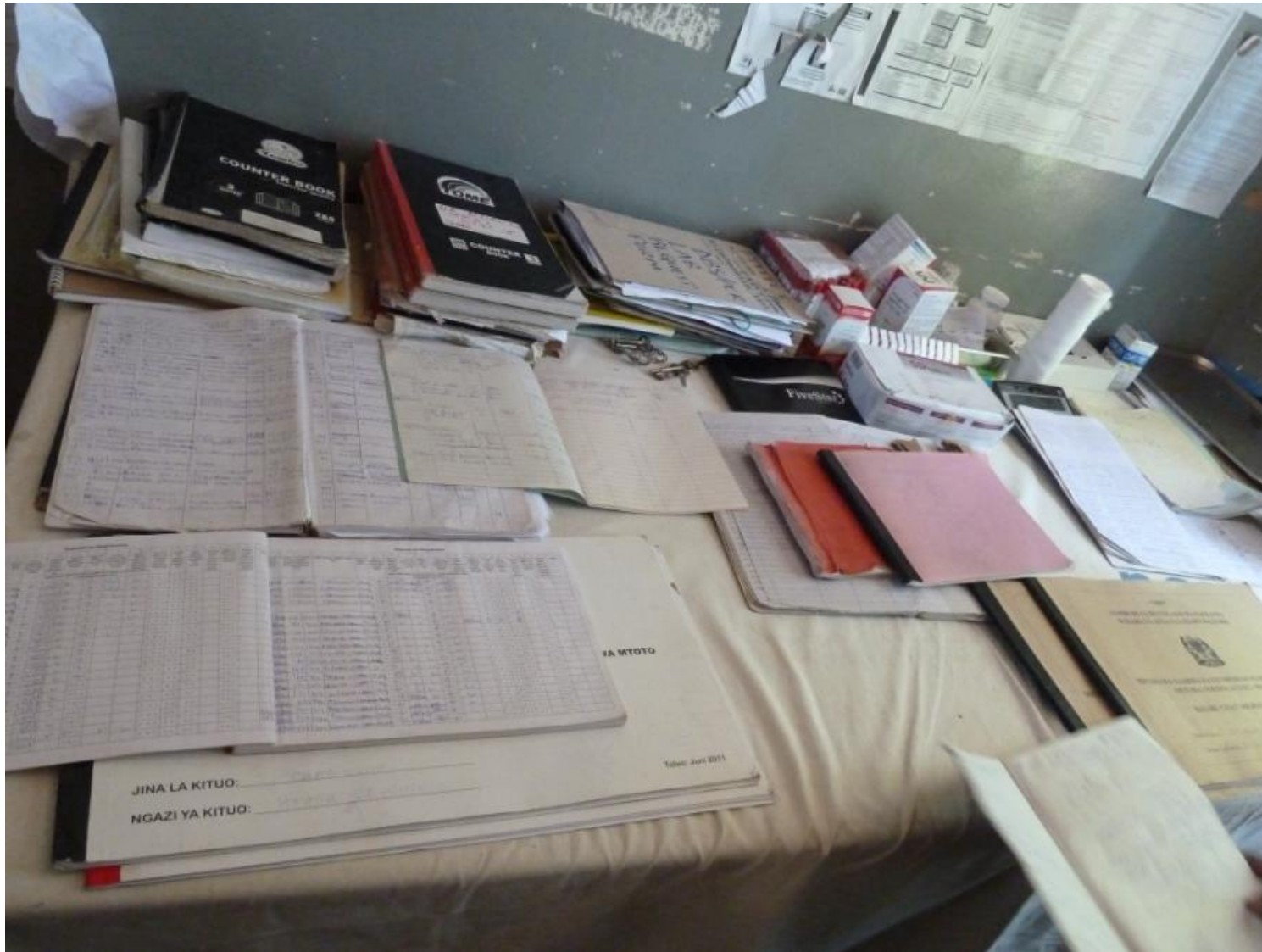
Case: HIV-positive pregnant women

Enrolled in the PMTCT program and in the ART program

Health authorities wish to know:

- How many/who are enrolled, what stage are they in, do they comply, etc.
- They distribute tally sheets, register books, etc.

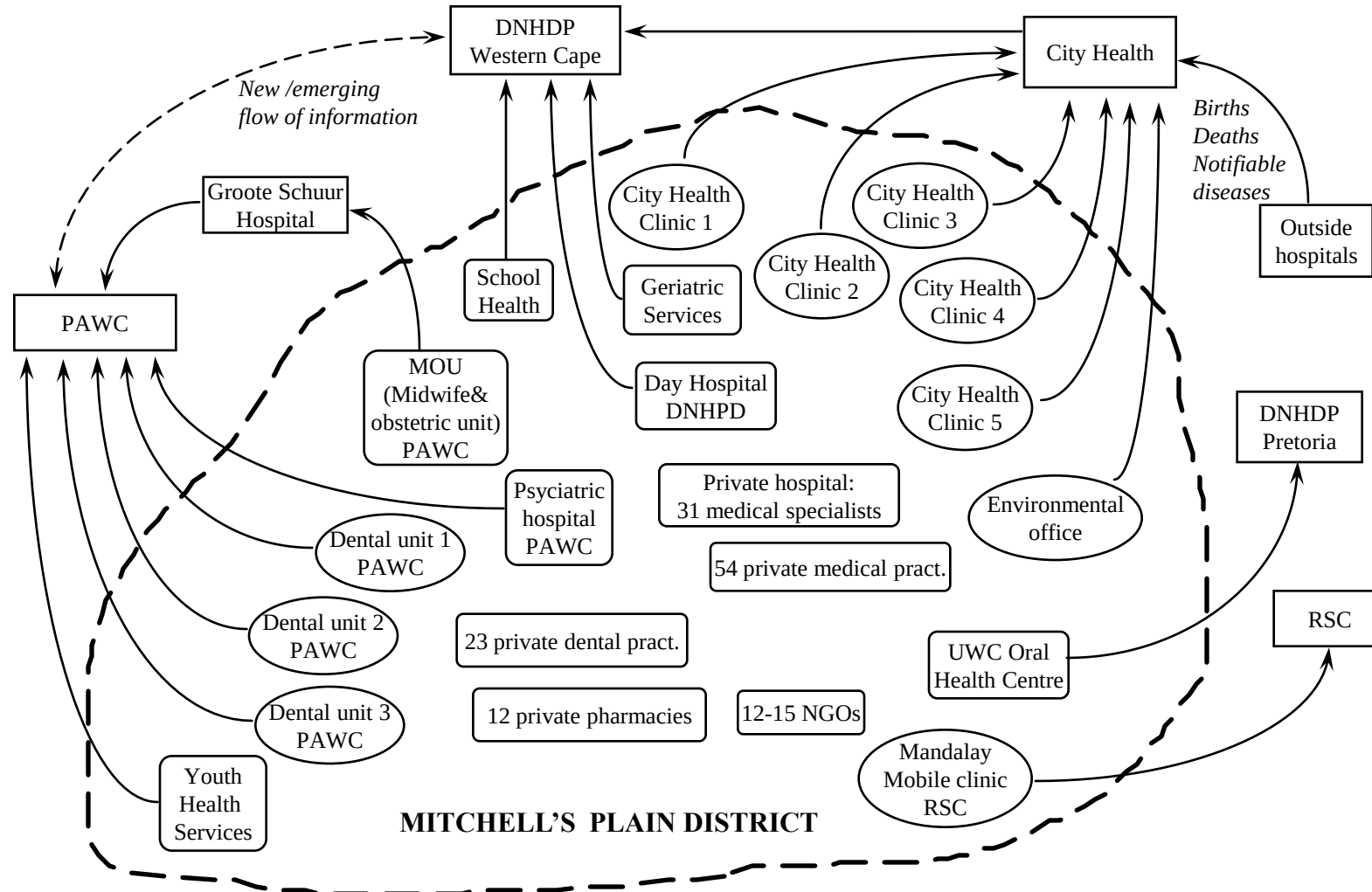




Summing up: Multiple interests around health data

- Different usages of (the same) health data → possibility for tensions
- Different interests may or may not be aligned...
 - Documentation just for primary/“here-and-now” (low re-usability)
 - Documentation mainly for secondary purposes (imposes extra work)
- Data production and use are shaped by context
 - Related to aims, needs, interests
- *A relational and processual view on data*

Sør-Afrika 1994



South Africa after Apartheid:

- fragmented and top down health structure
- inequity in health services delivery



AIM: Support local (district-level) decision making and utilization of information



4) Collaboration beyond the immediate colleagues

Oborn et al (2011): Unity in Diversity

Specialization vs. Integration in care

EPR – can one size fits all?

Describes the different documentation practices (among surgeons, radiologists, pathologists, oncologists, nurses)

.. and also, their joint use of EPR system in multidisciplinary team meetings

Information Systems Research

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Unity in Diversity: Electronic Patient Record Use in Multidisciplinary Practice

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In this paper we examine the use of electronic patient records (EPR) by clinical specialists in their development of multidisciplinary care for diagnosis and treatment of breast cancer. We develop a practice theory lens to investigate EPR use across multidisciplinary team practice. Our findings suggest that there are oppositional tendencies towards diversity in EPR use and unity which emerges across multidisciplinary work, and this influences the outcomes of EPR use. The value of this perspective is illustrated through the analysis of a year-long, longitudinal case study of a multidisciplinary team of surgeons, oncologists, pathologists, radiologists, and nurse specialists adopting a new EPR. Each group adapted their use of the EPR to their diverse specialist practices, but they nonetheless orientated their use of the EPR to each others' practices sufficiently to support unity in multidisciplinary teamwork. Multidisciplinary practice elements were also reconfigured in an episode of explicit negotiations, resulting in significant changes in EPR use within team meetings. Our study contributes to the growing literature that questions the feasibility and necessity of achieving high levels of standardized, uniform health information technology use in healthcare.

Key words: multidisciplinary; practice theory; electronic patient record; unity; IT adoption; information systems and organizational change; case study; longitudinal research; diversity

History: Robert Fichman, Rajiv Kohli, and Ranjani Krishnan, Senior Editors. This paper was received on February 6, 2009, and was with the authors 9½ months for 2 revisions. Published online in *Articles in Advance* July 26, 2011.



FOREGROUNDING DIFFERENCES:
a performative approach to the coordination of distributed
work and information infrastructures in use

Miria Grisot

Kapittel 4

Ordningslogikker i informasjonspraksiser – en case fra hjertetransplantasjon

Miria Grisot

Introduksjon

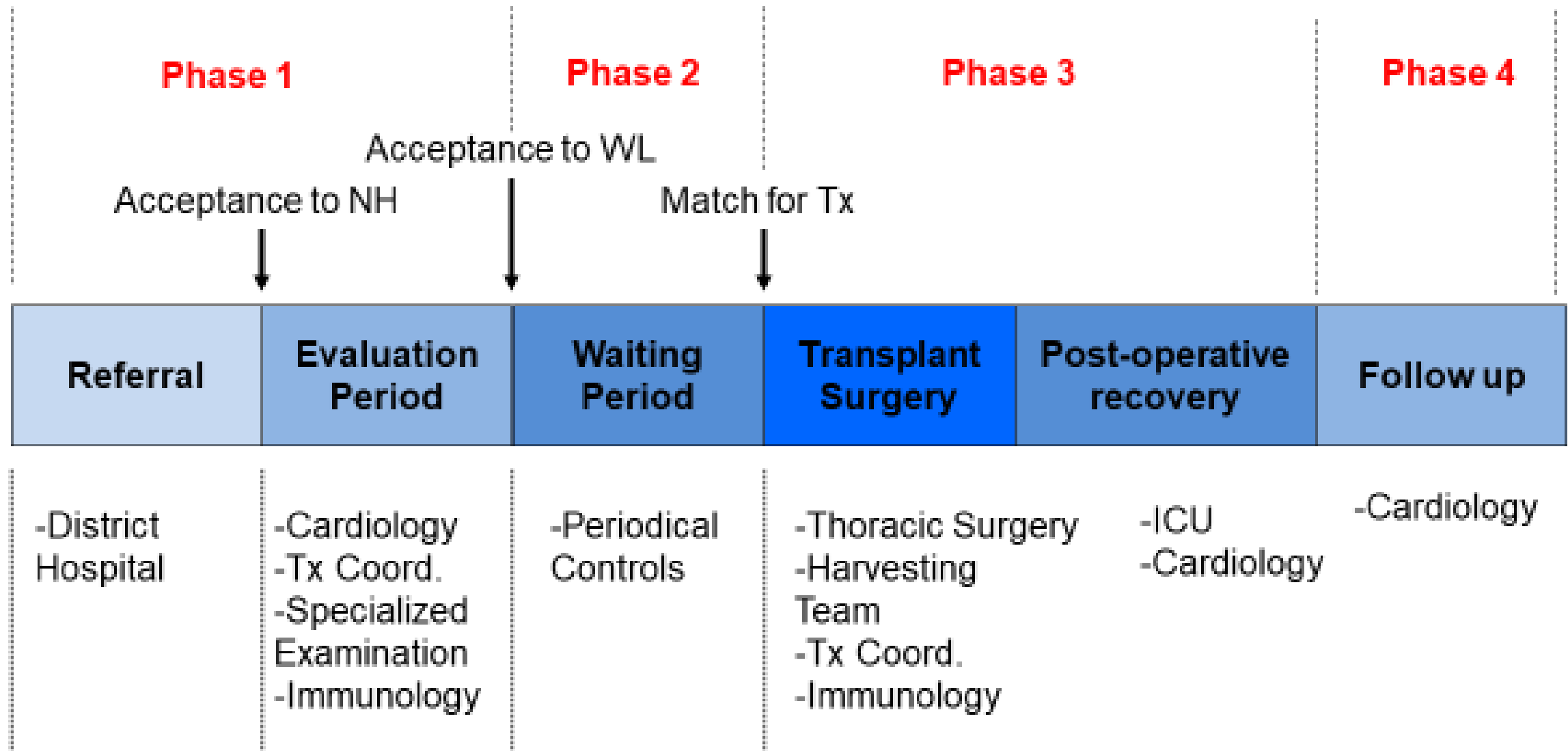
Pasientens og brukerens møte med helse- og omsorgstjenesten kan beskrives som et forløp, bestående av ulike hendelser; fra den første kontakten til en eventuell behandling er avsluttet. Denne strategien har en utvidet forståelse av pasient- og brukerforløp, som også omfatter egenomsorg før kontakten med helse- og omsorgstjenesten innledes og eventuelle helse- og omsorgstjenester underveis og i etterkant av behandlingen. Mange pasient- og brukerforløp vil omfatte kontakt med flere ledd i tjenestene, på tvers av forvaltningsnivå, institusjoner og profesjoner, og enkelte forløp kan være en kombinasjon av sosialtjenester og helse- og omsorgstjenester. Begrepet «forløp» vektlegger samordning og kontinuitet i tjenestetilbytt og forebyggende arbeid. Målet er at pasienter og brukere skal oppleve møtet med tjenestene som et helhetlig forløp. (Fra Se/Spill 2.0 side 10.)

Fokuset på pasientforløpet fremheves i strategiske dokumenter som et innovativt og viktig prinsipp i leveransen av helsetjenester. Å se møtet mellom pasienter og helsestystemet som et «forløp» krever at man forbedrer omsorg, behandling og helsearbeidernes prestasjoner som er basert på pasientenes erfaringer, spesielt når det gjelder pasienter med kroniske sykdommer. Sitatet ovenfor er fra S&spill 2.0¹ der det argumenteres for at det er nødvendig å tenke «forløp», det vil si kontinuitet når pasienter flyttes mellom omsorgsnivåer, men også mellom avdelinger ved sykehuset.

Sykehus er komplekse organisasjoner der forskjellige kliniske disipliner møtes og må samarbeide i omsorgsprosessene. Mange av sykehusene i Norge er allerede i gang med reorganisering av arbeidsprosesser som er fokusert på «forløp» som et kjerneprinsipp. Antakelsen

1 S@mspill 2.0 er Nasjonal strategi for elektronisk samhandling i helse- og omsorgssektoren 2008–2013. Den finner du på: <http://www.helsedirektoratet.no>

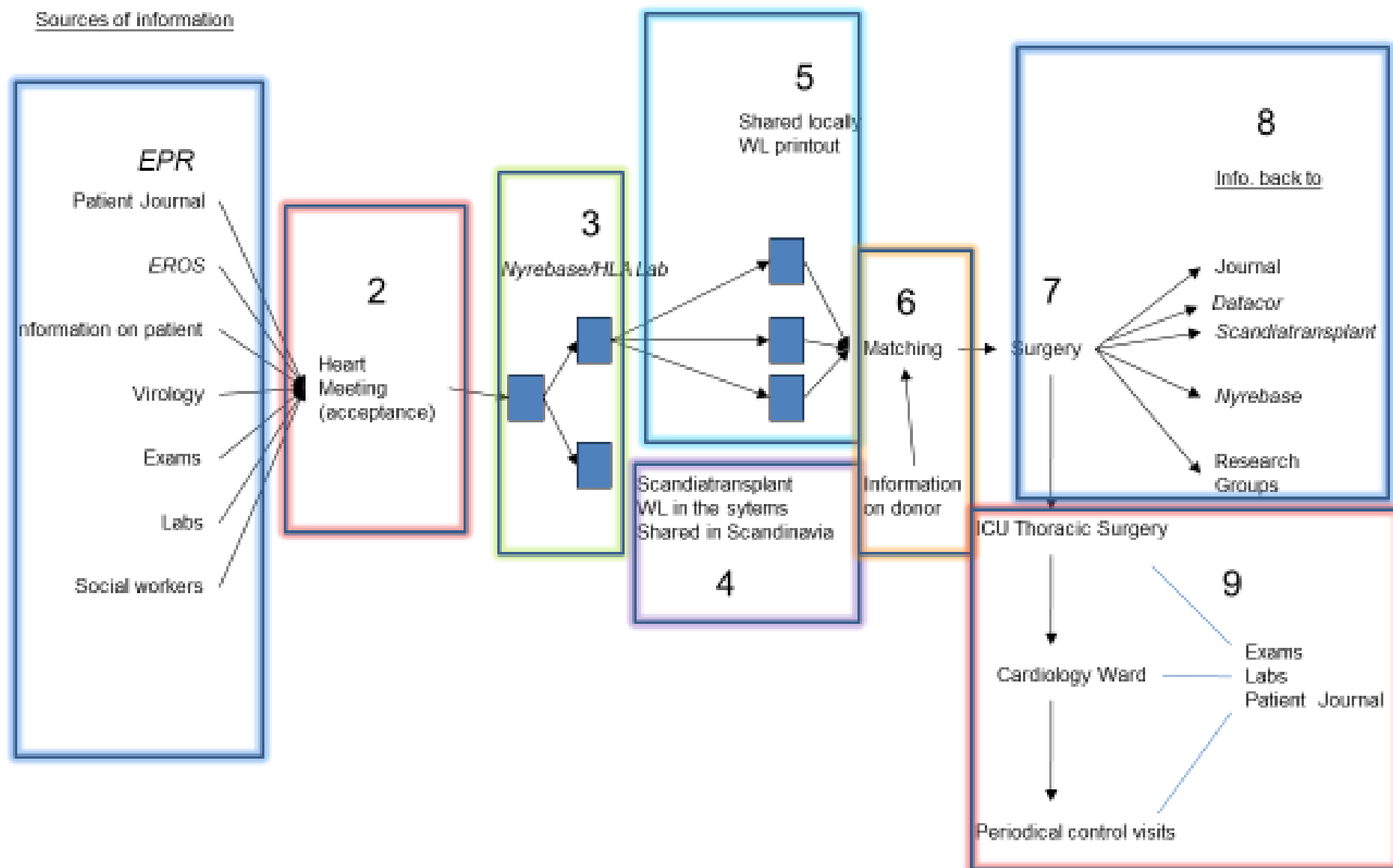
PHASES OF THE TRANSPLANT PROCESS



Information flow in the process

1

Sources of information



	Paper based	Computer based
Centralized Artefacts	• Paper based centralized patient record (the patient journal). • Containing: • F1 form • G form: Checklist (Information for heart transplant and after transplantation)	• Electronic patient record (including the Administrative patient system)
Infra-departmental Artefacts	• Waiting list paper printout • Order form for Clinical Chemistry Lab • Order form for IMMI Lab • Order form for Microbiology Lab • Order form for other service departments • Form for acceptance for transplant	• Nyrebase system and HLA Lab system at IMMI • Datacor system in Thoracic Surgery
Infra-institutional Artefacts	• Transport plan for the incoming of heart-, heart/lung and lung recipients to transplantation	• ScandiaTransplant database
Local Artefacts	<i>Cardiology</i> • The cardiology ward daily patient list • Recipient form for evaluation for heart-transplant in the cardiology department • Binder	• Local database (cardiology)



Findings (III)

- Four coexisting logics of information use
 1. Patient centered ordering
 - Chronological order, medical history
 - storyline
 2. Treatment centered ordering
 - Heart transplantation as specific treatment
 - Specific category of patients
 - Research oriented
 3. Procedural ordering
 - Concurrent tasks and patient trajectories
 4. Planning ordering
 - Specific event
 - Minimize uncertainties

The case illustrates the multiplicity of information needs and usages

Implications for standardization of work/information?

Making health data flow /Secondary data use

- So, the context matters (for generation/use of health data)
- In order to be used beyond the local context, both work processes, data and decision criteria need to be standardized.
- However standardization requirements often clash with existing work arrangements → requires changes in sociotechnical systems/networks
- Berg: why is this difficult?
 - Medical work is complex
 - The information systems (medical record) have many active roles (documentation, coordination, etc)
 - Medical information has a contextual nature- (needs disentanglement, work)

Berg (2004): Chapter 3

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 - The information systems (medical record) have many active roles (documentation, coordination, etc)
 - Medical information has a contextual nature- (needs disentanglement, work)

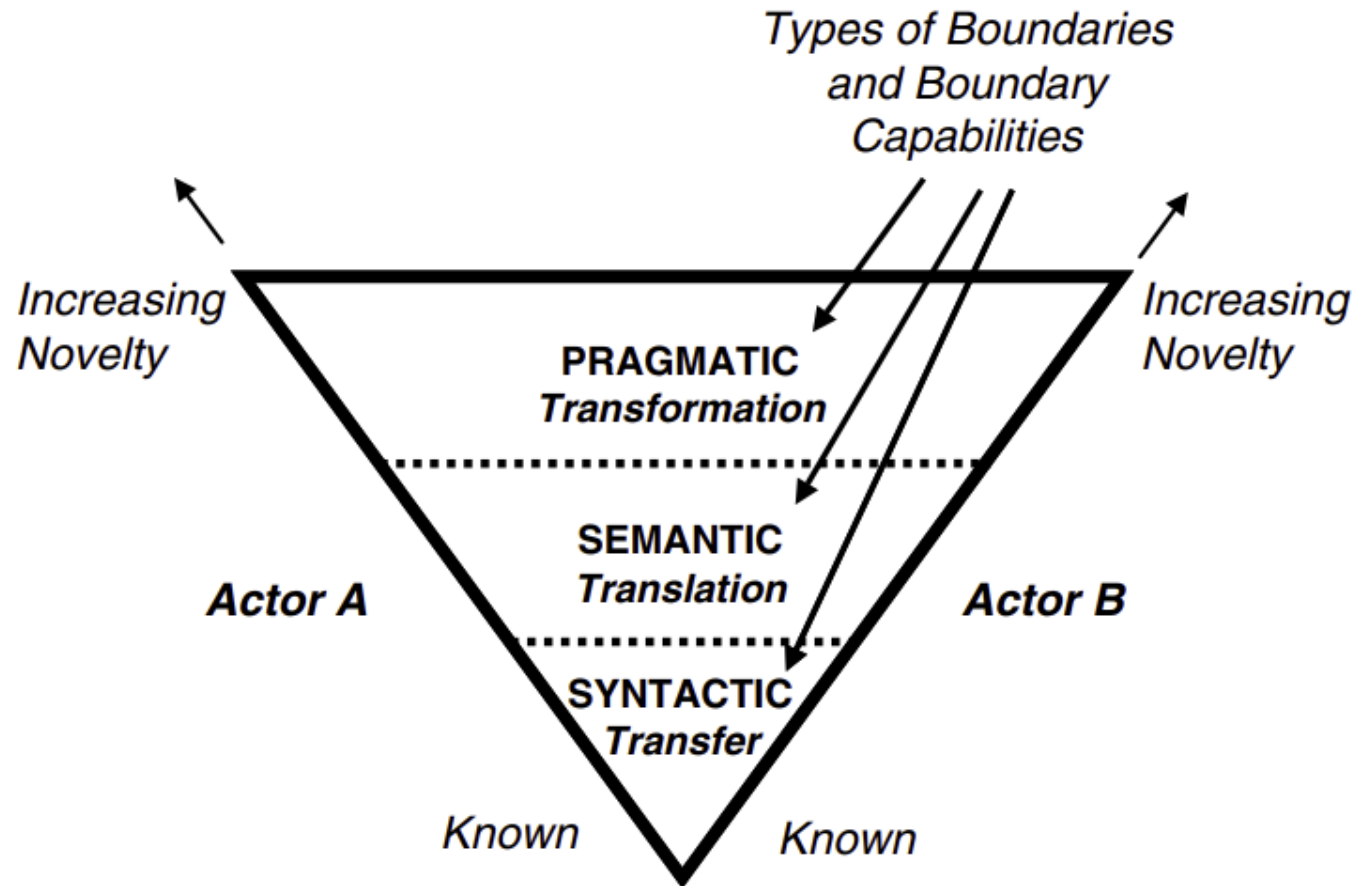


LET US TAKE A LOOK AT THIS POINT

Medical work is *complex* (Berg, chapter 3)

- Complex nature of health care work – it is:
 - **Provisional** (temporary, adaptive)
 - **Pragmatic** (contingent, related to practice, e.g. prioritisation)
- Medical work is a collective effort
 - Decision making is **collective, social**
 - **Interdisciplinary** (crossing professional boundaries)
- Collaborative management of patient trajectories (both the patient and multiple health workers)
- There is never ‘full control’ over the trajectory
- Healthcare work is
 - **Contingent** and **emergent**
 - **Interpretative** and **interactional**

Carlile (2004) on knowledge boundaries



Framework can be useful when dealing with diverse information needs and usages

Readings:

Additional readings:

Heath & Luff (1996): Documents and Professional Practice: 'bad' organisational reasons for 'good' clinical records

Mønsted, T., Reddy, M. C., & Bansler, J. P. (2011). The use of narratives in medical work: A field study of physician-patient consultations. In ECSCW 2011: Proceedings of the 12th European Conference on Computer Supported Cooperative Work, 24-28 September 2011, Aarhus Denmark (pp. 81-100). Springer, London.

Harold Garfinkel: «Good» organizational reasons for «bad» clinic records. In: Studies in ethnomethodology, p. 189-207.

Ellingsen, G., & Monteiro, E. (2006). Seamless integration: standardisation across multiple local settings. Computer Supported Cooperative Work (CSCW), 15, 443-466.

Grisot, M. (2010): Ordningslogikker i informasjonspraksiser – en case fra hjertetransplantasjon.

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. Organization science, 15(5), 555-568.

Shidende, N. H., Aanestad, M., & Igira, F. (2016). The role of context in the co-evolution of work and tools: A case from the primary health sector in Tanzania. Information Technology & People, 29(4), 850-875.