Medical decisions in 372 hospital encounters

Eirik Hugaas Ofstad

HØKH Research Centre, Akershus University Hospital
Institute of Clinical Medicine, Faculty of Medicine, University of Oslo
Norway
2015

Series of dissertations submitted to the
Faculty of Medicine, University of Oslo
No. 2069

ISBN 978-82-8333-078-6

Cover: Hanne Baadsgaard Utigard.
Printed in Norway: AIT Oslo AS.

Produced in co-operation with Akademika Publishing.
The thesis is produced by Akademika Publishing merely in connection with the thesis defence. Kindly direct all inquiries regarding the thesis to the copyright holder or the unit which grants the doctorate.

"There exists today, in every doctor´s office and every hospital, a mine of data whose gold awaits removal. Work in the mine has deliberately been rejected or thoughtlessly avoided, and the ore, inadequately or improperly extracted, has not been recognized as a source of gold".

Alvan Feinstein, *Clinical Judgment*, 1967

"Forget the scientific approach to clinical decision-making, and you are a menace to your patients; forget the human approach, and you ignore the aim of medicine"

Henrik R. Wulff, *The Lancet, 1998*

"The problem with communication is the illusion that it has occurred"

George Bernard Shaw (*unknown*)

Abstract

Decision-making is a key activity in health care and clinical decisions are important outcomes of patient-physician encounters. We wanted to study how the dialogue between physician and patient influences decisions about diagnostic procedures and treatment in hospital encounters with patients. Previous studies describing the nature and frequencies of clinical decisions in patient-physician encounters have focused on the degree of patient involvement in the decision-making process. We realized such an approach to clinical decisions might exclude other clinically relevant decisions that are made in medical encounters.

Because of this we aimed to describe clinically relevant decisions as they emerge in patient-physician dialogue in a precise, detailed and comprehensive manner. We conducted a qualitative study based on 380 patient-physician encounters from 17 different specialties videotaped at Akershus University Hospital in 2007-2008.

Through a content-driven, iterative process involving the perspectives of four physicians we found that clinically relevant decisions in medical encounters comprise more than what has previously been framed as decisions, which called for a broader definition and classification of the term.

We have developed a taxonomy consisting of ten topical categories and three temporal categories allowing identification and classification by defining a clinically relevant decision as "a verbal statement committing to a particular course of clinically relevant action and/or statement concerning the patient's health that carries meaning and weight because it is said by a medical expert". The taxonomy is named The Decision Identification and Classification Taxonomy for Use in Medicine (DICTUM).

Applying DICTUM to our material led us to find an average of 13 clinically relevant decisions in 372 hospital encounters. Content coding of our material has provided a description of clinically relevant decisions across different clinical specialties, settings, physicians and encounters.

We think that DICTUM could prove helpful in other descriptive studies of clinical decision-making and aid future studies aiming to assess the quality of medical decisions with regards to level of patient involvement, patient safety, provider professionalism and degree of concordance with evidence based practice.

Sammendrag (abstract in Norwegian)

Beslutningstaking er en sentral aktivitet i helsevesenet og kliniske beslutninger er viktige utfall av lege-pasientmøter. Vi ønsket å studere hvordan dialogen mellom lege og pasient påvirker beslutninger omkring diagnostiske prosedyrer og behandling. Tidligere studier som har beskrevet typer og frekvenser av kliniske beslutninger i lege-pasientkonsultasjoner har fokusert på graden av pasientmedvirkning i beslutningsprosessen. Vi innså at en slik tilnærming til kliniske beslutninger kunne ekskludere andre klinisk relevante beslutninger som fattes i lege-pasientkonsultasjoner.

På grunn av dette tok vi mål av oss å beskrive klinisk relevante beslutninger slik de utspiller seg i lege-pasientdialog så presist, detaljert og uttømmende som mulig. Vi gjorde en kvalitativ studie basert på 380 lege-pasientkonsultasjoner fra 17 forskjellige spesialiteter videofilmet ved Akershus universitetssykehus i 2007-2008.

Gjennom en innholdsdrevet, repeterende analyse som involverte fire legers perspektiver, fant vi at klinisk relevante beslutninger i medisinske konsultasjoner omfatter mer enn det som tidligere er omtalt som kliniske beslutninger, noe som skapte behov for en bredere definisjon og klassifisering av begrepet.

Vi har utviklet en taksonomi bestående av ti kategorier som skiller mellom typer og tre kategorier som skiller mellom tidsdimensjon, slik at identifisering og klassifisering lar seg gjøre ved å definere en klinisk relevant beslutning som "et verbalt utsagn som forplikter et bestemt forløp av klinisk relevant handling og / eller et utsagn om pasientens helse som bærer mening og tyngde fordi det er sagt av en medisinsk ekspert". Taksonomien heter The Decision Identification and Classification Taxonomy for Use in Medicine (DICTUM).

Ved å bruke DICTUM i analysen av vårt materiale, fant vi et gjennomsnitt på 13 klinisk relevante beslutninger i 372 sykehuskonsultasjoner. Innholdskodingen av vårt materiale har gitt en presis og detaljert beskrivelse av klinisk relevante beslutninger på tvers av kliniske spesialiteter, konsultasjonstyper, leger og lege-pasientmøter.

Vi mener at DICTUM kan være nyttig i andre deskriptive studier av klinisk beslutningstaking og fremtidige studier som tar sikte på å vurdere kvaliteten av medisinske beslutninger med hensyn til grad av pasientinvolvering, pasientsikkerhet, profesjonalitet og overenstemmelse med kunnskapsbasert praksis.

Table of contents

1 Preface

When I was 14, I dreamt of becoming a journalist – like my Grandfather. I got a freelance position at the local news paper the same year. It did not take long before I realized journalism was not for me. The dualism between being unsensationally truthful towards the people I interviewed and the expectations of creating "kiosk-tipping" headlines to hook readers was something I struggled to reconcile with.

When I was 17, I dreamt of becoming a physician – like my other Grandfather. I wanted to be an orthopedic surgeon. I was convinced that fixing something broken and to help people, could be an honest, pure and meaningful way of work. I still do, but also discovered even more exciting paths to explore. Enter Edvin.

I met Edvin Schei at a family reunion in Lofoten in 2002. My father is third cousin to Edvin's wife. I had seen Edvin once before. He gave a lecture a few months earlier, when I was in my first year as a medical student in Bergen. The main reason I remember the lecture was that Edvin didn't give it per se. He stood by a stereo from which he played the recording of a lecture he had given on the radio. The stereo was placed at the table of the pulpit. Edvin stood forward-leaning over the stereo with his arms supporting the weight of his upper body. He was looking at his audience of 200 students over his glasses. He stood like a statue for 40 minutes.

At lunch in Henningsvær one day at the family reunion, Edvin asked me what I wanted to write about for my fifth year student assignment. I said that I was curious about whether cruciate ligament tears in female handball players could be associated with certain phases of their menstrual cycle. Edvin looked at me. He said; "No no no…" A friendship was in its making. I wrote my assignment with Edvin as my supervisor. Its title could be translated into something like; "Extra Medicinam Nulla Salus – no salvation outside medicine; are there similarities between religious fundamentalism and extreme belief in medical science?"

In 2009, Edvin came to my hometown Bodø for the opening of the decentralized medical school. I had finished my internship a year ago and was a resident in internal medicine. He asked me how I was doing. I said I wanted to teach students, but that I couldn't because I was not qualified enough, not being a specialist or having a PhD. He said: "I know exactly who you should talk to". He gave me the phone number to Pål Gulbrandsen. A new friendship – *and* a research project - was in its making.

2 Acknowledgements

I am incredibly indebted to the three fellow members of my research group. Edvin has been a compass in my medical upbringing. He showed me books that changed my life. He has opened my eyes and made me aware of the potential we as physicians have of doing good. And that our presence and how we communicate with our patients is the most powerful tool we will ever have.

Pål is everything I strive to be. Attentive, curious, compassionate, efficient, kind and extremely good at what he does. He has been like a father to me in this process. Pål is a good father. He has pointed out marks to sail after and let me steer the boat. Being led to Pål feels like having won the lottery. I thank you for everything you have done for me and look forward to remain a friend and collaborator in the years to come.

My co-supervisor, Jan Frich is the fourth and perhaps most important member of our research team. He has asked critical questions which has led us to take a necessary step backwards, before being able to move forward again. Jan has pushed me to stretch for a higher level of detail, precision and self-criticism in my work and never turned his back while I have been struggling. Thank you, Jan.

In 2011, Pål introduced me to Richard Frankel. Rich invited us to his home outside Indianapolis. We stayed there for a couple of days. We talked, laughed and solved problems. Rich has been a valuable contributor and calibrated both our process and findings to a perspective broader than medicine and to be translatable into a North-American context. I also want to thank Arnstein Finset for his important contributions in the early stages of the project and for being an excellent consultant to our research group during the project period.

I could never have done this project as a long-distance relationship with my supervisor 1200 kilometers away, had it not been for the good will of Hilde Lurås, head at the HØKH research centre at Akershus University Hospital and my former department head at Nordland County Hospital, Geir Tollåli. Thanks also to colleague Beate Sørslett for writing the work schedule that set the example for how I could combine research with my clinical position and to current department head, Ragnar Breckan for allowing me to follow such a work schedule for almost five years.

Starting this project, I came to a set table by having the opportunity of using the richest videotaped material of hospital encounters recorded so far. I owe this pleasure to Bård Fossli Jensen and I have become increasingly impressed with his effort as I have observed and analyzed the videos he recorded the vast majority of.

I have a good mentor in my clinical supervisor, Knut Tore Lappegård, and our monthly talks have been important to me in what has been a somewhat lonesome period of my professional life. Another man I have been fortunate enough to have monthly talks with is Tor Anvik. Tor is the best listener I have ever spoken to and he has silently got me to say things I did not know I had within me. I look forward to having the time for coffee with you again, Tor.

I would also like to thank my colleagues and friends at the Research Centre at Akershus University Hospital, especially Anne Marie Dalby Landmark, Jennifer Gerwing, Erik Skjeggestad, Mathias Barra and Liv Ariane Augensen. I would like to thank my colleagues at Nordland County Hospital, fellow internists and friends at the Department of Internal Medicine in particular. Also, Lars Petter Jensen and Tore Olaussen deserve a sincere thank you for putting up with me occupying our office these years. Thank you to my colleagues at the University of Tromsø and to Torsten Risør in particular for believing in me and putting me in position to contribute to what led me to pursue research in the first place, namely having the opportunity to influence the teaching of medical students. Being a teacher for medical students has given me the most rewarding experiences in my professional career so far and to that I owe my students the sincere pleasure.

Thanks to my friends, especially my Bådin-boys, for the meaning, madness and humor you contribute to my life. Born and raised!

Thank you sister, Kristine, for your support. To my mom and dad, for always having faith in me and implicitly teaching me that nothing is impossible. Coincidentally the three of us have all worked too much on our respective academic projects for far too long now. I look forward to the time ahead – to just hang out with you two again.

Thank you Pernille and Sverre, the two greatest achievements of my life. You make every day one worth to remember. And to Cecilie for being supportive far beyond any reason – I could never have done this without you. I love you.

3 List of papers

I. Temporal characteristics of decisions in hospital encounters: a threshold for shared decision making? A qualitative study.
Patient Educ Couns 2014;97(2):216-22

II. A novel taxonomy for clinical decisions in patient-physician encounters. A qualitative study.
Submitted for publication March 2015

III. Clinical decisions in hospital encounters: which and how many. A cross-sectional study.
Submitted for publication March 2015

3.1 Locations of tables and figures

3.2 List of abbreviations

ANOVA – analysis of variance

DICTUM – The Decision Identification and Classification Taxonomy for Use in Medicine

EAS – editing analysis style

EBM – evidence-based medicine

ENT – ear-nose-throat

ER – emergency room

ES – Edvin Schei, researcher

GT – Grounded Theory

JCF – Jan C. Frich, researcher

I/C – immersion/crystallization

IDM – informed decision-making

IRR – inter-rater reliability

MDT – multi disciplinary team

OBGYN – obstetrics and gynecology

OP - outpatient

PA – Phenomenological Analysis

PCDM – patient-centered decision-making

PG - Pål Gulbrandsen, researcher

SDM – shared decision-making

SOAP – Subjective, Objective, Assessment, Plan

STC – Systematic Text Condensation

TAS – template analysis style

WR – ward round

4 Introduction

In August 2009, I spoke with Pål Gulbrandsen for the first time. Together with Bård Fossli Jensen, he had just conducted a study assessing the communication skills of 72 hospital physicians before and after a 20 hours communication skills course. The study proved that the physicians changed their communication behavior significantly in a desired direction after only two days of intervention. Bård and Pål had recorded 500 videos of patient-physician encounters during the study. Pål now searched the answer to a new question: Is there a link between how the physician communicates with the patient and the medical quality of what goes on in the same encounter?

Together we wrote a grant proposal entitled "The pursuit of clinical effects of clinician communication behavior". The proposal was granted funds by Helse Sør-Øst in November 2009. In the proposal we wrote:

"Main objective: To provide knowledge about if and how different types of doctor behavior influence subsequent decisions about diagnostic procedures and management in hospital encounters with patients. In order to do this, we will concentrate on three specific themes/sub studies:

1. to study decision-making processes in a purposeful sample of the encounters between hospital specialists and patients, in order to develop a purpose-specific classification system for clinical decisions in this setting
2. to study decisions and to classify them in terms of correctness by evaluating them against the evidence base, including the degree of uncertainty that we apply to this interpretation
3. to study how doctors' communication and behaviors influence the quality and correctness of decisions

if we succeed, we will subsequently apply our findings on a larger scale in the rest of the material to assess feasibility and validate our conclusions."

In order to explain what we planned and what we have done, I start by clarifying what I mean by three terms that will be frequently referred to in this thesis:

- **Descriptive**: describing in a non-judgmental way, e.g. "Eirik has brown hair"
- **Normative**: expressing value judgments, e.g. "Eirik has bad looking hair"
- **Prescriptive**: suggesting appropriate action, e.g. "Eirik needs to cut his hair"

As soon as we started the project, it became clear how challenging it would be to assess “the correctness” of decisions in our material. We had available a large and rich set of videotaped encounters, but did not have the possibility to tap into the perspectives of the participating patients or physicians on the videotapes or to access medical records related to each encounter.

At the same time we realized that the detail and precision of previous efforts in describing clinical decisions in patient-physician encounters, did not meet the standards we hoped and felt were needed. Because of these two major obstacles to approaching our material in a normative fashion, we decided to design the project framed within this thesis as a purely descriptive project aiming to answer one big question:

What is a clinical decision in the context of patient-physician encounters in hospitals?

5 Background

5.1 What is a decision?

In 1969 Samuel Eilon, professor of management science, started his paper "What is a decision?" writing;

"An examination of the literature reveals the somewhat perplexing fact that most books on management and decision theory do not contain a specific definition of what is meant by a decision. …the definition of decision activity itself is often taken for granted and is associated with making a choice between alternative courses of action". (Eilon 1969)
In his thorough analysis of the concept, Eilon also refrained from attempting to define the word decision.

If you search the word decision on the internet, a Wikipedia page pops up first. The page entitled "Decision" starts by offering a choice to go to a new Wikipedia page where decision-making is described with regards to different contexts. So like Eilon, those before him and those after him, reflection on the term decision seldom discusses the noun describing the outcome, but commonly focuses on the verb describing the process.

The Wikipedia page on "Decision-making" starts with: "Decision-making can be regarded as the cognitive process resulting in the selection of a belief or a course of action among several alternative possibilities". (Wikipedia, online) I urge the reader(s) of this thesis to keep this sentence in mind; "… selection of a belief or a course of action…"

Thesauruses offer relevant synonyms to the word decision such as; conclusion, determination, diagnosis, judgment, opinion, resolution, verdict; also decree, mandate, order. (Merriam-Webster 2014, p 273) The word and its synonyms signal something punctuated.

The verb decide is derived from the Middle English/Middle French verb; *de caedere*, which means to cut off. (Merriam-Webster online) Reflecting on this origin one might be lead to think that the word comprises both process and outcome; the action of cutting, but also establishing a new entity, separating it from what it originally belonged to. Like a loaf of bread containing your alternatives and the piece you cut off containing the alternative you decided on.

Since Eilon, there have been substantial contributions to the literature describing decisions and decision-making in a wide range of professional contexts. I will not go into detail about the history of decision theory, but as the clinical decision is the topic of this thesis, it is appropriate to briefly describe some of the milestones within the field.

Rational decision-making

In 1772, Benjamin Franklin, at the time British Postmaster to the colonies – later one of the founding fathers of the United States of America, laid out the first know description of the Pro & Con list in his letter to Joseph Priestly:

"…my Way is, to divide half a Sheet of Paper by a Line into two Columns, writing over the one Pro, and over the other Con. Then during three or four Days Consideration I put down under the different Heads short Hints of the different Motives that at different Times occur to me for or against the Measure. When I have thus got them all together in one View, I endeavor to estimate their respective Weights; and where I find two, one on each side, that seem equal, I strike them both out: If I find a Reason pro equal to some two Reasons con, I strike out the three. If I judge some two Reasons con equal to some three Reasons pro, I strike out the five; and thus proceeding I find at length where the Balance lies; and if after a Day or two of farther Consideration nothing new that is of Importance occurs on either side, I come to a Determination accordingly." (Whitfield & Labaree 1956)

In 1738, Swiss scientist Daniel Bernoulli wrote the first description on what has later been framed as "Expected Utility Theory". He claimed that a gift of ten ducats to someone who has 100 ducats is of the same value as a gift of 20 ducats to someone who has 200. Exemplified by a situation where there is a gamble of money; the choice of whether to gamble or not, does not depend on the value per se (10 or 20 ducats), but the psychological effect of the value at stake (the possible gain or loss) – its expected utility. (Bernoulli 1954)

These two examples of rational decision-making portray the reigning world-view at the time. In the 17th and 18th century, rationalism became the central philosophy of Western societies, with Rene Descartes, Baruch de Spinoza and Gottfried Leibniz as its developers. The two examples serve as both descriptive and normative accounts of the field of decision theory until the mid 20th century.

In the book "Models of Man", Herbert A. Simon described the concept of "bounded rationality" and how rationality is limited by the available information, cognitive limitations and time constraints of decision-makers. (Simon 1957) He describes how decision-makers due to this bounding of rationality may end up "satisficing"; settling for a satisfying solution to a problem, rather than the optimal solution. In 1978, Simon was awarded the Nobel Prize in Economy for his pioneering research into the decision-making of organizations.

Rationality under uncertainty

Social scientists in the 1970s broadly accepted two theories about human nature. First, people are generally rational and their thinking is sound. Second, emotions such as fear, affection and hatred explain most of the occasions where people depart from rationality. (Kahneman 2011 p11).

In 1974, Amos Tversky and Daniel Kahneman published an article in "Science" where they challenged these assumptions without confronting them directly. The article was titled "Judgment under Uncertainty: Heuristics and Biases". (Tversky & Kahneman 1974) They documented systematic errors in ordinary people's thinking and attributed these errors to the construction of cognition rather than to the corruption of thought by emotion. In the article they described how the human mind intuitively makes simplifying shortcuts – called "heuristics" – and explained several potential sources of error – called "biases" - as manifestations of these heuristics. (Kahneman 2011, p 11) They outlined three heuristics that are employed in decision-making under uncertainty, which I will present as I understand them:

- **Representativeness:** making judgments based on the similarity of objects and organizing them around a category prototype.
- **Availability:** making judgments based on experiences that are easily available in our memories, either particularly memorable or recent experiences.
- **Adjustment from an anchor:** making judgments where the weight on the first information received shapes the view of subsequent information

Five years later, Tversky and Kahneman presented the "Prospect Theory" where they challenged "Expected Utility Theory" by finding that people make risk judgments differently depending on whether they risk loss or gain. When evaluating a potential loss individuals are more likely to take on a risk, but while evaluating a potential gain individuals are more likely to avoid risk. (Kahneman & Tversky 1979) In 2002, Kahneman (and not Tversky, who died in 1996) received the Nobel Prize in Economy for his work on Prospect Theory.

Intuition and reasoning

Kahneman is still a key contributor to the field of how humans think and make decisions. In his recently published, best-selling book "Thinking Fast and Slow", he describes his and Tversky's previous efforts in a comprehendible language and synthesizes his thoughts and findings into a view that humans make decisions through two fundamentally different ways

of thinking. Kahneman is not the first who describes decision-making as a dual process theory - psychologist have studied the theory for decades – but he is definitely the first who has made the distinction between two different ways of thinking a part of pop literature.

Kahneman divides between an intuitive “System 1” that is fast and automatic, usually with strong emotional bonds in the reasoning process, and a reasoning “System 2” which is slower and effort-requiring, being subject to conscious judgment, attitudes and preferences. (Kahneman 2011)

While Tversky and Kahneman have studied these matters in laboratory experiments, psychologist Gary Klein has studied different professionals at work to see how they make decisions. He describes how firefighters make life-saving decisions without knowing why until they assess the scene of the fire in retrospect. People who are experts at something, e.g. chess, clinical medicine or fire fighting use their previous experiences and intuitively make recognition primed decisions; they recognize patterns they have experienced and solve problems drawing on previous knowledge of these patterns. (Klein 2003)

Decision-making in organizations

In 1972, Michael D. Cohen, James G. March and Johan P. Olsen wrote a paper titled “A Garbage Can Model of Organizational Choice”. In this paper the trio built on the previous work by the mentioned Herbert Simon presenting a theory for how decisions are made in organizations. They state that an organization is:

- “a collection of choices looking for problems,
- issues and feelings looking for decision situations in which they might be aired,
- solutions looking for issues to which they might be the answer, and
- decision-makers looking for work".

According to the model, problems, solutions, participants, and choice opportunities flow in and out of a garbage can, and which problems get attached to solutions is largely due to chance. (Cohen et al 1972)

In his 1994 book “A primer on decision making”, James G. March elaborated on the concepts of bounded rationality and the Garbage Can Model and point to four issues that decision-makers could profit from having increased awareness of: (March 1994)

- Is the decision choice-based or rule-based?
- Is there clarity and consistency or ambiguity and inconsistency in decision-making?
- Is there a need for instrumental or interpretive decision-making?
- Is the decision making autonomous or related to systemic properties of an interacting

ecology?

March also explores the concept of decisions in a more philosophical and existential manner than the more technical and often mathematical approaches of the above mentioned explorers of the field. He writes:

"The meanings elaborated in decision-making have importance beyond the mundane realities of rendering decisions…, decision makers develop and communicate meaning not only about decisions, but also more generally about truth, about what is happening in the world and why it is happening". (March, 1994, p 212)

How is this relevant for medicine and a study of decisions in clinical encounters? Patient-physician encounters are meetings between persons who in general intend to make rational decisions. Their rational intentions will be influenced by potentially bounding factors, heuristics and biases. Contextual factors such as time, quality of information and level of understanding will affect the decisions that are made. The encounters are an integrated part of a medical organization, which in turn might govern decisions according to reigning guidelines and procedures within the organization. Through making decisions, patients and physicians together develop and establish truth and meaning within the context of their encounter.

5.2 What is medicine?

As this thesis is about medical decisions, a brief description of the context medical decisions are made in is appropriate.

We are mortal. As long as there have been humans, there has been sickness and death. And humans have always tried to help fellow humans in pain and suffering. A mere century ago, caring and compassion was often the physician's only available option when confronted with illness and disease. (Barry & Edgman-Levitan 2012) Western medicine was at the dawn of its great evolution. Great progress in mapping the human body through sciences like biochemistry, anatomy, physiology and pathology laid grounds for - as writer and physician James Le Fanu puts it – "a medical revolution so dramatically successful that it stands out as one of the most impressive epochs of human achievement". (Le Fanu 2000) From 1941, silver bullets like penicillin, cortisone, chlorpromazine, the polio vaccine, open heart surgery, organ transplants and artificial joints came out of the assembly line over a short two decade period. (Duffin 2010; Le Fanu 2000; Porter 2003)

Since World War II, modern medicine has grown to become a powerful franchise and in the course of this process its providers has become part of a culture that has gradually distanced itself from the everyday life-world. I will present some examples of how the medical world differs from the life-world and present them as a condensation of relevant literature (Barry et al 2001; Wulff et al 1986; Atkinson 1995; Cassell 2013; Freidson 1988; Groopman 2008; Illich 1982; Pendleton 1984; Sinclair 1997; Le Fanu 2000; Duffin 2010; Porter 2003; Agledahl 2011; Hodgkin 1985) and my own experience of going through medical school and having been a practicing physician for almost a decade.

The medical system is success oriented. Medicine's fundamental aim is to prevent and cure disease. The success of modern medicine is to a large extent a result of the mechanical approach to the human organism, viewing organs as parts of a machinery and gaining knowledge of specific processes within this machinery.

Medical dialogue is problem oriented. The conversation with patients is commonly driven by the aim of finding out the nature, cause and severity of the patient's problem (clinical essentializing), in order to customize prescriptive actions.

Medicine aims to generalize and decontextualize. Symptoms, signs and findings are classified and combined into making a diagnostic framework where the illness of one individual can fit into a framework describing disease in a general and reproducible fashion. Because of this, medicine aims to generalize and decontextualize the symptoms, signs and findings in a sick person, in order for it to fit into established categories and understanding of disease. As a result of this the subject who feels sick, is from a medical perspective an object hosting an illness.

Medicine and the war metaphor. In one way medicine is the anti-thesis to the military: instead of sacrifice of human lives with aims of winning a war, the aim is to preserve the lives and good health of humans. In another way medicine and warfare are the same: the war to preserve life is fought against microorganisms such as bacteria and viruses or mutations of human cells which may lead to cancer. The immune system is the body's own army and if necessary it may be aided by chemical weapons such as antibiotics or chemotherapy or surgical weaponry like the scalpel or the powers of radiation.

Medical culture and language. Individuals who become a part of the medical system commonly have a strong motivation to be a part of this noble warfare - helping people in need. Health care professionals – like other professionals – have their own language appreciated as technical terminology aiding efficiency and precision of communication by insiders, but for outsiders it may be incomprehensible and portray as

excluding jargon. Health care professionals are exposed to the extremes of life; pain, suffering and death. Emotional control is viewed as a necessary trait in order to stay problem and success oriented, and as a survival skill for a human being in a professional role. Physicians are as novices in medical school socialized into a system that could be described as having a tribal or military resemblance; clear hierarchical structures, strong sense of unity and an underlying demand of a till-you-drop team-spirit effort.

The ivory towers of medicine. Our study is based on the observation of patient-physician encounters in hospitals. Medical hospitals may be described as "fortresses" in medicine's fights against sickness and death. The gradually increasing establishment of hospitals during the past millennium has functioned as a centralization of patients and thereby health care professionals aiming to produce knowledge about the mysteries of the human organism and its illnesses. At the same time hospitals have been the cradle of physicians; where the medical schools have been situated and where future physicians have learned and adopted their skills in clinical reasoning, communication and professional behavior.

How is this relevant for a study of decisions in clinical encounters? Patient-physician encounters are meetings between persons with different starting points. They have different areas and levels of expertise. The physician has expert knowledge of medicine. The patient has expert knowledge of him- or herself. Both commonly have insufficient knowledge about the other's field of expertise. Hence, there are gradients between their respective levels of knowledge. (Stewart et al 1995) Their goals might differ. The physician is trained to be problem-oriented, success-oriented and essentializing (Agledahl 2011) through a mechanistic approach and recognition primed decision-making. The physician is trained to interpret the patient's story into a general framework of health and disease and offer normative and prescriptive accounts, potentially presented by using technical terminology.

5.3 What is a medical decision?

Like decision literature in general, the medical decision literature has focused mainly on the process of decision-making. I will outline some milestones within this field, before I describe previous efforts focusing on what a clinical decision is.

The harbinger of medical decision-making literature was Alvan Feinstein's "Clinical Judgment" in 1967, published when medical science was at the peak of its golden era. Feinstein, a specialist in internal medicine, urged physicians to view themselves as scientists

in clinical action and to see the care of their patients as experiments arranged by nature, not by man. He discussed the types, uses and attributes of clinical data, revitalized the concept of diagnostic taxonomy and the critical evaluation of treatment. He ended his book by stating: "The clinician has an ancient and honorable heritage, a tradition of enlightened thought and achievement, and a domain whose humanistic and scientific complexity can challenge the most demanding intellect… He need not look for "basic science" elsewhere. He can make his own". (Feinstein 1967, p 390)

In 1973, the Danish physician Henrik R. Wulff wrote "Rationell Klinik" in his mother tongue, which three years later was published in English with the title "Rational Diagnosis and Treatment". (Wulff & Gøtzsche 2000) In this book, Wulff provided a detailed descriptive and structured framework for diagnostic and therapeutic decision-making at the bedside. He integrated the science and statistical approach of available evidence with the art and humanism of medical practice, made explicit by his four components of the basis for clinical decisions; (Wulff & Gøtzsche 2000, p 148)

- **Scientific thinking**

1. *The deductive component;* drawing on theoretical knowledge about disease and disease mechanisms
2. *The empirical component;* drawing on experiences from the study of previous patients

- **Humanistic thinking**

3. *The empathic-hermeneutic component:* drawing on the understanding of the patient as a fellow human being
4. *The ethical component:* drawing on ethical norms

From bedside to theory and statistics

In the 1980s, the literature on clinical judgment and medical decision-making drifted from the bedside to become more theoretical and statistical endeavors. The scientific journal, Medical Decision Making was established in 1981, and already in its first issues studies on theoretical concepts and health-policy decisions dominated.

In 1988, Jack Dowie and Arthur Elstein edited the book "Professional Judgment; a reader in medical decision-making", which incorporated some of the contemporary decision theory and applied it to the medical context. (Dowie & Elstein 1988) In one of the chapters Robert Hamm integrated two theories that are of particular relevance for clinical decision-making. First, Hammond et al.'s "Cognitive Continuum Theory", which makes the

distinction between intuition and analysis and how they are north and south poles in a "continuum" where decision-making processes seldom rest with one or the other, but rather lies somewhere in between. (Hammond et al 1980) Second, the Dreyfus brothers' "Theory of Expert Cognition", where levels of expertise is staged in the following order: novice, advanced beginner, competent, proficient, expert. (Dreyfus et al 1986)The Dreyfuses' describe how the novice perceives elements of situations in an analytical matter and rely on others to make decisions, how the competent perceives the same elements intuitively and make decisions analytically, and finally how the expert both perceives elements and makes decisions intuitively.

In 1994, political scientist Raisa Deber in her paper "The patient-physician partnership: decision making, problem solving and the desire to participate" separated problem solving and decision-making as being two fundamentally different processes for medical choice. She writes: "… I define problem solving as the search for the single correct solution to a problem..." and "decision-making situations as those in which a choice must be made from several alternatives… The key distinction for medical choice is that the value assigned to potential outcomes are not relevant to problem solving. For example, a radiograph may show my leg is broken… There is only one correct answer to the diagnosis, which may or may not be ascertained." (Deber 1994)

In 2002, the distinction between problem solving and decision-making was discussed by psychologists Arthur Elstein and Alan Schwartz, in the challenge of arriving at a diagnosis. (Elstein & Schwartz 2002) Problem solving was presented as diagnosis by selecting a hypothesis, where hypothesis testing and pattern recognition by instances and prototypes were suggested as problem solving strategies. Decision making was presented as diagnosis by opinion revision with imperfect information, and they put Bayes' theorem (statistical method relating current probabilities to prior probabilities) as the standard rule for this task, and identified heuristics and biases that may affect decision-making.

Around the millennium two books on medical decision-making were published, namely "Decision Making in Health Care: Theory, Psychology and Application" (Chapman & Sonnenberg 2000) and "Decision Making in Health and Medicine: Integrating evidence and values". (Hunink et al. 2001) Both can in my view be described as thick, process oriented, quantitative, theoretical and with low relevance to a practicing clinician.

The most recent book on Medical Decision Making, authored by Alan Schwartz and George Bergus, is subtitled "A physician's guide" and aims to emphasize relevant concepts and clinical cases instead of mathematics and computation. (Schwartz & Bergus 2008)The

book is still highly number-oriented, but integrates patient goals, family matters, social values and preferences in addition to framing insecurity-inducing concepts like uncertainty and evidence based-information with headlines like “embracing uncertainty” and “developing information”.

The concepts of uncertainty and information bring us to a core challenge of medicine. As David Eddy has put it:

“Uncertainty creeps into medical practice through every pore. Whether a physician is defining a disease, making a diagnosis, selecting a procedure, observing outcomes, assessing probabilities, assigning preferences, or putting it all together, he is walking on very slippery terrain. It is difficult for nonphysicians, and for many physicians, to appreciate how complex these tasks are, how poorly we understand them, and how easy it is for honest people to come to different conclusions.” (Eddy 1984)

In this landscape medical science is endlessly grinding to produce more knowledge – increasing the precision and detail to inform medical decisions. As the body of research increases in amount, detail, and complexity it becomes challenging for the practicing clinician to keep up to speed. To render this, experts within every branch of medicine collaborate to assess the body of available evidence, interpret and translate it into clinically relevant recommendations and guidelines.

The nature and frequency of decisions in medical encounters

In 1997, Clarence Braddock 3rd et al published the first study I have found which defined what a medical decision is and applied this definition to describe the nature and frequencies of decisions in medical encounters. (Braddock et al 1997) They defined a medical decision as “a verbal statement committing to a particular course of action”. With this definition they found an average of 3.2 and 3.4 decisions per encounter in two studies where they assessed 81 audio-taped primary care and 1057 outpatient surgery or primary care encounters respectively. (Braddock et al 1997; Braddock et al 1999)

In 2006, Saba et al. analyzed 18 video-taped primary care visits with decision moments as their unit of analysis. (Saba et al 2006) They defined a decision moment as “a meaningful, observable event in the encounter that contained an implicit or explicit choice of action for the present or future” and found an average of 6.9 decision moments. In 2010, they repeated a similar approach in 240 video-taped encounters between medical students and standardized patients and found an average of 3.2 decision moments. (Hauer et al 2011)

In 2007, Skinner et al. analyzed 134 audio-taped encounters between patients and diabetic nurses or dieticians. They defined a treatment decision according to two criteria: first, the health professional or patient had to make a clear statement; questions were not considered as advice or treatment decisions – second, the statement needed to include an action that either the patient or the professional was to undertake. They identified an average of 2.2 decisions. (Skinner et al 2007)

And lastly, in 2012 Marla Clayman et al. analyzed 20 video-recorded outpatient breast cancer encounters identifying 80 decisions composed of 158 decision-making segments. (Clayman et al 2012) In this paper it is not explicitly defined neither what is meant by a decision nor a decision making segment, but an average of 4.0 decisions is reported from this material.

For all five abovementioned studies, the identification of decisions has not been the primary aim of the study. Skinner et al.'s study compared the observed frequencies of decisions with the amount of decisions recalled by patients and providers. The remaining four studies' primary aim was to assess the degree of patient involvement in the decision-making process.

How is this relevant for a study of decisions in clinical encounters? Patient-physician encounters are meetings between persons where medical decisions are made and discussed. Descriptive, normative, and prescriptive efforts regarding medical decisions and decision-making, have to a large extent been theoretical and mathematical. Three decades after publishing "Clinical Judgment", Alvan Feinstein concluded that the field's emphasis on quantitative models derived from nonclinical sources had left central challenges on how decisions are made at the bedside or in the clinic, open for pursuit. (Feinstein 1994)

Only a handful of studies have described the nature and frequencies of decisions in patient-physician encounters. Neither of them have incorporated the challenges of defining the nature, cause, severity, and prognosis of disease – which Simon Whitney have described as the "silent decisions" of clinical encounters (Whitney & McCullough 2007) and which as Eddy puts it has the potential to be interpreted differently depending on who is left to decide. (Eddy 1984)

5.4 Who makes medical decisions?

It is a tradition as long as medicine that physicians have made medical decisions on behalf of their patients. (Robison & Pritchard 1979; Bassford 1982) There are several reasons for

this. Historically, physicians have claimed expert knowledge of a craftsmanship portrayed as beyond the apprehension of lay people. We don't have to look many decades back in time, where the situation was commonly that if you saw a doctor, you were likely so sick that taking part in any decision-making process would be futile.

A lot of things have changed. There are more physicians. People see the doctor not only when they are sick. Primary care medicine has evolved to be an accessible and stable premise for the delivery of up-to-date practice. The precondition for discussing medical decisions is better when the patient and physician sit in chairs, as opposed to when the patient is bedridden with sickness to such an extent that cognitive functions are impaired. The latter situation is still a common presentation for patients who are admitted to hospitals.

The principle of autonomy entered medicine as a safeguard towards abuse in the name of science. In the aftermath of World War II, The Nuremberg Code of 1947 declared that voluntary consent of the human subject is absolutely essential. (Weindling 2001) The principle has been carried over to clinical medicine, probably facilitated by human rights movements and rising discontent with authoritarian and paternalistic doctors. (Jonsen 1998)

Henrik Wulff points out that moral philosophers define paternalism in different ways and has himself proposed a working definition: (Wulff & Gøtzsche 2000, pp. 162-163) "Person A acts paternalistically towards a person B, when A – with or without B's consent – chooses the decision which she believes has the best consequences for B". Using this definition, Wulff made a distinction between three forms of paternalism: genuine, solicited or unsolicited.

- **Genuine paternalism:** a paternalistic action towards a non-autonomous person, e.g. the father who imposes his will on a small child because "Daddy knows best", but also unconscious patients, patients delirious due to high fever or psychotic patients. Wulff concluded that in such cases paternalistic action is morally required.
- **Solicited paternalism:** a paternalistic action towards autonomous patients who say they have no wish to take part in the decisions process, but wish to leave the decision to the doctor. Wulff stated that this type of paternalism is also morally acceptable.
- **Unsolicited paternalism:** a paternalistic action towards an autonomous patient without consent, i.e. instituting diagnostic procedures or treatment without having consulted the patient in advance. Wulff states that it is agreed, at least in this part of the world, that general unsolicited paternalism is morally unacceptable.

So does unsolicited paternalism occur in contemporary medicine? My experience is yes, every day, many times a day. And I do not think this form of paternalism occurs because

physicians disagree with the moral argument. I think there are several explanations and I will point to a couple of them.

Arriving at a precise diagnosis is physician's primary aim in order to assess treatment options. The knowledge basis for medicine has evolved into being more precise and detailed, but also vaster, complex and specialist oriented. In cases where one physician concluded on diagnosis and treatment fifty years ago, diagnostic assessments today – i.e. staging and classification of lung cancer – takes place in multidisciplinary team (MDT) meetings where relevant specialists are present; pulmonologist, thoracic surgeon, oncologist, radiation oncologist, radiologist and pathologists. Patients are usually not invited to such meetings. In this forum the physicians together work to conclude on a diagnosis with the highest degree of precision possible and go on to discuss and conclude on relevant treatment, where alternatives could be i.e. surgery (usually with hopes of curing) or radiation and/or chemotherapy (commonly when curing is not possible). In these decision-making processes physicians look for support in consensus-developed guidelines relevant for the disease in question. Sociologist Per Måseide has studied and described these MDT-meetings in detail and concluded that, especially when there is doubt in the room, this process portrays as a social production of biomedical truth. (Måseide 2006)

Another reason why physicians act with unsolicited paternalism is lack of awareness that a decision which morally mandates solicitation and informed consent is being made. I see examples of such decisions frequently in my clinical work. Patients have been started on a medication without having been asked or informed. A concrete example of this is the use of blood thinners for patients who have atrial fibrillation in order to protect them from having a stroke. Physicians can apply risk scores developed from large study populations to extrapolate the prevalence of stroke from this study population as the degree of risk for the patient in question. (Camm et al 2010; January et al 2014) My experience is that if this score is high, physicians do not necessarily find it ethically correct to open up for discussion regarding such a decision under the rationale that "the evidence speaks for itself". I have made this exact unsolicited paternalistic decision myself and my excuse now is that I just was not properly aware of this being a decision that would profit from being discussed with the patient. Time constraint is another excuse I have heard when I have asked my colleagues why they don't discuss such decisions with patients.

How is this relevant for a study of decisions in clinical encounters? Patient-physician encounters are meetings between persons where not only there is an imbalance of knowledge, but also different starting points with regards to who shall decide. (Whitney

2008; Landmark et al 2014) A patient's starting position may range from presenting an explicit request to the physician (e.g. "I need a prescription for birth control pills") to not having a preference at all. A physician's starting position is the obligation to offer health care while juggling the patient's preferences with legislative regulations, evidence based practice and personal and employer preferences. Finding mutual ground for discussing decisions may be challenging.

5.5 What is a good medical decision?

This question signals a shift from discussing medicine and clinical decisions in a descriptive fashion, to entering some of the reigning normative frameworks of today. Three of these frameworks focus on how the patient and physician communicate around medical decisions. I will also mention two approaches that are more theoretical and less patient-inclusive in their methods, but their aims are directed towards better quality medical care.

In 1982 President Reagan's Commission for Ethical Problems in Medicine and Biomedical Research and Behavioral presented the term shared decision-making (SDM) for the first time. (President's Commission 1982) In the wake of the Commission's report two different approaches to increase patient involvement in decisions evolved – although with quite similar motives, also fundamentally different from one another.

Informed decision making (IDM) has evolved from bioethics and has been promoted with aims of improving the informed consent process in medical decisions. (Braddock et al 1997) The previously mentioned Clarence Braddock and colleagues performed a large study assessing the degree of IDM in more than a 1000 outpatient surgery or primary care encounters and found that a low 9% of decisions fulfilled the criteria for IDM. (Braddock et al 1999)

Shared decision-making (SDM) has evolved more as an offspring of patient-centered medicine and patient-centered communication. (Charles et al 1997; Towle & Godolphin 1999; Elwyn et al 2003; Makoul & Clayman 2006; Stiggelbout et al 2012) SDM aims to support patients in deliberation and determination around decisions entailing two or more options where there is genuine uncertainty about what option would be beneficial. (Elwyn et al 2012) This situation is referred to as equipoise. (Freedman 1987; Elwyn et al 2000) A wide range of studies have assessed the degree of SDM in different contexts and generally report low degree of SDM. (Couët et al 2013; Elwyn et al 2001a) Outcomes of SDM have been assessed in a recent systematic review. When analyzing 39 studies, Shay et al. found

that SDM, when perceived by patients as occurring, tended to result in improved affective-cognitive outcomes, but not in patient behavioral and health outcomes. (Shay & Lafata 2014)

Quite recently, a third conceptual approach to customizing care for the individual patient has been promoted. Patient-centered decision-making (PCDM) or Contextualizing Care incorporates clinically relevant patient-specific circumstances and behaviors into formulating a contextually appropriate plan. (Weiner et al 2014) The approach starts by flagging contextual factors that might be relevant to incorporate in a care plan. In a study of 774 patients, 208 contextual factors were confirmed. In 157 of these factors, PCDM was found to address 96 and of these outcomes improved in 71% versus 46% unaddressed by PCDM. (Weiner et al 2013)

Evidence-based medicine (EBM) aims to optimize decision-making by emphasizing evidence from well designed and conducted research. As the movement has evolved over the past three decades, it has both integrated the perspective of clinical expertise and more recently patient values and is now defined by Sackett and colleagues as "the integration of best research evidence with clinical expertise and patient values" (Sackett 2000)

EBM and SDM seem to be in a process of finding each other (Hoffmann et al 2014; Montori et al 2013) and their common platform so far is patient decision aids, which are tools to facilitate patient participation in decision-making. These tools may be designed in a wide variety of ways; cards, leaflets, educational videos, interactive software programs, option-comparing spreadsheets etc. (Montori et al 2006; Elwyn et al 2013a; Mann et al 2010; Vandvik et al 2013) In a systematic review of 115 studies of decision aids including 34 000 patients, Stacey et al., found that patients improved their knowledge of the options, felt more informed and more clear about what mattered most to them, had more accurate expectations of possible benefits and harms of their options and participated more in decision making. (Stacey et al 2014)

Lastly, patient safety emphasizes the registration, analysis and prevention of medical errors that leads to adverse events, i.e. which harm patients. In its earlier years its focus has been on identifying errors already made using various patient record identification tools (e.g. Global Trigger Tool). (Michel et al 2004; Parry et al 2012) In the latter years there has been a stronger emphasis on preventive measures. The best known study so far was conducted by Atul Gawande and colleagues, who assessed the effect on operations of nearly 8000 patients before and after the implementation of "The safe surgery checklist". They found a significant decrease in mortality and inpatient complications associated with the

implementation of the checklist. (Haynes et al 2009) One of the advantages in studying an operating room for research purposes is that it is a relatively fixed and repetitive context. Implementation of improvement programs in other contexts of hospital care becomes more complicated because they are commonly more fluent and less predictable. It is therefore worth to mention that Braddock and colleagues recently published a prospective interventional study where they found that a multifaceted patient safety program targeted at hospital acquired severe infections (sepsis), suggested an association with improved hospital acquired complications and weighted risk-adjusted mortality. (Braddock et al 2014)

How is this relevant for a study of decisions in clinical encounters? Both physicians and patients want to make good decisions. Patient involvement in medical decision is both an ethical and a public imperative. (Beauchamp & Childress 2001; Coylewright et al 2012) Models for involving patients in decisions aim to integrate best available evidence. Still, even the most strenuous efforts to decide right, by the physician or the medical team, with or without involvement of the patient and/or relatives, will sometimes lead to poor outcomes. This ever-present Damocles sword of medicine could sometimes lead physicians to involve patients in clinical decisions not because it is an ethical imperative, but as a precaution against being made liable. In order to disentangle the forces at work in decision-making processes, we need to establish a more detailed, precise and comprehensive description of the decisional landscape than what has previously been offered. When the punctuation marks of medical care are sufficiently mapped, we can proceed to study and describe how physicians think and communicate before decisions are made and start forming detailed prescriptions for communication in different decisional situations.

6 Aim and research questions

We wanted to study the association between communicative behavior in medical encounters and the quality of medical decisions. In the preparatory phase of the study we discovered, as described above, that few descriptive, empirical studies of decisions in medical encounters existed and that all but one of these studies assessed decisions with regards to degree of patient involvement. Accordingly, we set out to explore an extensive, available dataset looking for any possible medical decision in order to provide a detailed map of an insufficiently charted continent of medical practice.

We operationalized the aim into the following questions:

1. What is a clinically relevant decision in a patient-physician encounter?
2. Provided we are able to develop a definition and identify clinically relevant decisions, when and how are clinical decisions made in hospital encounters?
3. Provided we are able to develop a definition and identify clinically relevant decisions, how can we classify them and sort them into precise and detailed categories that are mutually exclusive?
4. Provided that we are able to define, identify and classify clinically relevant decisions, how does the decisional terrain look in hospital encounters?

7 Material and Methods

Study context

The present study draws on data that was collected as part of the study "Better clinical communication in hospitals", a randomized controlled trial (RCT) to evaluate the effect of a 20-hour communication skills course for physicians. (Fossli Jensen et al 2011)

7.1 Material

In the period between 2007 and 2008, Bård Fossli Jensen (BFJ) and Pål Gulbrandsen (PG) recorded 519 videotaped patient-physician encounters at Akershus University Hospital (Ahus). Ahus is one of Norway's largest hospitals with 953 beds and 9231 employees (Ahus.no 2015).

Physicians

In order to secure physicians to participate in the trial, the hospital administration endorsed the project and instructed department heads to allow doctors time off from their clinical work to participate in the intervention. (Fossli Jensen et al 2011) Recruitment of physicians started by generating a list of all physicians under 60 years of age working in non-psychiatric clinical departments (randomized list order for each; internal medicine, surgery, orthopedics, pediatrics, obstetrics/gynecology, ear-nose-throat, neurology, anesthetics).

From this body of 249 physicians a statistical stratification on the basis of department and status (consultant or resident) was made. Necessary sample size of the intervention was calculated to be 64 physicians. Anticipating a 10% loss to follow-up, 72 physicians would be enough to secure the sample size. Physicians were approached following the random order of the list and when 103 physicians had been invited, 72 (70%) had consented to participate in the trial.

59 of these physicians provided broad consent, meaning that the physicians did not only consent to participate in the RCT, but also consented that their videotaped recordings could be used in other studies on clinical communication until 2020.

Patients

The patient sample was convenience based; patients were recruited consecutively on the days the participating physicians were available. (Gulbrandsen & Jensen 2010)Patients would receive normal medical care and the only extra risk they could possibly run was that the presence of a video camera could affect the situation. The patients were informed that the videotapes were to be assessed by external individuals (researchers). Because of this the Regional Ethics Committee required the recommended 24-hour time for reflection for the consent to be valid. (Wager et al 1995)

Patients were approached in the waiting room on the day of the encounter. If a patient, after having received oral information and read the written information, decided to agree to inclusion, data including videotaping of the encounter were collected. After data collection, the patients signed the information and consent form. The patients' cell phone number was registered. They were given a copy of the written information to take home, and informed that after more than 24 hours they would receive a standardized message via short message service (SMS) in which they were asked to confirm or regret their decision by responding 'yes' or 'no'.

Patients were explicitly informed that if they regretted the decision, all data about them would be deleted, and that regret would not have any consequences for their relationship with the doctor or the hospital. Patients were strongly recommended to discuss the decision with relevant individuals. The SMS response was saved digitally as a documentation of their decision. Patients who did not have a cell phone were contacted in person (if an inpatient), by telephone or regular mail. The ethics committee accepted this procedure.

A total of 553 patients was approached by one of the two researchers (PG or BFJ), 530 (95.8%) decided to participate and gave informed consent. 519 (98.5%) confirmed their consent via SMS, telephone, letter or orally. In 499 of these encounters the videotape was of sufficient quality to be included in the study. One physician with two videotaped encounters withdrew from the study after inclusion, leaving a total of 497 encounters in the original study.

Of the 497 videos from the original study, patients in 445 (89.5%) and physicians in 427 (85.9%) videos gave broad consent that their videotaped recordings could be used in other studies on clinical communication until 2020. With an overlap of five videos where neither physician nor patient gave broad consent, the material available for our study was 380 videotaped encounters (76.4% of encounters from the original study).

Ethics

The original study was accepted by the Regional Ethics Committee for Medical Research of South-East Norway in 2007 (1.2007/356). By broad consent 380 videos were available for the study that we started planning in 2009. At the time of the encounter, the patients and physicians were of course unaware of our subsequent focus on identification and classification of decisions. We applied to the Regional Ethics Committee for Medical Research of South-East Norway for approval of our study in 2009. The application was granted (1.2009/1415).

Privacy

Privacy measures were accepted by the privacy ombudsman for research in Norwegian universities (NSD approval 16423/2007). Since 2007, the privacy authority for Akershus University Hospital is based in the hospital, which granted a permit for the PhD student to study a copy of the 380 videotapes stored on an encrypted hard-drive situated in a locked facility.

Characteristics of participants and encounters in the present project

The 380 encounters where participants gave broad consent were the basis for our study. The characteristics of physicians and patients are shown in table 1.

Table 1. Characteristics of the physicians and patients in our sample

		N	%
Patients		380	
	Men	186	49
	Women	194	51
	Age 0-17	82	22
	Age 18-60	174	46
	Age >60	124	32
Physicians		59	
	Men	35	59
	Women	24	41
	Age <40	31	53
	Age ≥40	28	47
	Internal medicine specialties (cardiology, respiratory medicine, nephrology, gastroenterology, endocrinology, hematology, infectious diseases, oncology)	20	34
	Surgical disciplines (gastro surgery, urology, thorax & vascular surgery, orthopedics, ear-nose-throat, anesthesiology)	16	27
	Obstetrics & gynecology	7	12
	Pediatrics	8	14
	Neurology	8	14
Setting		380	
	Outpatient	291	77
	Ward round	58	15
	Emergency room	31	8

In the present project, we reviewed 380 videotapes. Eight of these videos were excluded from the final analysis: one encounter was incompletely captured on videotape (showing only six of 53 minutes), and one physician whose seven encounters all exceeded 60 minutes was excluded, as this practitioner represented an extreme outlier.

The average duration of the 372 encounters was 21:06 minutes (range 3-66). In the material of 497 videos the average duration was 21:25 minutes. In 87 (27%) of 372 of the encounters the communication was observed and coded by EHO as challenging either because the patient was a child or an immigrant with limited Norwegian fluency. In three encounters the patient was a child with immigrant parents with limited Norwegian fluency.

I coded all encounters with regards to the primary diagnosis for the episode of care by taking physician specialty, setting and the medical condition discussed in the encounter into account. Coding was done according to the International Statistical Classification of Diseases and Related Health Problems Revision 10 (ICD-10). (World Health Organization 2004) See Table 2 for full distribution of primary diagnoses.

Table 2. Primary diagnosis for the episode of care in our material according to ICD-10

ICD-10 categories (classification letter)	N (%)
Diseases of the circulatory system (I)	50 (13)
Neoplasms (C/D)	38 (10)
Symptoms, signs, findings not classified elsewhere (R)	35 (9)
Diseases of the digestive system (K)	32 (9)
Diseases of the musculoskeletal system (M)	29 (8)
Diseases of the genitourinary system (N)	28 (8)
Endocrine disorders (E)	27 (7)
Diseases of the nervous system (G)	25 (7)
Diseases of the respiratory system (J)	25 (7)
Pregnancy, childbirth (O)	18 (5)
Injury due to external cause (S/T)	16 (4)
Infectious disease (A/B)	14 (4)
Congenital malformations (Q)	8 (2)
Factors influencing health status and contact with health system (Z)	6 (1)
Diseases of the ear (H)	5 (1)
Diseases of the skin (L)	4 (1)
Diseases of the blood (D)	3 (1)
Mental and behavioral disorders (F)	3 (1)
Conditions originating in perinatal period (P)	3 (1)
Preoperative visit without known problem	3 (1)
Total	**372 (100)**

I also registered if encounters contained a clinical procedure comprised by the Norwegian classification of surgical and medical procedures. (Helsedirektoratet 2011). 81 (22%) of 372 the encounters comprised a procedure, the most frequent being obstetrical or gynecological ultrasound (27%), echocardiography (21%), stress-echocardiogram (9%), pacemaker-test (7%), neurography/electromyography (7%), anoscopy/rectoscopy (7%) and urethrocystoscopy (6%).

7.2 Methods

The project team

We decided to assemble a team of researchers for this project. Since the start in 2010, the team has consisted of:

- Pål Gulbrandsen: a former general practitioner and a specialist in public health, who has worked full time in health services research the past decade, currently as a professor at the University of Oslo, based at HØKH Research Centre at Akershus University Hospital in Lørenskog.
- Jan Frich: a neurologist at Oslo University Hospital Rikshospitalet and a professor at the University of Oslo, with a special interest in Huntington's disease, qualitative methods and leadership development within health care.
- Edvin Schei: a specialist in family medicine at Eidsvåg legesenter and a professor at the University of Bergen, who teaches and writes about patient-physician communication, philosophy and the physician as a leader in medical encounters.
- The PhD candidate: who combined the PhD-period with a position as a physician under specialization in internal medicine at Nordland County Hospital in Bodø and had worked three and a half years as a physician when the project started.

In 2011 we included Richard Frankel, who had collaborated with Gulbrandsen since 2006. He is a social psychologist and professor at Indiana University School of Medicine.
The project team members were scattered in four different locations in Norway, and in the United States.

In the project's first year and a half, the Norwegian project group members met for six sessions that lasted one or two days. Before every meeting we prepared material for discussion, I took notes during the first meetings and shifted to audio recording in the last meetings. After every meeting I wrote a summary with action points to be followed up before the next meeting. The members of the core group in this project team are all physicians. A previously informed perspective may function as a bias in the analysis of interaction between people, which anthropologists for a century have described as ethnocentrism (Sumner 1906), in this case medical ethnocentrism or medicocentrism (Pfifferling 1980). Medicocentrism – seeing the world from a medical standpoint – represents a central challenge for health professionals who conduct qualitative research within their own field. (Malterud 2011) We had continuous discussions concerning our common medical grounding and how it could bias our analyses.

Deductive and inductive

It became clear to us at an early stage that this project was partly deductive, partly inductive.

Deductive reasoning is the process of reasoning from general knowledge (episteme) to the application of this knowledge in a concrete example. (Malterud 2011) Deductive reasoning is a ”top-down” approach starting from the top with existing theory and going down into the material to find answers. Deductive reasoning could schematically be presented like this:

Theory → Hypothesis → Observation → Confirmation

In our case – being experienced physicians and having knowledge of previously published material on clinical decisions – the prescription of drugs was an action that we intuitively agreed on being a clinically relevant decision and an action that several authors previously had described as a clinical decision. (Braddock et al 1997; Braddock et al 1999; Elwyn et al 2000; Elwyn et al 2001b; Charles et al 2003)

Inductive reasoning follows the opposite path, when a concrete example may inform and create general knowledge. Inductive reasoning is a ”bottom-up” approach where the material allows for identification of terms and categories that previously have not been precisely described or separated. (Malterud 2011) Inductive reasoning could schematically be presented like this:

Observation → Pattern → Tentative Hypothesis → Theory

In other words our project needed an approach allowing headroom for already existing theory, while having the ability open up for new phenomena extracted from the data.

Crabtree and Miller

In her Norwegian book on “Qualitative methods in medical research” (my translation), Kirsti Malterud describes a wide range of different qualitative methods that could be useful in medical research (Malterud 2011, pp. 91-112). Among these we find the three different prototypical strategies of qualitative research as Crabtree and Miller presents them (Crabtree & Miller 1999, p 22).

- Immersion/crystallization (I/C)
- Editing Analysis Style (EAS)
- Template Analysis Style (TAS)

By taking a first look at the figure outlining these different methods, I saw a pattern that made sense with respect to what we were trying to achieve.

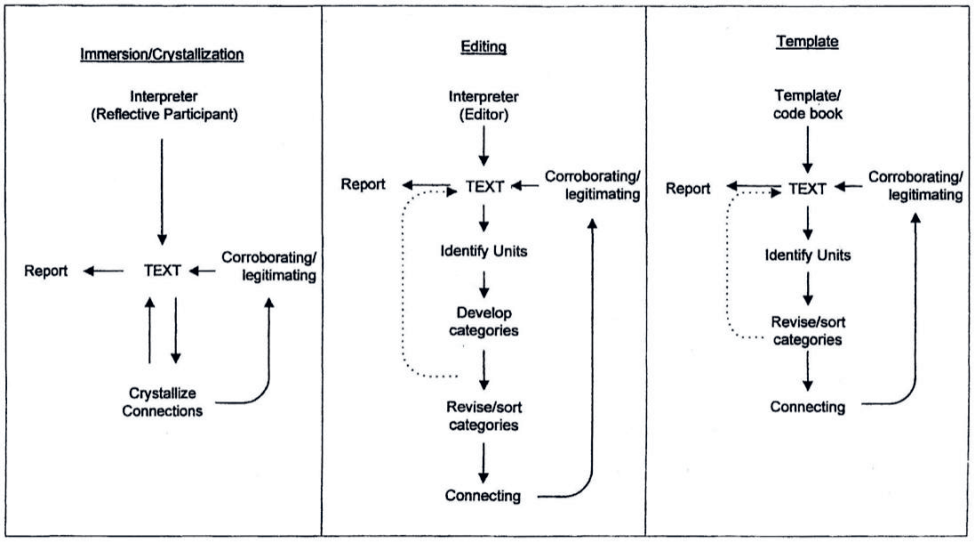

Figure 1: Diagrammatic representation of different organizing styles of analysis (reprinted with permission from Universitetsforlaget: "Kvalitative metoder i medisinsk forskning", Kirsti Malterud, 3rd edition, 2011).

I saw this figure more as a process moving from left to right, rather than a depiction of three separate, impermeable boxes. As Crabtree and Miller write in the first chapter of the book "Doing Qualitative Research" which they were editors of:

"Our own approach to the organizing phase of analysis is to conceptualize a continuum of three different idealized organizing styles with permeable, fluid boundaries capable of changing over the course of any given study… One advantage of distinguishing three different styles is the ability to recognize how each limits, alerts, and disrupts the natural stream and structure of the text. This recognition reinforces the suggestion to use multiple organizing styles over time. More important, we hope the three styles, and our description of their use over time, help display and promote the dynamic, creative, iterative, yet disciplined craft of qualitative interpretation". (Miller & Crabtree in Crabtree & Miller eds. 1999, p 134)

The way I read this, is that Crabtree and Miller actually encourage researchers to apply more than one style and emphasize the possibility of shifting back and forth between them, if the analysis of the material could benefit from it.

Immersion/crystallization

The least structured of the three organizing styles, immersion/crystallization (I/C), consists of the analyst's prolonged immersion into and experience of the text, and then emergence after concerned reflection, with an intuitive crystallization of the data. As previously described, we felt that the previous efforts of describing clinical decisions in patient-physician encounters were not precise, detailed or exhaustive enough. Because of this, starting with an open approach like I/C aligned with the open and reflexive approach we as a team had agreed on. We had prior knowledge into the field and were aware of previous categories, but we discussed the need for explicit efforts to free us from this prior knowledge and entered the videotaped material as intuitive observers, which is in concordance with how the method is described:

"The analyst's intuition and team reflexivity work as they are engaged with the data are the primary source of interpretation… Reflexivity is especially important when using this organizing style". (Miller & Crabtree in Crabtree & Miller eds. 1999, p 135)

In what retrospectively could be seen as an I/C phase of the project, our group meetings emphasized discussions on reflexivity and we entered the material with no particular previous method or framework in mind. The way we worked with the material was that we saw videotaped encounters either by ourselves before the meetings while taking notes or we saw them together while pausing and discussing the content and meaning of the dialogue. The transcribed sections of dialogue were discussed with regards to whether they signified a clinical decision or not. These sections of dialogue commonly found place after some time in the encounter and early on in our I/C process we felt a need to structure the material into different sections.

SOAP-notes

In an attempt sort sections of dialogue where diagnoses and treatment were discussed from the remaining sections of the encounters, we decided to describe the encounters according to a structure. For this task, we drew on a well-known clinical framework, namely "SOAP notes" which is an acronym for:

- Subjective: the patient's story (symptoms, concerns, context)
- Objective: observed or measured clinical findings
- Assessment: formulation of diagnosis based upon analysis of the patient's story and the clinical findings
- Plan: actions based upon the assessment, including diagnostics and treatment plan.

The SOAP note originates from the Problem Oriented Medical Record (POMR) developed by Lawrence Weed in the late sixties (Weed 1971) and is today widely adopted by health care professionals of various backgrounds. Based on the SOAP note structure, I organized the timelines of the encounters in three different phases:

- Phase 1: information gathering (subjective and objective)
- Phase 2: defining problem (assessment)
- Phase 3: management (plan)

Core process and core questions

In the chapter on I/C (Borkan in Crabtree & Miller eds. 1999, pp. 179-194), the section "The Core Process" starts with:

"In describing the core process of immersion/crystallization, one must answer two fundamental questions:

- What are the content and constituent elements?
- When does it begin?"

The first question was almost identical to our research aim:

- *What is (the content and constituent elements of) a clinically relevant decision?*

The second questions actually made us aware of one of the main challenges in our material:

- *When are clinically relevant decisions made?*

As our first paper reveals, the framework of I/C aided us in the analysis of the temporal characteristics of decisions in hospital encounters, but the full comprehension of the temporal dimension in clinical decision-making did not become clear until we moved into the editing analysis and template analysis phase of the project.

I worked part time as a clinician during the project. After nine months of immersion into the data and team discussions, we as a group started to close in on an agreement of what constituted a clinically relevant decision and what did not. This agreement was not made explicit and we did not at this stage attempt to formulate a definition or structure a classification.

Editing Analysis Style

In March 2011, PG came to visit me in Bodø. Before the meeting I had transcribed all statements with any resemblance of being decisions according to our group discussions. These 262 statements were drawn from 30 encounters. I printed the statements on double spaced paper and cut each statement or passage of dialogue into strips of paper. We then got out all the boxes and coffee mugs we could find and tried to sort the statements into groups with common denominators.

The boxes and mugs were given provisional names on post-its that we attached. We are aware of available digital software for organizing text, like “Nvivo” or “Atlas”. I intuitively decided to organize this as an analog, hands-on exercise, which worked really well because we did this as a pair and had the possibility of placing, tagging and moving around actual objects in front of us, instead of being distracted by technical skill requirements of a computer software.

The categories from this exercise were “future drugs”, “admit/discharge”, “future referral”, “old decisions conveyed to patient”, “current diagnostic”, “legal”, “drugs”, “control”, “external info”, “future control”, “treatment goal”, “NOT”.

This approach to the transcribed material aligns with the strategy that Crabtree and Miller describe as Editing Analysis Style (EAS). (Addison in Crabtree & Miller eds. 1999 pp. 145-162) Most of the strips were easy to sort into categories with others, some were harder to group and we sorted these into the “NOT”-box, deferring to decide upon them and present them to the group for discussion.

At this point we did not have an overall structure of intuitive categories. In our subsequent group meetings we discussed the provisional categories and as a result of these discussions the categories’ names and boundaries were further developed, new categories emerged and we tried to sort them into a schematic structure. Table 3 shows how the categories were tentatively structured in April 2011.

Table 3. Provisional structure of clinical decision categories as of April 2011.

Phase 1 (info gathering)	Phase 2 (define problem)	Phase 3a (management)	Phase 3b (future)
Clinical Information	Clinical Evaluation	Drug Related	Drug Related
Paraclinical Info	Paraclinical Evaluation	Surgical Related	Surgical Related
External Information	Current Diagnostic	Legal Related	Legal Related
	Convey Established	Referral	Referral
		Admit/Discharge	Future Contact
		Advice	Future External Info
		Precaution	
		Treatment Goal	
		Convey Established	

I tried out several ways of organizing the categories between group meetings and without achieving the tidy, clear and comprehensible structure we as a group hoped to reach. The bits and pieces of our puzzle came together when temporal and topical categories were separated, as two different dimensions hypothesizing that every decision has both a topical and a temporal characteristic. Table 4 shows the earliest version of what has become the structure of our categories.

Table 4. The earliest version of what was to become the structure of categories.

PAST (C)	PRESENT (P)	FUTURE (F)
←	Gathering information (G)	→
←	Defining problem (D)	→
←	Drug-related (M)	→
←	Surgery-related (S)	→
←	Legally related (L)	→
←	Contact related (C)	→
←	Referral (R)	→
←	Advice (A)	Precaution
←	Treatment Goal (T)	→
←	Deferment (N)	→

In this period the process of iteratively working with categories and their meaning in an editing analysis fashion, evolved into a gradually more structured approach. Not only did we discuss categories, but also we discussed categories with hopes of singling out all relevant categories as we aimed to identify all clinically relevant decisions. We also decided to try out the categories and structure we had agreed upon as codes when analyzing the videos and we attempted to describe the categories as detailed and precise as possible, with aims that each category should be mutually exclusive from other categories.

Template Analysis Style

Approaching the material in such a way, aligns with how Crabtree and Miller describe the most structured fashion to organize qualitative data, namely Template Analysis Style (TAS). (Crabtree & Miller in Crabtree & Miller eds. 1999, pp 163-178) TAS is the process of using a template to form codes comprised by a code manual. TAS is particularly suited for larger volumes of textual material. The way TAS described by Crabtree and Miller differs from EAS, is the primary use of codes as a starting point.

So far we had worked with our material in an EAS fashion, but as we attempted to apply the categories to code the material we continued our iterative discussions, which in turn led to more precise descriptions of each category and alterations in our coding scheme. As Crabtree and Miller writes:

"Note that, in editing style, the researcher makes interpretations (observations) of segments of text, and these interpretations are in turn used to make further abstractions; the researcher using template style identifies segments of text that are sorted and used to make further abstractions. (note where the recursive arrows occur)" (See figure on page 41) (Miller & Crabtree in Crabtree & Miller eds. 1999, p. 165)

By September 2011 we proceeded with the first attempts to code videos. I selected five videos aiming to have variation in gender and age of physicians and patients, in clinical setting and specialty. This approach to selection is described as maximum-variation sampling; sampling as wide a range of perspectives as possible to capture the broadest set of information and experiences. (Kuper et al 2008)

All four physicians of the core group coded the five videos. The coding was done with an excel-sheet where each coder registered identified decisions at each row, inserted time point of when the decision was communicated in the first column, inserted specified

letter for topical category in the second column and for temporal category in the third column (se letters in table 4). In the fourth column every coder wrote a short transcription of the spoken words related to the code and we discussed our findings within the group.

Three major conclusions came out of this first coding session and its subsequent discussion:

1. There were differences between what each of us has coded. We discussed all codes we agreed upon, thereby making the agreements explicit. We discussed our disagreements and how to calibrate our common threshold for what could be identified as a clinically relevant decision. Using the metaphor of a fishing-net, we agreed that the mesh size of our net was too large and that our net allowed clinically relevant decisions to pass through.

2. We combined the two categories, contact-related and referral. Both categories represent an element of (level of) contact with the health care system and sometimes they were hard to distinguish from each other, i.e. when the physician referred the patient to a diabetes nurse who sat next door.

3. It was sometimes hard to distinguish whether or not the decision communicated to the patient had been made before the encounter. When we felt certain, we coded the decision as preformed (past). If we were in doubt, we agreed that decisions should be coded as made in the present.

In November 2011 we coded five new videos with maximum-variation sampling. There were also this time disagreements between us, which we discussed. Our discussions lead to three major changes:

1. There were once again differences between our codes and this time the mesh size had become so small that we realized we had moved away from clinically relevant to clinically detailed in a manner that was not feasible. In particular we saw this in the categories “drug-related” and “advice and precaution”. When physicians prescribe drugs they often give a mini-lecture that comprises the name of the drug, the dosage, when during the day it should be taken, how it works, what potential side effects it may have etc. With regards to advice, physicians often get very specific when giving advice on i.e. diet or physical activity. We decided that for every drug, we should administer one code, unless the decision was framed in an additional temporal dimension – then it would count as two codes (i.e. “Let’s start with this drug” and “If it does not work, you could double the dosage”). With relation to diet, we agreed on administering one code for dietary advice as a whole and not one code per item or food group.

2. We struggled with our "defining problem" category, because the diagnostic conclusions we coded within these categories varied substantially; from the simplest of assessments (i.e. "Your blood pressure is fine") to complex conclusions based on several sources of information (i.e. "Based on our findings it is likely that you have had a minor stroke"). Because of this we separated simple evaluations from the "defining problem" category and eventually named this new category "interpretation of test". Also in our "defining problem" category we observed that physicians often gave mini-lectures on possible causes of disease and prognosis. These mini-lectures were often a summary of general medical knowledge and not customized to fit the patient's context. Other times we observed that the physicians directed statements concerning cause, prognosis and possible risks to the patient and his or her life-world. Consider the difference between these two statements: "Five year survival in a large population with this disease is about 10%" versus "You have a 10% of being alive in five years". Our discussions concerning this distinction led us to an agreement that we would code the latter statement as a decision because it is a statement contextualized to the patient, while the former - as a provision of general medical information – would not be coded.

3. We saw a pattern in the statements that we coded as conditional (future) based on future trajectories. Commonly these forecasted decisions started with a subordinating conjunction to form a conditional clause (i.e. "If you get chest pain again, you should contact your physician"). Becoming aware of this pattern made it easier for us to identify the temporal characteristics of such statements.

In January 2012 we coded five videos for a third round. This coding session saw us much more in-tune with each other and differences between our coding were small. We decided that we had reached a point where the structure of our coding system could be tested in terms of reliability.

Typology or taxonomy?

During this iterative period we discussed what to call our system of categories. Early on we discussed whether our work could be described as a typology or not. Typology is the study of types and to structure types into typologies in different professional disciplines is common. We initially called our system a typology, namely the Decision Identification and Classification Typology for Use in Medicine (DICTUM).

Later on we had discussions about the distinction between typology and taxonomy. Taxonomy originates from biology and is the science of description, identification and classification of organisms. Elizabeth Bradley et al have described the term and its relevance in qualitative research with great clarity and precision in the paper "Qualitative Data Analysis for Health Services Research: Developing Taxonomy, Themes and Theory". (Bradley et al 2007) Taxonomy is a formal system for classifying multifaceted, complex phenomena according to a set of common conceptual domains and dimensions. (Patton 1999) Taxonomies promote increased clarity in defining and hence comparing diverse, complex interventions (Sofaer 1999), which are common in health policy and management.

Bradley et al. describes how qualitative analysis aiming to develop taxonomy should be done. When describing development of coding structure, they outline the range of possibilities in the landscape between inductive and deductive approaches. They describe an integrated approach which employs both inductive (ground-up) development of codes as well as a deductive organizing framework for code types (start list). They describe five different types of codes from previous literature which all have relevance for health care research:

- Conceptual codes and subcodes identifying key concept domains and essential dimensions of these concept domains
- Relationship codes identifying links between other concepts coded with conceptual codes
- Participant perspective codes, which identify if the participant is positive, negative, or indifferent about a particular experience or part of an experience
- Participant characteristic codes
- Setting codes.

As can be seen from our final taxonomy and its codebook (see appendix), the topical dimension with subcategories constitutes a set of conceptual coding categories. The temporal dimension of the taxonomy has characteristics of being a set of relationship coding categories. The independent variables registered in each of our encounters (age and gender of patient, number of relatives present, language proficiency of patient, specialty of physician, type of encounter) give this material participant characteristics codes and setting codes.

After consideration we decided that the word taxonomy described our classification system in a more precise way than typology and it is now called The Decision Identification and Classification Taxonomy for Use in Medicine (DICTUM).

A new definition

Around this time we also started discussing a possible definition that comprised all the categories described in our taxonomy. We decided to build our definition on the previous definition by Clarence Braddock and colleagues (Braddock et al 1997) and expanded it to include the categories our medically informed iterative approach had led us to form.

"A clinically relevant decision is a verbal statement committing to a particular course of clinically relevant action and/or statement concerning the patient's health that carries meaning and weight because it is said by a medical expert".

In order to assess the taxonomy in terms of reliability, we needed to compare how we as coders were able to identify and classify in agreement using the final version of the taxonomy.

Inter-rater reliability

Inter-rater reliability can be measured statistically to reveal by how much the data deviate from the ideal of perfect reliability and whether this deviation is above or below accepted reliability standards (Krippendorff 2004, p 221). We needed a statistical method that allowed the comparison between several coders. Klaus Krippendorff's α-agreement for coding allows for the comparison of many observers, many nominal categories and missing values (Krippendorff 2004, pp. 230-236). We were four coders, we needed to take missing values into account (when coders don't code, while others do) and we had ten nominal categories with regards to type and three with regards to time.

In February 2012 we coded a final set of five videos selected through maximum-variation sampling. Krippendorff recommends the following policies (Krippendorff 2004, p. 241):

- rely only on variables with reliabilities above α=.800
- consider variables with reliabilities between α=.667 and α=.800 only for drawing tentative conclusions

Our four-way coding of five videos returned α=.79.

Next, we decided that I would code the entire material of 380 videos and that PG would code every 20th video in the randomized list of encounters. In this way we could measure inter-rater reliability to check for drift. To measure this two-coder inter-rater reliability, we calculated Cohen´s kappa. (Gwet 2014) Inter-rater reliability in the 19 videos coded by two coders averaged κ=0.61.

Intra-rater reliability

In addition to inter-rater reliability, we would evaluate how sustainable my coding was throughout the coding period by calculating intra-rater reliability from my coding of five videos sampled with maximum-variation approach. In the setting of a known number of subjects, two replicates of each subjects and an arbitrary number of the response categories, the equation of the kappa statistics remains unchanged. (Gweet 2008) Intra-rater reliability was therefore calculated using Cohen's kappa. Intra-rater reliability in the five videos I coded twice averaged κ=0.77.

Coding the material

To code the material of the 380 videos I used the observation software Observer XT (Noldus Information Technologies, Wageningen, The Netherlands). Observer allows for several different approaches to code real-time audio or video. (Noldus et al 2000) Relevant observations can be coded as state events; events occurring over some duration of time, by entering a code when the event starts and another code when the event stops. Alternatively, events can be coded as point events; assigning a code at a point in time when something of a short duration occurs, e.g. a gunshot.

I set up the coding scheme to assume mutual exclusivity between categories. In order to be able to code all topical and temporal categories with relevant modifiers, I decided to code decisions as point events, instead of as a state event of some duration (which would require the use of two different keyboard keys per code instead of one). Decisions are of course communicated over the time it takes for one or several participants to communicate the relevant content, i.e. they should be coded as state events. But for the sake of simplicity and the opportunity of increasing precision in the subgroups of the decisions (by having availability of ten additional keyboard keys), I coded them as point events. Entering a point event code stops the videotape. Because of this the point event code was entered immediately after the statement conveying or finalizing a decision had been said. We decided on such a rule when coding to minimize the need for rewinding. In addition to point events, I coded the structure of the medical encounter as state events (see Figure 2).

Figure 2: DICTUM coding scheme
Below: decisions are coded as point events and the structure of encounters as state events
To the right: every decision code is classified into a relevant subgroup

Decisions (Mutually exclusive, Exhaustive)		
No decision	-	Initial State Event
Gathering info	g	Point Event
Simple evaluation	e	Point Event
Defining problem	d	Point Event
Drug related	m	Point Event
Intervention	i	Point Event
Legally	l	Point Event
Contact	c	Point Event
Advice	a	Point Event
Treatment goal	t	Point Event
Deferment	n	Point Event
Repetition	r	Point Event
Content (Mutually exclusive, Exhaustive)		
Videostart	9	Initial State Event
Meet and greet	0	State Event
Phase 1	1	State Event
Phys exam	2	State Event
Other exam	3	State Event
Manage	4	State Event
Consultation interr...	5	State Event
Relevant colleague...	6	State Event
Checking chart	7	State Event
Videostop	8	State Event

Infogathering (Mutually exclusive, N	
Consult	q
External info	w
Order test	e
Judgment (Mutually exclusive, Nomi	
Good/ok	+
Neutral	
Not good	-
Type definition (Mutually exclusive,	
State of health	æ
Etiology	ø
Prognosis	å
Diagnostic conclusion	o
Action (Mutually exclusive, Nominal,	
Start	r
Stop	t
Alter	y
Maintain	u
Refrain	i
Intervene (Mutually exclusive, Nor	
Surgery	a
Focused care	s
Radiology	d
Radiation therapy	|
Verbal explicit	g
Judicial (Mutually exclusive, Nomi	
Drug refund	h
Sick leave	j
Insurance	k
Disability	l
Nature (Mutually exclusive, Nomir	
Admit	<
Discharge	z
Schedule	x
Referral	c
Instruction (Mutually exclusive, N	
Advice	v
Precaution	b
Qua (Mutually exclusive, Nominal,	
Quantitative	n
Qualitative	m
Not (Mutually exclusive, Nominal,	
Transfer responsibility	,
Change subject	\
Active and specified	'
Temporality (Mutually exclusive, N	
Past	p
Present	.
Future	f

Time	Behavior	Modifier	C
0,00	**Start**		
0,00	Videostart		
0,00	No decision		
2,60	Meet and greet		
15,12	Phase 1		
261,44	Phys exam		
465,40	Manage		
467,24	Gathering info	Order test Past	je
510,20	Intervention	Start Surgery Future	h
529,16	Intervention	Refrain Surgery Future	h
564,76	Defining proble	Prognosis Future	d
586,20	Repetition	Future 5	h
596,00	Repetition	Future 5	al
623,72	Defining proble	Prognosis Present	si
669,88	Repetition	Past 1	
688,56	Videostop		
730,29	**Stop**		

Figure 3: Coding of an encounter
Example of how the event log of a coded encounter looks. This encounter was selected because the amount of communicated decisions was low and the encounter was very structured. As you can see, if decisions were repeated, we coded them as repetitions. Statements conveying decisions were transcribed in the coloumn right to the modifier coloumn. I have not included the transcriptions in this screengrab order to protect the confidentiality of participants.

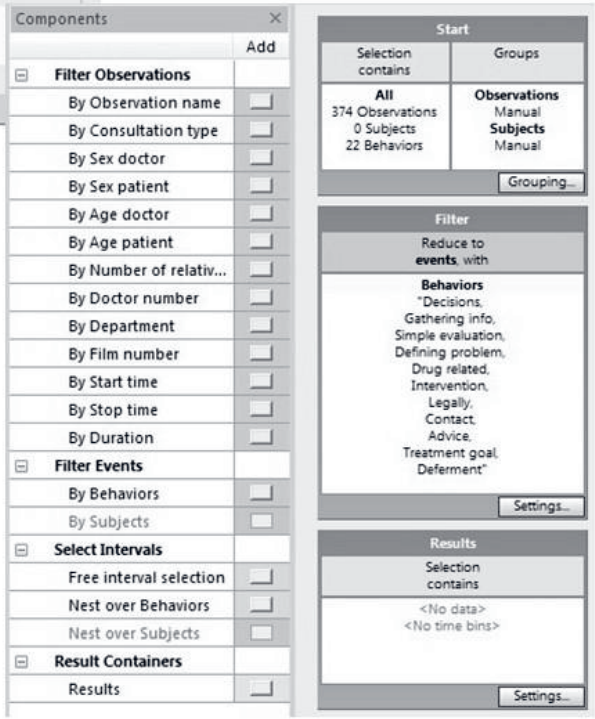

Figure 4: Data extraction from Observer
Observer allows for filtering of observations according to selected variables which may be exported to statistical software via an excel spreadsheet.

Because of part time clinical work, PhD courses and six months of leave from work (paternity leave and sick leave) the coding lasted from December 2012 to September 2014. Average time to code an encounter took 1-1.5 times the duration of the encounter. Because we transcribed statements coded as decisions, the combined coding and transcribing time averaged between 1.5-2.5 times the encounter, depending on the number of codes per encounter (see Figure 3). As I transcribed the statements for all our codes and wrote down reflexive notes after each encounter, the coding took a total of around 400 hours.

Statistical analysis

Once coding was completed, I selected data using the data profile creator in Observer (see Figure 4). The data were exported to the statistical software SPSS21 (IBM Corporation, Armonk, NY, USA) via an excel spreadsheet. We calculated simple descriptive statistics using Altman's Practical Statistics for Medical Research. (Altman 1999) We compared proportions using 2x2 frequency tables and compared means between two groups using independent sample t-tests and between several groups using one-way analysis of variance (ANOVA) with Bonferroni correction. (Bland & Altman 1995) In the statistical analysis we sorted the participant and setting codes according to gender, relevant age groups (children/adult patients/old patients and experienced/inexperienced physicians), specialty of physician, and type of encounter.

8 Summary of results

Paper I:

Ofstad EH, Frich JC, Schei E, Frankel RM, Gulbrandsen P.

Temporal characteristics of decisions in hospital encounters: a threshold for shared decision making? A qualitative study

Patient Educ Couns. 2014 Nov;97(2):216-22. doi:10.1016/j.pec.2014.08.005.

The aim of this paper was to identify and characterize statements that contained evidence of clinically relevant decisions in encounters with patients in different hospital settings and to describe how temporal characteristics of decisions affect preconditions for patient involvement.

We analyzed 50 videotaped patient-physician encounters from three different settings (ward rounds, the emergency room and outpatient clinics) in the department of internal medicine at Akershus University Hospital.

We found that clinical decisions could be grouped in a temporal order: decisions which had already been made, and were brought into the encounter by the physician (preformed decisions), decisions made in the present (here-and-now decisions) and decisions prescribing future actions given a certain course of events (conditional decisions). We observed that there were chronometric differences between settings; preformed decisions were a hallmark in the ward and conditional decisions a central feature of emergency room encounters.

We concluded that clinical decisions related to a patient-physician encounter spanned a time frame exceeding the duration of the encounter and linked this observation as relevant to the current public and ethical demand of more patient involvement in decisions. Our findings indicate that while a distribution of decisions over time and space fosters sharing and dilution of responsibility between providers, it makes the decision making process hard to access for patients.

We propose that in order to plan when and how to involve patients in decisions, physicians need increased awareness of when clinical decisions are made, who makes them and who should make them.

Paper II:

Ofstad EH, Frich JC, Schei E, Frankel RM, Gulbrandsen P.

A novel taxonomy for clinical decisions in patient-physician encounters. A qualitative study

Submitted for publication March 2015.

The aim of this paper was to identify and classify all decisions emerging in conversations between patients and physicians and to describe how decisions can be categorized in different, mutually exclusive topical categories.

For the analysis aiming to develop a framework for identification and classification, we used 50 videotaped patient-physician encounters from three different settings (ward rounds, the emergency room and outpatient clinics) in the department of internal medicine at Akershus University Hospital. In order to test the framework in other specialties, we applied it to a remaining body of 330 encounters from 17 different specialties.

We found that clinically relevant decisions could be sorted in ten different topical categories with mutually exclusive characteristics; 1. gathering additional information, 2. interpretation of test, 3. defining problem, 4. drug-related, 5. surgery-related, 6. legally related, 7. contact-related, 8. advice and precaution, 9. treatment goal, and 10. deferment. Together with an already described definition of what a clinical decision is and a temporal dimension (paper I) consisting of three categories, the topical dimension form the basis for a taxonomy we named the Decision Identification and Classification Taxonomy for Use in Medicine (DICTUM). We assessed reliability of the taxonomy's coding scheme by measuring four-coder inter-rater reliability using Krippendorf's alpha, which averaged 0.79.

We concluded that a taxonomy of ten topical and three temporal categories allows for a detailed, precise and comprehensive description of decisions communicated in patient-physician encounters. Compared to previous normative frameworks, the taxonomy is purely descriptive, substantially broader and offers new categories to the variety of clinical decisions.

We claim that the taxonomy could aid studies on quality of medical work, time-management and use of resources in a financial perspective, and understanding of why, when, and how patients are or are not involved in decisions.

Paper III:

Ofstad EH, Frich JC, Schei E, Frankel RM, Gulbrandsen P.

Clinical decisions in hospital encounters: which – and how many? A cross-sectional study

Submitted for publication March 2015.

The aim of this paper was to demonstrate how the taxonomy (DICTUM) could be applied to describe the nature and frequencies of clinical decisions in our material of hospital encounters.

We found that there was an average of 13 decisions per encounter in our material of 372 videos. The overall distribution of the ten topical categories in all encounters was: Defining problem 30%, interpretation of test 17%, drug-related 13%, gathering additional information 10%, contact-related 10%, advice and precaution 8%, surgery-related 5%, deferment 4%, legally related 2%, treatment goal 1%. Across the three temporal categories the distribution of decisions was 71% here-and-now, 16% preformed, and 13% conditional.

We found an average of 15.7 decisions per encounter in internal medicine, 7.1 in ear-nose-throat-encounters, and 11.0-13.6 in the remaining specialties. We found that ward round encounters contained significantly more drug-related decisions than outpatient encounters and more preformed decisions than emergency room and outpatient encounters. We found that emergency room encounters contained significantly more gathering additional information and less problem defining decisions than in the two other settings. There was no significant difference in averages related to physician and patient age or gender, except female physicians presented 14.7 decisions versus male physicians 12.7.

We conclude that hospital encounters contain several – and quite often a large amount – of clinical decisions which are possible to identify and categorize using DICTUM.

We claim that identification, classification and quantification of decisions using DICTUM offer a landscape description which could aid normative approaches to assessment of clinical decisions.

9 Discussion

In this discussion I aim to critically evaluate the material, methods and results of our study. There is a wide range of criteria and checklists available for critical assessment of qualitative research. I have chosen to structure this section discussing three central scientific quality criteria, namely reflexivity, validity and relevance. (Giacomini & Cook 2000a; Giacomini & Cook 2000b; Malterud 2011, p. 211) I address each of these criteria separately, although at times they overlap.

9.1 Methodological considerations

Reflexivity

Reflexivity emphasizes the awareness of the researcher's own presence in the research process, including self-reflection of one's biases, theoretical predispositions and preferences. The end point of reflexivity is to improve the quality of the research. (Barry et al 1999)

Teamwork reflexivity

I have described how we worked as a team. Being a group of four motivated persons created a good space for creative thinking, open and lengthy discussions and provided a sense of meaning in what we were trying to achieve. In their article "Using Reflexivity to Optimize Teamwork in Qualitative Research", Christine Barry and colleagues state that possible advantages of teamwork when doing a qualitative research project are enhanced creative thinking and intellectual rigor as well as higher morale and job satisfaction, which in turn might lead to improved effectiveness, quality and more robust research. (Barry et al 1999) Picturing how this project would have been if I were to take it on alone, I think Barry and colleagues' conclusions sum up what being a team has added to this project.

Any research, including qualitative research, is vulnerable to the potential personal bias a researcher may inflict on the process. At the start of the process we discussed our backgrounds, how we as individual members thought we could contribute and shared accounts of personal motives for partaking in the project. During the process we tried to peel off layers of how we as individuals understood relevant concepts, terms and definitions in order to calibrate our understanding. When we agreed on something, this discussion made the agreement explicit. When we had differences in opinion, we discussed, not necessarily

until full agreement, but until we could decide on a conclusion that made us able to move on in the process.

After each meeting I wrote summaries based on my notes or audio recordings of the meetings. The group members responded to these summaries via e-mail. In this way we had a continuous reflexive writing process shared between us as group members. This was extremely valuable to me, and in retrospect I wish we had done it even more. The fact that this team reflexive process was not thoroughly understood by me as a reflexive process, but more as a means to see the project progress, is the main reason why this was not further emphasized.

Ideally we could have had more meetings, more discussions and a more evenly distributed degree of contribution to the project. Being scattered at four different places and that team members juggled several professional obligations, were the two main reasons why we did not meet more often. The fact that this was my PhD project and that PG was my main supervisor made it natural that we contributed the most, keeping JCF and ES as important critics and discussion partners in and between project meetings.

Physician reflexivity

We approached the material as physicians with an interest in exploring how decisions are communicated in patient-physician encounters. In other words we were aiming to interpret the content and meaning of material from a context in which we ourselves had years of professional experience. Such a starting point has possible advantages, but can also be potentially problematic.

It could be argued that a medically informed perspective in observation of patient-physician interaction may ignore or oversee vital and meaningful information due to a narrow-minded physician-centered focus. We had continuous discussions concerning our medical backgrounds and how medicocentrism (Malterud 2011; Pfifferling 1980) could bias our analyses. We decided to approach the material as open-minded as we could, even though we agreed that our medical backgrounds were something we could never rid ourselves of.

We soon realized that our medically informed perspectives provided us with the ability to comprehend the content of all the dialogue in our material. As pointed out in the introduction, physicians are taught and apply a technical language crowded with words that are not used in everyday language, and which may be incomprehensible to someone without a medical background. Being experienced in the cognitive process of clinical reasoning was

helpful. In most cases I quickly got a feeling for what the physician was trying to achieve when asking questions and when providing information to the patient. Because of this, observing the physician did not feel very demanding, and a larger part of the attention and effort could be focused on how the patient contributed to the dialogue and how the patient and physician interacted.

So if the question is whether physicians can do qualitative research on material from their own professional field, I would answer that it depends on what the aim of the research is and what the material is. If the aim is trying to answer "What is a clinical decision?" and the material is videotaped medical encounters, I would conclude that being medically informed is an advantage and working as a team even more important.

Personal reflexivity

The relationship between me and the object of research (medical encounters) may be described as very close. Being a part time researcher - studying and trying to describe and interpret physician-patient interaction in actual medical encounters - and working part time as a clinician - trying to make the best of my interaction with patients in order to reach good decisions – was an exciting, rewarding and cognitively challenging combination.

When I worked as a physician, I realized I was "meta-observing" myself and the level of awareness concerning how I communicated with my patients had increased substantially. This "meta-observing" was exhausting; in the beginning I worked much slower than I usually do and the increased awareness of what decisions were to be made, made the decisions much harder to reach. I noticed that I started discussing decisions more with my patients and attempted to involve them in the decision-making process. Most patients were very surprised by this. Usually patients refrained from being involved and explicitly stated that they trusted my judgment. I still try to probe for patient involvement in decisions and I more frequently experience a desire for participation in the process from patients. Involving patients in the process takes more time, but I get a clear sense that this investment pays off by producing more robust decisions.

I discovered that I had the possibility to test and validate our research findings in a clinical context. The regular shifts between these professional positions became an important factor in the development and refinement of the identification and classification of clinical decisions. To experience the clinical relevance of our research has been inspiring, seen from both professional perspectives.

Reflexivity concerning descriptive approach

Early in the project, we agreed that our initial aim of assessing the quality of medical decisions would not be possible with the material we had available. When I look back on the moment we agreed on this, I remember I was disappointed. I think this disappointment was caused by a desire for our work to be of normative guidance and with the possibility of making prescriptive recommendations. Now five years later I see that approaching this material with a descriptive approach was a task big enough in itself. Through a prolonged iterative process we have pursued the project's aim gradually and ended up with a definition and a taxonomy that answers our research question. In retrospect I would say that striving to stay descriptive in the development process, freed us to be receptive of what our material had to offer. Staying descriptive has led us to describe phenomena inherent in medical encounters and piece them together in a structure that aims to outline clinically relevant decisions in an exhaustive manner. I am not sure we would have been equally patient or thorough in this process if the descriptive analysis had only been a subordinate goal to a normative approach.

Reflexivity in the coding process

In the coding process of the material, I made reflexive notes after I had coded every encounter. I wrote down half a page for every encounter in a note book. On the cover of this book I have written "Normadictum". Finally, I could set free the critic within me, if only as a part of a debriefing self-reflection after a coding task. The coding itself could be described as gradually less demanding as I got the coding scheme in my fingers and saw that codes, patterns and the construct of the dialogue repeated itself almost without exceptions. Same rules - different people, content and context.

My primary aim of writing in this book was to formulate my judgments after having seen the encounter, juggling my perspectives as a hospital doctor, fellow human being and researcher with interest in patient-physician communication. Another important reason for taking these notes surfaced as I started coding the videos. Not only did I make descriptive and normative notes about the encounters, I cast my judgments on how our taxonomy "did what it was supposed to". This book has been vital to me in the process. The book is where I have had the chance to describe what made an encounter particularly good, how medicine could look when it is at its best and how some physicians excel in their work to such an extent that I feel an urge to share it with the rest of the world.

But I have also seen the other side of it. When studying a large number of actual encounters from a general hospital, one might expect to observe examples of substandard care offered to patients. When we had studied around a quarter of the material, we had already encountered examples of misuse of diagnostic tools and treatment. In order to clarify if there was a need for feedback to the physicians observed, PG wrote a letter to one of the leading capacities on medical ethics in Norway, explaining and exemplifying some of these episodes. The response was that the observations we had made did not warrant any action, not because our judgment was wrong, but because what we saw was perceived by the medical ethics consultant as within the range of typical care even if substandard.

Having had the opportunity to observe this large material of real-life encounters, I am grateful. I am grateful for our health care system. I am grateful for having had the chance of being a fly on the wall for 380 more or less important glimpses in people's lives. There were tears. There was laughter. I am grateful for having had the opportunity to see and get to know 59 physicians at work. They have taught me a lot and it has been impossible not to become fond of them.

Validity

I now shift from the research group and my own role as researcher in this project, to the available material and the methods we applied in our analysis. This section is titled Validity, but for the remainder of the Discussion I will integrate reflexive accounts sporadically. Validity is commonly divided into internal validity and external validity.

Internal validity

Internal validity refers to whether a study has explored what the researcher intended, being as honest, detailed and precise as possible. I will start by discussing the validity of our material, first as a material for a qualitative study and subsequently as a material describing the nature and frequencies of clinical decisions in hospital encounters. Then I will go on to discuss the validity of our methods, both our qualitative approach and the subsequent reliability assessments and statistical analyses.

Our material comprised 380 videotaped hospital encounters. To our knowledge this material is the largest collection of videotaped encounters recorded in a hospital setting as of yet.

The material for the qualitative study

For the purpose of a qualitative study the videotaped encounters was more than large enough to serve as a material depicting everyday clinical practice in hospitals. This is also supported by the experience that after having observed, discussed and analyzed 30 encounters, we had identified elements pertaining to all the categories in what would later be our taxonomy. In qualitative research it is commonly recommended not to decide on a necessary number of observations in advance, but to analyze a gradually increasing number of observations until the researcher reaches "saturation". The point of saturation is when the researcher concludes that further data collection will not add new knowledge. (Malterud 2011, p. 60; Glaser & Strauss 1967) When we had analyzed 30 encounters, we decided to approach this material differently, signifying what could be described as a shift from I/C to EAS.

The 30 encounters were sampled by starting from the top of a randomized list of internal medicine encounters. Analyzing encounters from a randomized list was done to minimize selection bias. We decided to start with encounters from internal medicine for several reasons. It was the specialty with the largest amount of encounters (n=120) and physicians (n=20) and with several encounters from all three different clinical settings; emergency room (ER), ward round (WR) and outpatient clinic (OP) encounters. Modern medicine evolves continuously. New drugs are frequently introduced. Guidelines and recommendations concerning use of tests, criteria for diagnoses and treatments are frequently updated. Because of this, my background of being an internist under specialization was considered an advantage. We hoped that my up-to-date knowledge within the field of internal medicine would provide a precise description and if necessary translation of the content in these videos to the other members of the research team. In the first 30 videos, there were no elements of diagnostic or therapeutic dialogue that were incomprehensible to me.

In the TAS phase of the study, we sampled 20 encounters using a maximum-variation approach (Kuper et al 2008), to reduce potential selection bias as much as we could. As described, we analyzed these 20 videos in clusters of five videos at a time, with iterative discussions in between. No new elements leading to larger alterations of our findings from the first 30 videos were discovered in this process.

Starting out by selecting encounters from internal medicine could be criticized as a selection bias, but over the course of the remaining 342 encounters all the categories we

agreed upon from this material were applicable in the other specialties and no types of decisions requiring new categories emerged.

Representativeness of the 380 encounters

In the Method section I have described in detail how the material of 380 videos was gathered and by broad consent available for our project. The validity of this material would depend on what the purpose of studying it would be.

If our study's primary aim was to test significant differences between different specialties, settings, genders and degree of experience in physicians, the sampling of a material should have been balanced accordingly. Seeing that our aim in paper III was to provide a description of the decisional terrain in the material that was available to us, it is relevant to discuss the representativeness of the encounters. By representativeness I mean how the encounters and participants reflect the variety of medical encounters in our study hospital.

Overall the representativeness was very good, but the skewed distribution of clinical setting and specialties of participating physicians, is not ideal for comparisons in these two categories. Ideally we should have had more encounters from the emergency room, inpatient bed wards, anesthesiology, surgery and ENT in order for the distribution to be more even.

Still, the representativeness of participating physicians in the context of studying clinical decision making in hospital encounters was good. The study comprises 59 physicians from seventeen different specialties. The distribution between male and female physicians (59 versus 41%) and between experienced and inexperienced physicians was also good (47 versus 53%). The material gave us a particularly broad insight into specialties such as pediatrics, gynecology and obstetrics and neurology with more than 50 encounters from each of these specialties. 120 encounters from internal medicine is also substantial, but these encounters are distributed across eight subspecialties which all have characteristics making them quite distinct from one another.

The representativeness of participating patients was also very good. The 380 patients were between 0 and 92 years of age, with good representation from all age groups and even distribution between genders (49% men and 51% women). The patients' reason for contact with the hospital spanned the full range of diagnoses in the international classifications of diseases (ICD-10). Only eight of the 380 encounters were excluded from the analysis. The lack of representativeness in one physician (averaging more than one hour per encounter), explains the exclusion of seven videos.

Choice of methods

Qualitative research methods are strategies for the systematic collection, organization, and interpretation of textual material obtained from talk or observation, which allow the exploration of social events as experienced by individuals in their natural context. (Malterud 2001). There is a wide range of different qualitative methods described in the literature. In her Norwegian book "Qualitative Methods in Medical Research" (my translation), Kirsti Malterud presents six different approaches and describe four of them more detailed (Malterud 2011, pp. 91-112). She writes that two procedures stand out because of the level of detail they are described in, while at the same time being theoretically anchored, namely Giorgi's phenomenological analysis and Grounded Theory.

Because of this I read quite a lot about these two methods at an early stage of my PhD period. I will not describe the methods in detail, but will say a few words about them in order to explain why they were not chosen as frameworks for our study.

Grounded Theory (GT) was developed half a decade ago by Barney Glaser and Anselm Strauss (Glaser & Strauss 1967) and was proposed as an alternative to research that merely sought to provide detailed descriptions of the research field and stressed the importance of processing descriptions in order to produce analytical concepts and gain a theoretical understanding of the data.

Ideally, when approaching a research field with GT, the researcher should not have a prepared research question, not have done any literature studies in advance and preferably not even know the research field in advance. Such criteria were of course impossible for us to meet. Still, other researchers with physician background have applied GT in studies on medical encounters. (Agledahl 2011; Cook et al 2013) When I read about GT and research projects where physicians had applied GT, I got a sense that I would be placed in a defensive position from the start and that argumentation against my background would demand much attention. I feared that if I were to apply GT, the project would be limited by these demands. This did not appeal to me.

Phenomenological Analysis (PA), described by Amadeo Giorgi, aims to develop knowledge about the life-world and it's relation to science within a research field, through a search for the essence of the phenomena studied, while at the same time bracketing the researcher's own experiences. Giorgi describes a procedure containing three explicit steps before summarizing the meaning of the content: "read for sense of the whole", "determination of meaning units", and "transformation of the participant's natural attitude expressions into phenomenologically psychologically sensitive expressions". (Giorgi 2009)

JCF used PA in his thesis and suggested I read Giorgi's book and see for myself. When I read it, I found it very abstract and was not able to imagine how the framework could aid and facilitate our process. Malterud, in her book recommends that if you are not experienced within a phenomenological framework, you should keep a low profile and don't come on as more phenomenologically experienced than you actually are (Malterud 2011, p. 97). I experienced the method as close to intimidating when reading about it.

Kirsti Malterud has herself developed a method named Systematic Text Condensation (STC) inspired by Giorgi, suitable for descriptive cross-sectional analysis of phenomena aiming to develop new terms and descriptions. (Malterud 2011) This method stood out as more concrete to me than PA and I seriously considered STC as a possible way of approaching our data, but in Malterud's chapter on different approaches she also describes the three prototypical approaches described by Crabtree and Miller. I have described in detail in the Methods section why this trio of approaches appealed to me and how we decided to apply them.

The fact that we moved from, as Crabtree and Miller describes them, the most open-ended of qualitative approaches – immersion/crystallization – to the most structured of qualitative approaches – template analysis style – within the same research project, might be viewed by some as problematic. It could be argued that as we were already medically informed, we could not enter the material in an I/C manner. But the description of I/C does not disapprove of previous knowledge, like Grounded Theory does. The emphasis in the description of I/C focuses more on reflexivity, depth of description, accuracy, rigor, intellectual honesty and (continuously) searching for alternate hypotheses and interpretations as a prescriptive measure to get valid results. (Borkan in Crabtree & Miller 1999, p. 193)

Operationalized by the two core questions of I/C (what is and when does?), approaching the material with an open mind felt natural and necessary in order to gain new insight into a context we already were a part of. As we have demonstrated in previous descriptions of the iterative process, such a starting point led to important findings that have been the basis for the paper I and paper II and served as key parts of the framework for paper III.

As it became clear to us that we were developing a taxonomy, Bradley et al.'s paper on developing taxonomy, themes and theory became a central source of support. (Bradley et al 2007) If I had known about this paper and known that we aimed to develop a taxonomy when we started out, I probably would have framed our study according to the approach

they describe. Seeing that this paper was discovered later on in the process, it has to a large extent served as a confirmation that what we have done aligns with their recommendations. In that sense the paper serves as a validation of our analytic process.

A frequent criticism of coding as a method is that it seeks to transform qualitative data into empirically valid data, which contain: actual value range, structural proportion, contrast ratios, and scientific objective properties; thereby draining the data of its variety, richness, and individual character. (Malterud 2001) Our response to such a potential criticism is the thorough exposition of our process and the definitions we base our categories on, which is described in detail in the code book (appendix). In paper I and paper II we link the categories in our taxonomy to the underlying data, in order to bring back some of the richness that would have been lost in a mere list of codes. In paper III, the purpose of applying the taxonomy to the full material of 372 encounters was to provide a landscape description of the nature and frequencies of clinically relevant decisions within this material.

Reliability

Reliability can be described as the overall consistency of a measure and a measure has high reliability if it produces the similar results under consistent conditions. We tested the inter-rater reliability (IRR) of the taxonomy before coding the material. In the Method section I have explained the rationale for using Krippendorff's alpha-agreement for our measuring four-coder inter-rater reliability. (Krippendorff 2004) Our result (alpha=0.79) was 0.01 below the threshold of reliability set by Krippendorff and we could be criticized for not repeating our IRR-testing until we got above the 0.8 mark.

After some discussion we decided that doing a new IRR-test before applying the taxonomy and its codebook to our material, was not necessary. There were several reasons for this and the most important being that only two of the coders would proceed as coders in the coding analysis of the whole material. Investing further effort in getting all four of us up to a higher level of calibration seemed futile. We decided it was more important to focus on consistency of coding precision during the analysis of the entire material.

I coded the entire material and during coding we tested inter-rater reliability to check for drift and intra-rater reliability to measure the consistency of coding, both with Cohen's kappa. Cohen´s kappa coefficient takes into account agreement occurring by chance, and is therefore thought of as a more robust method than simple percentage calculations of agreement. The precision of kappa statistics is a topic for discussion; some argue that it is a too conservative measure, which underestimates agreement in certain categories (Strijbos et

al 2006), while others contest the assertion of kappa statistics taking chance agreement into account. (Uebersax 1987)

With regards to significance and how to interpret kappa coefficients, there is also a discussion. (Sim & Wright 2005; Bakeman et al 1997) Landis and Koch were the first to propose magnitude guidelines for the kappa coefficient; 0–0.20 as slight agreement, 0.21–0.40 as fair, 0.41–0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1 as almost perfect (Landis & Koch 1977) Fleiss later characterized kappas over 0.75 as excellent, 0.40-0.75 as fair to good and below 0.40 as poor. (Fleiss 1981) Statisticians who argue against the degree of precision in kappa statistics state that such guidelines may be more harmful than helpful. (Gwet 2014) With this in mind, our inter-rater reliability of κ=0.61 and intra-rater reliability of κ=0.77 allows us to conclude that the consistency of the coding was acceptable.

The coding could have been even more robust if the project group had kept on meeting to discuss the precision of coding and to make boundaries between categories even more detailed and precise. A possible approach to ensure precision and sustainability of content coding is to have two coders code every encounter and discuss all disagreements until consensus is reached. We chose not to perform dual coding of all videos because it would have required twice as much coding effort and that such an effort would not add significant precision to our findings. Besides, we did not have funding for such a large undertaking.

Challenges in the coding process

When I started coding the material, I realized how important the discussions and subsequent agreements reached in the iterative process leading to a precise and detailed code book, were for the coding analysis.

In the coding process of a large material there is a possibility of misclassification, which for the coding results may be referred to as the potential of misclassification bias. Over the coding of the entire material, I encountered a total of 39 passages of dialogue that I struggled to classify to such an extent that I made written descriptions of the event. In a material consisting of 4976 codes, 39 substantial coding dilemmas is a low figure. The description of these coding dilemmas have been incorporated into the final version of the codebook (appendix), so that coding of possible future material could be informed by my struggles. Most of these dilemmas concerned the need for a clarification of which subgroups within the topical categories statements should be sorted into. Only a handful of times did the struggles concern the overall structure of the ten topical categories. In these cases I

discussed with PG to reach an agreement.

When coding 380 encounters with an average duration of 22 minutes, maintaining necessary attention to the coding task is challenging and relevant codes might be missed. In other words the coding results might be inflicted by attention bias. Although I have not become aware of any drift in attention or coding precision, the coding results for each video could have been influenced by when each video was coded over the course of such a prolonged period of time. In many of the videos there are longer sequences of clinical examination or diagnostic or therapeutic procedures, frequently performed outside frame of the camera lens and with significant reduction in sound quality. Being an attentive observer during these phases in the videos was hard and sometimes the sound quality was so compromised that reliable coding of statements potentially reflecting clinically relevant decisions could not be done.

Statistical analyses

For the analysis of frequencies and distributions in our material of 372 encounters, we applied simple descriptive statistics that are widely accepted in the analyses of quantitative medical research. (Altman 1999) For comparisons of more than two groups (i.e. different specialties) we chose to apply the Bonferroni correction when using one-way analysis of variance (ANOVA). The Bonferroni correction is both the simplest and most conservative way to correct for error rate in combined comparisons, which becomes a challenge if more than one hypothesis is to be tested simultaneously. (Bland & Altman 1995) We could have chosen less conservative corrections and possibly have ended up with lower p-values. But because our aim was to provide a description of the decisional terrain, rather than to focus on potential differences between categories we chose the most conservative approach.

Potential biases

Potential biases that could have affected the internal validity of this study are personal bias, selection bias, misclassification bias, attention bias and information bias. I have incorporated the four first potential biases in the discussion already. Information bias, which is bias in a broader sense than the four former, can be described as a bias influencing the nature, precision and completeness of the study data collected. In our case information bias would also include the information produced through our iterative process.

Information bias in our study has been minimized by a rich material, an open starting approach, team work, prolonged iterative discussions, a qualitative framework that aided the

process, repeated reliability assessments and continuous reflexivity efforts. We conclude that information bias is a small problem in our study.

External validity

External validity of research design deals with the degree to which findings are able to be generalized to other groups or populations. I will as in the previous section start by discussing external validity of our material, before I proceed by discussing our approach.

I have discussed the advantages of having a large and diverse material of hospital encounters available for this study and the representativeness of the participants. A weakness of the material is that it consists only of encounters from a single hospital and does not comprise encounters from central health care arenas like psychiatry or general practice. Further studies in other settings are warranted to confirm our assumption that the definition and taxonomy is applicable to medical encounters in general.

Our research team consisted only of physicians. As we got into the analytic process, we included Richard Frankel in the research group. The reason for including Rich was his background as a social psychologist and communications expert combined with his experience in research of health care encounters between providers and patients. His contributions have been valuable to counter an all-physician perspective.

We did not include patients or other researchers that were non-physicians in the development phase. I have discussed the advantages of having a medically informed perspective when pursuing the research questions at hand. It could be argued that including patients or more researchers with other backgrounds could have informed our analysis. Still, it is not clear how for example a patient, a nurse, or someone else could come up with a different taxonomy. They could, however, definitely have added new interpretations to the meaning and consequences of the categories, if our aim was more of a normative than a descriptive character.

How easily our taxonomy of decisions might be translated into and be applicable in other settings, depends on what could be described as the workability of it (Glaser & Strauss 1967). Further studies are needed to assess the workability of DICTUM. But we have already received feedback on several occasions that our framework provides structure to a more comprehensive and detailed extent than previous frameworks.

Our research has been presented at several occasions; clinical meetings at hospitals, research meetings at different medical universities, courses and seminars with health care

personnel, patient representatives and lay-persons and national and international conferences within clinical communication and medical decision making. The general feedback from these presentations has been that our contribution is precise, detailed and representative of medical work as people know it, not only in Norway, but in also Europe and North America.

When the time frame has allowed for such an exercise, I have challenged the audience to discuss and present what types of decisions they think are made in patient-physician encounters. Every time I have done this, the audience has produced examples of decisions that fit into at least two thirds of the topical categories in our taxonomy. At one occasion – a seminar for general practitioners – members of the audience gave examples of decisions they make on a daily basis to the extent that all ten topical categories were exemplified. My experience has been that especially physicians seem to identify – and thereby validate - these categories with great ease.

We have had discussions with researchers that have disagreed with us on the structure of the taxonomy and in particular the inclusion of "interpretations of tests" and "defining problem"-statements as being decisions. The argument has been that these two categories in particular are judgments and not decisions – that they are judgments that constitute the basis for decisions. Our point is that the judgments made in these two categories demand similar cognitive decision-making efforts as statements committing to action. Judgment and action decisions may both be fast and intuitive – or they may both be more complex and in need of an analytic approach. And both always demand a choice between at least two alternatives. I will return to these two topical categories in particular as we enter the discussion of our results.

9.2 General discussion of the results

This general discussion aims to integrate and present the findings from our three papers and answer the four research questions of this project. The first and main research question serves as a foundation for the three subsequent questions, each of which serves as a basis for our three papers. As we go along I will discuss the relevance of our study and our findings both with regards to the clinical context and how it could aid future research.

What is a decision?

Our first research question was: *What is a clinically relevant decision in a patient-physician encounter?*

Before the start of our project, searches of the literature revealed a handful of efforts to identify decisions in medical encounters, each of them entailing more or less explicit definitions of what medical decisions are. Braddock and colleagues defined that a decision is "a statement committing to a particular course of action". (Braddock et al 1997) The findings that followed from this definition were from our point of view clearly of high specificity, i.e. we agreed on all decisions reported in this material as being clinically relevant decisions. However, reflecting on our own practices and what we saw on the videos, we were increasingly in doubt about the definition's ability to pick up all decisions, that is, we were questioning its sensitivity. Entering on that question, we soon had to ask ourselves; what is not a decision?

When I think back and look in my notes on how we thought about this question, it becomes clear to me that we focused on the outcome of the statements that we agreed signified relevant decisions. We saw beyond the words and focused on what these landmarks in the encounter would mean – for the patient, for the physician, for the relation between them and for the context they were in.

When a physician offers an expert opinion on what might be the cause of the patient's problems, this has an impact. It shapes the life-world of the patient. It has the potential to affect the patient's understanding, emotions and actions, in the present and for the future. And this expert opinion comes as a result of at least one decision where there will always be at least one option.

This is what we do as physicians. We gather information to a point where we can or have to offer a conclusion. Sometimes these conclusions are self-evident. When a shin bone sticks out through the skin, you don't have to be a physician to conclude that the shin bone

is broken. But most of the time – luckily less frequent the more experienced you get – concluding on a diagnosis, cause of disease and predicting what the future will bring, is challenging and always calls for a decision-making process. (Måseide 2006; Norman 2005)

Decision scientists have described "problem solving" and "decision-making" as two separate cognitive processes (Elstein & Schwartz al 2002; Deber 1994), and in theory this is a sensible distinction. But Deber's claim that "there is only one correct answer to the diagnosis", only demonstrates that Deber is not a physician and has never struggled with having to decide on a diagnosis. The boundaries between problem solving and decision-making in clinical reasoning are constantly blurred and to separate between them is failing to take the complexity of real-life medical decision-making into account.

Diagnostic conclusions are possible to identify as an observer when they are communicated to the patient – and they are clinically relevant. They are the stepping stones for the prescriptive actions that might be discussed or offered, such as advice, drugs, surgery or referral to another provider of health care. If the evaluation of the patient's health, the interpretation of a test or formulation of a diagnosis is not correct, this will affect the actions to follow. Chances are the actions will not be appropriate. Diagnostic conclusions and therapeutic actions are closely integrated and disregarding the former when describing and assessing clinical decisions as relevant outcomes of medical encounters is wrong.

By focusing on the clinically relevant outcomes of the dialogue between patient and physician, we were able to identify and define statements that were not comprised by previous frameworks and it was clear that we had broadened the inclusion criteria. But where should the borders be drawn?

I will provide a concrete example where we struggled to draw a line. When patients are angry, happy or sad there are opportunities for physicians to acknowledge this and respond empathically. In our material of hospital encounters, empathy from physicians is rarely explicitly expressed, even though training to be more empathic was part of the course that physicians had undergone in half of the videos. Does an empathic response from a physician signify a clinically relevant decision? We had lengthy discussions about this. In some cases being empathic and supportive of the patient, is arguably the most clinically relevant decision a physician could make in that context. It is also possible to imagine that such an "intervention" could have a large "therapeutic effect" in terms of how the patient feels understood and how this in turn affects the patients' function. A recent review concluded that there in different studies are associations between physician empathic communication and higher levels of patient satisfaction, quality of life, empowerment and

adherence. (Neumann et al 2012) Another study has reported that diabetes patients attending primary care physicians with high empathy scores had a lower rate of acute metabolic complications, compared with patients of physicians with moderate or low empathy scores. (Del Canale et al 2012)

Still, identifying empathic communication through observation is challenging. Empathy is more than words, it is attention, it is facial expression, it is listening and more. To decide whether empathy originates from a conscious decision to be empathic is impossible from an observer perspective. The outcome of empathy – what effect it may have on the patient - is equally hard to tap into from an observer perspective. So to conclude; even though a physician's decision to be empathic may be of clinical relevance, we decided to not include empathic statements into our framework of decisions.

We also refrained from including how the physician asked the patient questions. Even though some physicians in our material asked questions in what appeared to be a very deliberate fashion – for instance starting with open questions and proceeding with closed questions - we decided to refrain from characterizing such seemingly deliberate behavior as decisions.

This brings us to our structuring of encounters in order to get a sense of when clinically relevant decisions were communicated. We modified the widely adopted SOAP-note framework (Weed 1971) into three phases: gathering information, defining problem and management. In general, we saw that the gathering information phase – comprised by taking the patient's story and clinical examination – did not contain statements that we identified as clinically relevant decisions (except sporadic simple assessments during clinical examinations, for instance after auscultation; "Your lungs sound fine").

The first defining problem phase marked a shift in the encounters, by being when the physician offered his or her expert opinion. This phase most commonly overlapped with what we called the management phase, where appropriate actions were decided upon. So for the sake of simplicity, we combined the latter two phases and thereby had one phase where decisions were communicated and one where decisions were rarely communicated. Needless to say, shifts between these phases were frequent in most videos. This framework helped us a lot in the early stages of the project and I have also coded the entire material according to these two phases (in the coding scheme they are named Phase 1 and Management).

Formulating a new definition

The content-driven, iterative process led us to a broader definition of clinically relevant decisions than what has previously been proposed and it was based on the following specifications:

- all statements included as decisions had to require some element of clinically relevant content, e.g. “We have to operate on you” is included by such a requirement, while “We’ll order a train ticket for you to get home” is not.
- all statements included as decisions had to require a relation to the actual patient’s concrete situation and be distinct from general medical information, e.g. “I think you got lung cancer due to smoking” is included by such a requirement, while “Smoking is the most common cause for lung cancer” is not.
- as a result of this we included not only “statements committing to a particular course of action”, but also “statements concerning the patient’s health that carries meaning and weight because it is said by a medical expert”.

We broadened the definition with the clear aim to describe the medical decisional landscape as it is presented to patients in face-to-face interactions and argue that our definition and taxonomy comprise clinically relevant decisions *as they appear to the patient* in a precise, detailed and exhaustive manner.

From a medical point of view, our definition and taxonomy comprise any clinically relevant task that needs to be dealt with in an encounter; from interpreting the patient’s story, symptoms, clinical findings and diagnostic tests, to the translation of this knowledge into sensible actions including medical interventions, providing relevant contextualized information to the patient and appropriate level of follow-up.

From the patient’s perspective, the statements identified as decisions sum up the bullet points of conclusions the patient takes home from the encounter. After an encounter one could imagine that a patient’s response to the question “So what did the doctor say?”, would be a summary of the statements identified as decisions by the taxonomy, e.g. “The doctor concluded that I have pneumonia and gave me some antibiotics. She said I will be fine again, but that it could take as long as a month before all symptoms will pass. I have to go back to control my chest x-ray in 6-8 weeks. She said I should stop smoking. When I asked if I could get any of the pills available for smoking cessation, she said I have to speak with my family physician.”

This example is probably more structured, detailed and medicocentered than patients' real-life summaries of medical encounters would be, but it is provided to depict the amount and complexity of clinically relevant outcomes that is communicated to patients. Neither patients nor physicians need necessarily agree with this. As we did not have the possibility to get the perspectives of patients or physicians, we do not know to which extent they would agree on our identification of decisions in their encounters.

We found one study comparing the observer perspective with provider (nurses and dieticians) and patient recall of which decisions were made in outpatient diabetes encounters. The agreement between all three groups was poor. (Skinner et al 2007) Another study titled "Was a decision made?" assessed whether or not a cancer care decision was made in 315 outpatient oncology encounters. In around half of the encounters did patients (58%) and physicians (55%) answer yes to this question, and only in 68% of the cases did both parties agree. (Leppin et al 2015)

Perhaps such findings could render the argument that both patients and providers could profit from a clear framework that defines what clinically relevant decisions are. It could raise the awareness of which decisions need to be made, who should make them and how patients and physicians could evaluate their outcomes together. Exposing patients and physicians to our definition and taxonomy before or after the encounter, is a possible future approach to assess how relevant our work might be for the participants in medical encounters.

When and how are clinical decisions made?

Our second research question was: *Provided we are able to develop a definition and identify clinically relevant decisions, when and how are clinical decisions made in hospital encounters?*

Temporal characteristics of clinical decisions

A temporal aspect of clinical decisions has been touched upon in other studies of clinical decision making. Sociologist Tim Rapley has described how decision-making in medical encounters is an ongoing event that often evolves over multiple encounters and how decision-making is seldom a solo, cognitive activity, but instead distributed over a range of

people and technologies. (Rapley 2008) In our paper we have taken this conclusion on to a more precise and detailed level by grouping decisions in three temporal categories:

- Preformed decisions: decisions which have been made before the start of the encounter and are brought into the encounter by the physician as information.
- Here-and-now decisions: decisions made in the present as a result of patient-physician dialogue and clinical examination of the patient.
- Conditional decisions: decisions prescribing future actions given a certain course of events.

Our first identification of a temporal pattern, started by the discovery that ward round visits with inpatients in several instances served as a provision of information from the physician to the patient about what had been decided on behalf of the patient prior to the encounter. After we knew what we were looking for, we found presence of preformed decisions in all clinical settings and all specialties.

We also observed that conditional decisions were "forecasted" to provide information about what to expect and decisions that were to be finalized at a later point in time. This observation was particularly striking in the emergency room setting, mainly because a lot of information (lab results, tests, imaging) were not yet available and decisions concerning diagnosis and treatment were tentative at best. In paper III, we see that conditional decisions account for the same proportion of decisions in all three clinical settings, and that they were not more frequent in ER encounters, which was our overall impression of encounters analyzed for paper I. This internal discrepancy in the study needs some justification.

In an open qualitative approach, like I/C, you approach your material without predetermined categories. The result of such an approach might be the establishment of categories that are applicable to other, more structured frameworks, like survey questions or relevant data that might be extracted from patient records. Research aiming to measure range, distribution, effect and difference always start by a qualitative phase where themes, terms, categories and hypotheses are formulated. (Malterud 2011) This phase may of course vary in extent, from literature searches of previous studies and replication of previously used concepts to qualitative studies exploring new concepts.

With this in mind, our paper I established three temporal categories that has not been described in detail in the context of hospital encounters and served to hypothesize that preformed decisions were a hallmark of ward rounds and that conditional decisions was a central feature of emergency room encounters. In paper III, we tested these hypotheses in

our material and found out that the former could be accepted, while the latter should be discarded (in our material). In retrospect we should have been more explicit in paper I, that these associations between temporality and setting were indeed hypotheses and not findings that we could provide frequencies or distributions to support. And we should have chosen less conclusive words than “hallmark” and “central feature” when describing our observations.

Clinical decision-making in hospitals

Trying to answer how clinical decisions are made in hospital encounters, starts with our observation that clinically relevant decisions in our material were – with few exceptions – conveyed as factual information and not as topics for deliberation. From the observer perspective, physicians seemed to deal with diagnostic and therapeutic decisions as if they were the same thing: solving problems and making decisions in a paternalistic, but polite manner.

Why is this? I will draw on some elements presented in the introduction and my own clinical experience in order to suggest possible explanations. As I have described, medical care in hospitals have traditionally been provided without involving patients. When patients are admitted to a hospital they are quite often ill, sometimes very ill. A patient’s first hospital encounter in the ER is affected by the total amount of patients in the ER and the severity of their conditions. It may be hectic. Commonly, patient-physician dialogue in ER encounters is interrupted several times. Beepers go off, colleagues interrupt to ask questions, other patients need immediate attention. Patients lie in their bed. There may be other patients in the same room. The physician commonly stands. Frequently there are several physicians working as a team, perhaps an intern, a resident and a consultant. Knowing who is in charge might not be made explicit to the patient.

The aim of ER encounters is to find out what is the cause of the patients sickness; establishing a diagnosis. Because diagnostic reasoning to a large extent relies information additional to what the patient can tell and display through clinical examination, diagnoses are often tentative as the patient leaves the ER, frequently headed for the radiology department. While the patients travel from ER to their destination, often the inpatient bed ward, the physicians receive lab results and assess images. As the diagnosis becomes less tentative and appropriate treatment actions can be discussed, the physical distance between the patient and the responsible physician could be substantial. The physician might not have the possibility to leave the ER. Actions may be ordered to the responsible nurse, who makes

sure to implement them and inform the patient. “Doctor’s orders”, the nurse might say. “Unsolicited paternalism”, Henrik Wulff would say.

During the night there might be a need for decisions to be made, commonly by the on-call ward physician who has to juggle a large number of patients in need of attention and clinical decision-making. An important decision this physician has to make several times per shift is “Do I need to see the patient? Or can this be solved over the phone?”

The next time the patient sees a physician is usually on the ward round the next morning. The physician is most likely not the same as the day before. It may not be the same physician the day after. In many hospitals there is a striking lack of continuity in the inpatient-physician relationship. (Krogstad 2002 BMJ) Physicians commonly do their rounding followed by an entourage of nurses, medical students and/or other physicians. The ward round still struggles between finding balance functioning as an arena for the teaching of students and younger physicians, while at the same time being a setting where optimal physician-patient communication can take place. (O'Hare 2008; Steele & Morton 1978)

Before a ward round, physicians check the most recent lab results on a computer. These computers generally situated outside the patient’s rooms – in rooms where there is a good chance to discuss difficult diagnostic or therapeutic problems with colleagues. In Norway, such a meeting is formalized (called pre-visitt, “pre-wardround-meeting” my translation). The reason for this is that consultants rarely round themselves. They attend these pre-round meetings and go on to see a fully scheduled list of outpatients or go to a diagnostic lab where they perform procedures in need of specialist competency. The meeting room becomes a safe haven for getting expert views from senior colleagues, to talk freely using medical jargon and where the medical record of the patient can be scrutinized and discussed together. (Stickrath et al 2013)

In our material, the ward rounds in internal medicine are done exclusively by junior doctors. Our finding that at least 39% of the decisions communicated in ward round encounters were made before the encounter and conveyed to the patient as information, is explained by this preparation to the ward round taking place prior to the encounter.

As the duration of the hospital stay increases, the amount of information generated around the patient increases. But as the stay increase in length, the information the patient can offer in terms of talk or findings available through physical examination has to compete with daily notes in the patient record, lab results, x-ray images, written measurements of vital parameters such as temperature, blood pressure, pulse and weight. The location of information of interest to the physician moves from the bedside and onto a computer screen.

Electronic medical records are – at least in Norway – constructed in such a fashion that retrieving relevant information over the course of a long hospital admission is both time consuming and challenging. In addition physicians and thereby patients, are influenced by institutional demands, local procedures and evidence-based guidelines, neither of which are usually to be found by the bedside. Integration of patient decision aids in hospital care is being developed and tested, but is still far from everyday practice. (Agoritsas et al 2015)

Outpatient encounters between specialists and patients – which in Norway is an activity integrated in hospitals – have differing preconditions from ER and WR encounters. In OP encounters the patient commonly walks in and out of the office and the physician and patient sit in opposing chairs during the encounter, except for periods of clinical examinations or procedures. Despite this, we see the same patterns as in ER and WR encounters. Decisions are conveyed as information and we see few attempts of patient involvement in decision-making. We have no one explanation for why this is so. Previous studies tapping into the perspectives of physicians emphasize time constraints and lack of training as main barriers (Légaré et al 2008; Friedberg et al 2013) , while patients report the fear of being labeled as difficult as most important (Adams et al 2012; Frosch et al 2012)

As ethicist and physician Kari Agledahl puts it in her paper "Choice is not the issue": "The interesting point is not that any action can, in theory, be broken down into lesser sub-actions, but that actions in clinical medicine are essentially divided because they are performed by different people, often at different places and at different points in time. This makes it harder to define who has made the decision, identify who has the moral responsibility and understand what respecting a patient's right to autonomous choice could mean. Clinical practice is better described as a process over time and space in which several participants guide the actions that are taken. Patients are not without influence in this process, since good clinical practice is adjusted to their needs, but opportunities for autonomous choice are, in fact, quite limited". (Agledahl et al 2011)

The topical dimension of clinical decisions

Our third research question was: *Provided we are able to develop a definition and identify clinically relevant decisions, how can we classify them and sort them into precise and detailed categories that are mutually exclusive?*

Through a partly deductive, partly inductive iterative process, we ended up identifying ten different types of decision categories that are distinguishable from one another. Aiming to describe the boundaries and meaning of each category, we tried to answer what main function the decisions comprised by each category serve in a medical encounter.

Half of our ten categories comprised elements which have been framed as decisions in studies we were informed by prior to the our project (Braddock et al 1997; Braddock et al 1999; Braddock et al 2008; Elwyn et al 2001b) ;

- ordering tests/screening (comprised by DICTUM category 1)
- new medication, altering medication, maintaining medication (category 4)
- deciding to perform surgery or not (category 5)
- referrals to other health care providers (category 7)
- instructions regarding diet and physical activity (category 8)

The remaining half of the categories was developed through an inductive process:

- interpretation of test (category 2)
- defining problem, including diagnostic, etiological and prognostic judgments (category 3)
- legally related decisions (category 6)
- treatment goal (category 9)
- deferment (category 10)

In addition we identified decisions through our inductive process that fit into categories of decisions we were informed of;

- consulting colleague (comprised by DICTUM category 1)
- gathering information from next of kin or family physician (category 1)
- wound care, cast immobilization, shock wave therapy, radiotherapy, radiological intervention and similar hands-on interventions (category 5)
- admittance or discharge of patients, scheduling follow-up or transferring patients to another hospital or department (category 7)
- precautionary advice (category 8)

The work physicians do within the categories “interpretation of test” and “defining problem” and why we have defined them as being clinically relevant decisions, have been discussed to some extent in the section above. In the Method section we have also described in detail how we separated these as two separate categories that are mutually exclusive. “Interpretations of test” is a single and normative (positive or negative) assessment of a clinical examination or a paraclinical test. “Defining problem” is the more complex, descriptive and sometimes normative assessment of often several clinical findings and lab results in order to formulate a diagnosis, prognosis, etiological inference or general evaluation of state of health. These two categories may be of varying relevance depending on the setting. We have developed them and found them useful for the descriptive observations of clinicians at work in encounters with patients. But while a clinician conveys the radiologist’s interpretation of a CT scan as good or bad news for the patient, the task performed by the radiologist could be described as far more complex and perhaps even divided into several clinically relevant decisions the radiologist has to make (which are commonly communicated in their interpretations or in formal meetings, e.g. multi-disciplinary team meetings).

In previous studies, statements that we place into these two categories are found framed as clinical questions. In 1999, Ely et al. proposed a taxonomy of clinical questions which comprise questions like; can the patient have disease X, what is the cause of symptom X, what is the cause of test finding X etc? (Ely et al 1999; Ely et al 2000; Del Fiol et al 2014) These questions can produce answers given that someone decides what the answer is. Our categories “interpretation of test” and “defining problem” aid to identify when and how answers to clinical questions are communicated in the dialogue between physician and patient.

After we developed our taxonomy of ten topical categories, several studies have been published where elements we have defined as clinically relevant decisions have been framed as decisions. In Schuur et al’s study describing a top-five list for decisions in emergency medicine that can be actionable targets to prevent overuse of resources in the ER setting, they initially formed a list of 64 different decisions. (Schuur et al 2014) All 64 items in this list would be identified and classified as clinically relevant decisions by our taxonomy. Some of the items reflect decisions that we had identified through an inductive process, thereby serving as a validation of our findings. Examples of such decisions are; admitting patients, mandating follow-up and transferring patients to a higher level of care (coinciding with DICTUM category 7), consulting specialist services (category 1),

prescribing brand name antibiotics versus generic antibiotics with regards to cost-benefit (category 6).

In Weiner et al.'s study describing ten contextual domains relevant to optimize patient-centered decision making, they provide examples of contextual factors and care plans for each domain. (Weiner et al 2014) The contextual factors exemplified would have been coded as "defining problem"-decisions by our taxonomy if they had been discussed in a clinically relevant context in a patient-physician encounter. The ten different contextual care plans exemplified would all be coded as decisions and classified according to the relevant category in our taxonomy.

In addition a handful of other studies what our taxonomy codes as decisions have been framed as "decisions" or "key decisions" in the context of medical encounters or care for inpatients. (Zikmund-Fisher et al 2010; Fowler et al 2013; Cook et al 2013)

To conclude, our taxonomy of ten topical categories comprise all the clinically relevant decisions communicated in our material of 372 patient-physician encounters. When coding 372 encounters with these ten topical categories, I have not encountered more than a handful of coding dilemmas with regards to the topical categories. One of the few challenges I have discovered is when a statement contains several category elements within the same statement. The challenge is to find which element governs the statement and once you are aware that there is more than one relevant element within the statement, deciding on which element that governs it is an easier task.

The nature and frequency of decisions in hospital encounters

Our fourth and final research question was: *Provided that we are able to define, identify and classify clinically relevant decisions, how does the decisional terrain look in hospital encounters?*

In paper III we present, what to our knowledge is, the first study where the primary and only aim is to describe the nature and frequencies of clinically relevant decisions. Previous studies that have studied frequencies of decisions in medical encounters have always dealt with this as a partial task in order to assess the decisions normatively after identification. We conclude that these studies do not capture an exhaustive description of clinically relevant decisions, but deal only with the relevant actions that is or are to be made.

What we through a broader definition and taxonomy propose is a precise, detailed and exhaustive framework for identification and classification of decisions as they appear in patient-physician encounters. The taxonomy allows for a comprehensive mapping of the decisional terrain and in paper III we provide a landscape description of how it looks in 372 encounters.

We found an average of 13.4 decisions per encounter (range 2-40, SD 6.8, 95% CI 12.7-14.1). This number is substantially higher than in previous studies of patient-physician encounters, where frequencies between 3.2 and 7.0 have been reported. (Braddock et al 1997; Braddock et al 1999; Saba et al 2006; Hauer et al 2011; Clayman et al 2012) Taking a closer look at what the average in our study comprises, we see that there is an average of 4.1 "defining problem" decisions and 2.2 "interpretation of test" decisions per encounter, accounting for an average 47.1% of the total amount. These two categories could be lumped together as diagnostic judgments or medically informed conclusions, which illustrates that (before the other eight categories are discussed, at least) half of the communicated decisions in medical encounters concerns the physician's role as expert and interpreter of medical knowledge.

If we compare our findings to the previous studies, we see that our results category by category aligns with what has previously been done. The study where a clinical decision have been most clearly defined and the topical categories described in most detail, is Braddock et al.'s 1997 study of 88 primary care encounters. (Braddock et al 1997) In this study they found an average of 3.2 decisions in categories such as (presented in degree of how frequently they were communicated): new medication, medication renewal, routine laboratory test, office procedure, specific dietary regimen, specific physical regimen, routine imaging study, specialist referral, medication dosage change, cholesterol screening, physical therapy referral, cervical cancer screening.

If we by using table 5 add up the numbers in our material aligning with Braddock et al's findings (*numbers marked in cursive*), we end up with an average of 3.8 decisions pertaining to these respective categories in our material.

Table 5. Distribution of decisions across ten topical categories with subcategories (this table was not included in the submission of paper III due to word and table limit concerns)

Topical category	Number of decisions with subcategories (%)					
	Total	Order test	Consult	External info		
Gathering additional information	**504 (10.1)**	*438 (86.9)*	51 (10.1)	15 (3.0)		
		Positive	Neutral	Negative		
Evaluating test results	**829 (16.7)**	604 (72.9)	88 (10.6)	137 (16.5)		
		Diagnostic conclusion	State of health	Etiology	Prognosis	
Defining problem	**1512 (30.4)**	582 (38.5)	226 (14.9)	293 (19.4)	411 (27.2)	
		Start	Stop	Alter	Maintain	Refrain
Drug-related	**628 (12.6)**	*249 (39.6)*	*52 (8.3)*	*108 (17.2)*	*159 (25.3)*	*60 (9.6)*
		Start	Stop	Alter	Maintain	Refrain
Surgery-related	**260 (5.2)**	143 (55.0)	6 (2.3)	9 (3.5)	24 (9.2)	78 (30.0)
		Disability	Drug refund	Insurance	Sick leave	
Legally-related	**90 (1.8)**	27 (30.0)	36 (40.0)	5 (5.6)	22 (24.4)	
		Admit	Discharge	Referral	Schedule	
Contact-related	**496 (10.0)**	24 (4.8)	54 (10.9)	*75 (15.1)*	343 (69.2)	
		Advice	Precaution			
Advice and precaution	**397 (8.0)**	*294 (74.1)*	103 (25.9)			
		Qualitative	Quantitative			
Treatment goal	**70 (1.4)**	50 (71.4)	20 (28.6)			
		Active and specified	Change subject	Transfer responsibility		
Deferment	**190 (3.8)**	59 (31.1)	10 (5.3)	121 (63.7)		

Two years later, Braddock et al repeated this study in a larger material of 1057 outpatient surgery and primary care encounters, with a more detailed descriptive framework (assessing the complexity of decisions) and normative framework (degree of informed decision making) than in their previous study. (Braddock et al 1999) The only conceptually new categories described in this study versus the previous study, is follow-up appointments (DICTUM category 7) and decision to workup versus overlook new problem (resembling our category 10). In this study they found an average of 3.4 decisions.

There are several differences between the two Braddock studies and our study. While their studies were based in primary care and outpatient surgery clinics, our study does

not include primary care, but a large number of specialties and also encounters from inpatient ward rounds and the emergency room. The average duration of encounters in the latter Braddock study (duration not presented in the first) was also significantly lower than in our study (16.5 minutes for primary care and 13.6 minutes for surgery). The point is that in our development of a taxonomy, we have not gone against previous efforts within this field, but built on them, which is supported by the similarity in frequencies in the three studies.

So what does our landscape description tell us about what is going on in medical encounters in our study hospital? First, our material was not collected with aims of analyzing the nature and frequencies of clinical decisions communicated in the patient-physician encounters. Even though the material is large and diverse it was not gathered in such a fashion that comparison between specific groups of encounters should be weighted. There is both a skewed distribution between encounters from the three different clinical settings and between the 17 different specialties and subspecialties, and there are amount and setting differences in encounters for each of the 58 physicians.

With this is mind, our comparisons serve to illustrate that with a few exceptions (like ENT-encounters) there are fairly consistent findings in the nature and frequency of decisions across settings, specialties and degree of experience in physicians. Patterns that could be expected, e.g. a higher frequency of preformed decisions in ward rounds, a lower total frequency in ENT encounters, more "gathering information"-decisions in ER encounters and more "drug-related" decisions in internal medicine encounters, are all illustrated in our landscape description. And other patterns that could be hypothesized, e.g. higher frequency of conditional decisions in ER encounters or higher frequency of surgery-related decisions in orthopedic and surgery encounters, remains to be hypotheses that could be tested in a more purposefully selected material.

We found a difference of two decisions per encounter when comparing the averages of men and women (12.7 and 14.7 respectively). Although statistically significant, we are not convinced that this difference is of clinical significance. North American studies have found that female physicians' consultations are on average two minutes longer than male physicians' and that female physicians engage in more patient-centered communication than male physicians. (Roter et al 2002) In a recent systematic review of material from the United Kingdom, the authors found no difference in consultation length between male and female physicians. (Jefferson et al 2015) In our material, encounters with female physicians were shorter in duration than in those with male physicians (20:04 versus 21:39 minutes).

We have deliberately not analyzed encounters with respect to duration, because there are several factors that influence the duration of encounters in our material. First, the most probable reason why encounters with male physicians were longer on average was that encounters where time-demanding diagnostic procedures (such as echocardiograms, urethrocystoscopies, neurographies and electromyographies) were predominantly performed by male physicians. My impression after observing 372 encounters is that there was no clinically relevant difference in duration of encounters with male and female physicians.

Second, it could be argued that it is clinically relevant to point to the fact that different specialties demonstrate different average lengths of encounters. For instance orthopedic surgery encounters have an average of 12.6 decisions over an average of 13:13 minutes, while neurology encounters have an average of 13.6 decisions over an average of 29:32 minutes. Some might say that orthopedic surgeons are more time-efficient and get an equal amount of work done in less than half the time. The clinical difference in these two groups of encounters is that neurologists spend the vast majority of their time in what we have coded as the gathering information-phase, i.e. being extremely thorough in taking the patient's history and doing a full clinical examination of the nervous system. In order for it to be meaningful to describe how decisions are communicated with relation to time consumption, the structural content of encounters has to be mapped especially with regards to the time spent in phases where decisions are discussed. Such a possible future study could be aided by the taxonomy and mapping of different phases in medical encounters.

Our finding of differences should also be interpreted in light of the average of decisions for each of the 58 physicians' encounters. The inter-physician variability was large, ranging from 6 to 29 decisions. The variability was large also across specialties, leading us to conclude that this finding is influenced by different personal communication styles of physicians. When comparing how decisions varied between encounters of the same physician, we found large intra-physician variability, where the range was from 5 to 29 (minimum 9-14 and maximum 11-40, respectively). We interpret this finding to be influenced by the variation in patients; the complexity of their medical conditions and their communication styles.

The relevance of our definition, taxonomy, and findings

Reflecting on the relevance of a taxonomy of clinical decisions, I'll let Feinstein's words from half a decade ago set the stage:

"To many modern clinical scientists the very word taxonomy conjures up the image of an ancient biologist, passively observing nature… and speculating – without experimental proof – about the causes and what he classified". (Feinstein 1967, p. 71)

What is the point of trying to answer what a clinical decision is? Has this not been settled ages ago? In the Introduction I have pointed to a need for a more precise description of clinical decisions as they appear in medical encounters. A framework offering a more detailed and precise framework of clinical decisions is of relevance to patients, physicians and the health care system.

In general patients in Western societies prefer to be informed by their physicians (Cox et al 2006; Blanchard et al 1988) and to an increasing extent involved in the decision-making process. (Chewning et al 2012) In Norway and other countries and states, it is required by law that patients are informed and involved in decisions about diagnosis and treatment. (Lov om pasient- og brukerrettigheter; Shafir, & Rosenthal 2012) Studies indicate however that patients often do not recall what happened in their visits or during hospital stays, or they seem to be misinformed (Weeks et al 2012; Skinner et al 2007) Possible explanations could be that they have received too little or unclear information, or that they may be in an emotional state that hampers uptake of information.

Our study demonstrates that patients are given a lot of information and that they are informed of or involved in an average of 13 decisions per encounter. We believe that the way decisions in medical encounters can be described by our taxonomy, may enlighten understanding of the often observed missing information transfer. There is a trend today that some patients record their meetings with physicians, a practice that some physicians find disturbing and even threatening. This is a topic for discussion. (Elwyn & Buckman 2015) A Danish hospital has turned the coin and provides patients with an audio file of their visit to use for recalling what happened. (Wolderslund 2011) Our findings suggest that this could be a good idea. Our taxonomy could help to provide structure and highlight the most important passages of the dialogue.

We believe that our findings are relevant to physicians who stand in the midst of busy hospital work. Our framework and our findings can help physicians become more aware of all the decisions they discuss with their patients and how most of them are not suitable for patient involvement. Increased awareness has the potential to affect physician

behavior and may eventually lead to an increased ability to prioritize which decisions to discuss with patients.

As the taxonomy provides distinctions between types of decisions and can produce detailed maps of medical encounters, it serves as a novel way of describing what we do as physicians. It builds on previous efforts that have described decisions with high specificity, but with insufficient sensitivity. We think that our efforts in trying to describe clinically relevant decisions as comprehensive as possible have increased both specificity and sensitivity in this respect.

Our taxonomy taps into the enormous amount of information that has to be structured into something more concrete; a descriptive or normative conclusion and subsequently prescriptive actions. We believe that it may prove useful when analyzing practices with respect to efficiency and quality, on provider or system level.

We have developed a tool that allows for a detailed mapping of the decisional terrain. In our study this terrain is rich and vibrant, but also familiar and in a sense predictable. We see that most encounters – in all specialties and settings – contain certain categories of decisions and commonly follow an inherent order and structure that seems universal to medicine. We assume that decisions pertaining to these categories occur in other patient-physician encounters, in settings we have not tested yet (general practice and psychiatry), in other hospitals and in other countries. Still, we are open to the possibility that there are categories of relevant clinical decisions that we have not described, especially in encounters where talk is a more vital part of therapy.

Our taxonomy aims to capture and describe the decisional elements of medicine as a problem-solving profession. The framework of topical and temporal dimensions – and the inclusions of both judgments and actions as relevant decisions – could be applicable to other problem-solving professionals, e.g. car mechanics, carpenters and others.

The future of the taxonomy will be determined by how relevant and applicable it will be perceived by others. The strongest sign of a taxonomy's right to survival, is how it is used and modified to fit the contexts it might be of relevance to. The way the taxonomy now looks is logical and sensible to me as a developer of it, but to others it might not portray as finished or intuitively organized. After having worked with the taxonomy as it now looks for more than three years, I have become shaped by it in how I think as a physician and a researcher. I feel blind to its shortcomings. Becoming aware of what going deep into a field does to you, has been a humbling experience.

10 Future Research

In this section I will outline possible future research within the field of clinical decisions, where the findings of this thesis might be of relevance, structured from descriptive to normative to prescriptive.

Possible descriptive approaches

- Test the taxonomy's applicability, reliability and validity through content coding of audio or video in other settings, especially settings not comprised by our study, such as general practice, psychiatry, other hospitals and other countries.
- Test the taxonomy in a material sampled for the purpose of comparison, in order to assess differences and similarities between physicians, gender, settings, specialties, diagnoses/clinical problems/groups of patients.
- Interview participants in order to gain insight to how the taxonomy reflects which decisions participants think have been made in their encounter. Interview patients and physicians after the medical encounter to tap into their perspectives, and/or videotape the encounter and review it together with one or both participants in order to tap into participant perspectives.
- Use the taxonomy as an intervention in itself and describe what happens. Test how exposure to the categories of the taxonomy may affect awareness of clinical decisions and the communication of decisions in medical encounters by introducing physicians and/or patients to the taxonomy before a medical encounter and observe how decisions are communicated.

Possible normative approaches

- Use the taxonomy as a first pass instrument to assess a selection of decisions according to a normative framework, e.g. degree of patient involvement in decision-making. DICTUM is able to identify time points in encounters where SDM assessment-tools such as OPTION, (Elwyn et al 2013b), Deep-SDM (Clayman et al 2012) or MAPPIN-SDM (Kasper et al 2012) can rate the degree of different elements in an SDM process.
- Normative assessment of decisions through peer-evaluation of selected decisions by clinical experts or non-clinicians.

- Normative assessment of a pre-selected set of clinical decisions or a clinical context that is predictable in terms of which decisions are going to be discussed. Example: e.g. with an evidence-based approach: sample encounters from encounters where there are clear cut EBM guidelines, code the encounters to identify relevant decisions and assess how they align with EBM guidelines, interview participants after the encounter, get access to the patient medical record and follow up patient after a period of time. Select relevant outcome measures.

Possible prescriptive endeavors

- How may the taxonomy lead to improvement of current practice? Informed by descriptive and/or normative studies, use the taxonomy as a framework for teaching medical students and physicians about clinical decisions as they appear in medical encounters. Assess how intervention affects practice.

11 Conclusions

Previous studies describing the nature and frequencies of decisions in patient-physician encounters do not offer an exhaustive description of clinically relevant decisions as they are communicated in medical encounters.

Through development of a broader definition of what a clinically relevant decision is, we have discovered that decisions have characteristics that allow them to be grouped according to two different dimensions – a temporal and a topical dimension. The definition and the two dimensions form the basis for a taxonomy that we have named the Decision Identification and Classification Taxonomy for Use in Medicine (DICTUM)

Within a temporal dimension, decisions can be sorted across three different mutually exclusive categories: decisions which have already been made, and are brought into the encounter by the physician (preformed decisions), decisions that are made in the present (here-and-now decisions) and decisions prescribing future actions given a certain course of events (conditional decisions).

Within a topical dimension, decisions can be sorted across ten different categories with mutually exclusive characteristics: 1. gathering additional information, 2. interpretation of test, 3. defining problem, 4. drug-related, 5. surgery-related, 6. legally related, 7. contact-related, 8. advice and precaution, 9. treatment goal, and 10. deferment.

We found that there was an average of 13 decisions per encounter in our material of 372 videotaped hospital encounters from 17 different specialties and three different clinical settings (emergency room, ward round and outpatient clinic). We found distributions and differences between categories, clinical settings, and specialties that could be attributed to the nature of medical encounters in general and of the specific medical contexts comprised by our material.

We conclude that hospital encounters contain several – and quite often a large amount – of clinical decisions which are possible to identify and categorize using DICTUM. Identification, classification and quantification of decisions using DICTUM offer a precise, detailed and comprehensive description of the decisional terrain, which could aid normative approaches to assessment of clinical decisions.

12 References

Adams J.R., Elwyn G., Légaré F., Frosch D.L.. Communicating with physicians about medical decisions: a reluctance to disagree. *JAMA Intern Med*, 172(15), pp. 1184-6.

Agledahl, K.M., 2011, *Morally bound medical work. An empirical study exploring moral conditions of doctors' everyday practice,* Doctoral thesis, University of Tromsø, Norway.

Agledahl, K.M., Førde, R. & Wifstad, A., 2011, Choice is not the issue. The misrepresentation of healthcare in bioethical discourse, *Journal of Medical Ethics*, 37(4), pp. 212-5.

Agoritsas, T., Heen, A.F., Brandt, L., Alonso-Coello, P., Kristiansen, A., Akl, E.A., Neumann, I., Tikkinen, K.A., Weijden, T.v., Elwyn, G., Montori, V.M., Guyatt, G.H. & Vandvik, P.O., 2015, Decision aids that really promote shared decision making: the pace quickens, *BMJ (Clinical research ed.)*, 350, p. g7624.

Akershus University Hospitals webpage. http://www.ahus.no/ Accessed January 10th 2015.

Altman, D.G., 1999, *Practical statistics for medical research,* Chapman & Hall/CRC, Boca Raton, FL..

Atkinson, P., 1995, *Medical talk and medical work : the liturgy of the clinic,* Sage, London.

Bakeman, R., McArthur, D., Quera, V. & Robinson, B.F., 1997, Detecting sequential patterns and determining their reliability with fallible observers, *Psychological Methods*, 2(4), p. 357.

Barry, .A., Britten, N., Barber, N., Bradley, C. & Stevenson, F., 1999, Using Reflexivity to Optimize Teamwork in Qualitative Research, *Qualitative Health Research*, 9(1), pp. 26-44.

Barry, C.A., Stevenson, F.A., Britten, N., Barber, N. & Bradley, C.P., 2001, Giving voice to the lifeworld. More humane, more effective medical care? A qualitative study of doctor-patient communication in general practice, *Social Science & Medicine*, 53(4), pp. 487-505.

Barry, M.J. & Edgman-Levitan, S., 2012, Shared Decision Making — The Pinnacle of Patient-Centered Care, *N Engl J Med*, 366(9), pp. 780-1.

Bassford, H.A., 1982, The justification of medical paternalism, *Social Science & Medicine*, 16(6), pp. 731-9.

Beauchamp, T.L. & Childress, J.F., 2001, *Principles of biomedical ethics. 5th ed.* Oxford University Press, Oxford.

Bernoulli, D., 1954, Exposition of a New Theory on the Measurement of Risk, *Econometrica*, 22(1), pp. 23-36.

Blanchard, C.G., Labrecque, M.S., Ruckdeschel, J.C. & Blanchard, E.B., 1988, Information and decision-making preferences of hospitalized adult cancer patients, *Social Science & Medicine*, 27(11), pp. 1139-45.

Bland, J.M. & Altman, D.G., 1995, Multiple significance tests: the Bonferroni method, *BMJ (Clinical research ed.)*, 310(6973), p. 170.

Braddock, C., Hudak, P.L., Feldman, J.J., Bereknyei, S., Frankel, R.M. & Levinson, W., 2008, "Surgery is certainly one good option": quality and time-efficiency of informed decision-making in surgery, *The Journal of Bone and Joint Surgery.* 90(9), pp. 1830-8.

Braddock, C.H., Edwards, K.A., Hasenberg, N.M., Laidley, T.L. & Levinson, W., 1999, Informed decision making in outpatient practice: time to get back to basics, *JAMA: the journal of the American Medical Association*, 282(24), pp. 2313-20.

Braddock, C.H., Fihn, S.D., Levinson, W., Jonsen, A.R. & Pearlman, R.A., 1997, How doctors and patients discuss routine clinical decisions. Informed decision making in the outpatient setting, *Journal of General Internal Medicine*, 12(6), pp. 339-45.

Braddock, C.H., Szaflarski, N., Forsey, L., Abel, L., Hernandez-Boussard, T. & Morton, J., 2014, The TRANSFORM Patient Safety Project: A Microsystem Approach to Improving Outcomes on Inpatient Units, *Journal of General Internal Medicine,* 30(4), pp. 384-6..

Bradley, E.H., Curry, L.A. & Devers, K.J., 2007, Qualitative data analysis for health services research: developing taxonomy, themes, and theory, *Health Services Research*, 42(4), pp. 1758-72.

Camm, A.J., Kirchhof, P., Lip, G.Y., Schotten, U., Savelieva, I., Ernst, S., Van Gelder, I.C., Al-Attar, N., Hindricks, G., Prendergast, B., Heidbuchel, H., Alfieri, O., Angelini, A., Atar, D., Colonna, P., De Caterina, R., De Sutter, J., Goette, A., Gorenek, B., Heldal, M., Hohloser, S.H., Kolh, P., Le Heuzey, J.Y., Ponikowski, P. & Rutten, F.H., 2010, Guidelines for the management of atrial fibrillation: the Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC), *European Heart Journal*, 31(19), pp. 2369-429.

Cassell, E.J., 2013, *The nature of healing : the modern practice of medicine,* Oxford University Press, Oxford.

Chapman, G.B. & Sonnenberg, F.A., 2000, *Decision making in health care : theory, psychology, and applications,* Cambridge University Press, Cambridge, UK ; New York.

Charles, C., Gafni, A. & Whelan, T., 1997, Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango), *Social Science & Medicine*, 44(5), pp. 681-92.

Charles, C.A., Whelan, T., Gafni, A., Willan, A. & Farrell, S., 2003, Shared treatment decision making: What does it mean to physicians? *Journal of Clinical Oncology*, 21(5), p. 932.

Chewning, B., Bylund, C.L., Shah, B., Arora, N.K., Gueguen, J.A. & Makoul, G., 2012, Patient preferences for shared decisions: a systematic review, *Patient Education and Counseling*, 86(1), pp. 9-18.

Choosing wisely, from http://www.choosingwisely.org/ Accessed February 25th 2015.

Clayman, M.L., Makoul, G., Harper, M.M., Koby, D.G. & Williams, A.R., 2012, Development of a shared decision making coding system for analysis of patient-healthcare provider encounters, *Patient Education and Counseling*, 88(3), pp. 367-72.

Cohen, M.D., March, J.G. & Olsen, J.P., 1972, A garbage can model of organizational choice, *Administrative Science Quarterly*, pp. 1-25.

Cook, D.A., Sorensen, K.J., Wilkinson, J.M. & Berger, R.A., 2013, Barriers and decisions when answering clinical questions at the point of care: a grounded theory study, *JAMA Internal Medicine*, 173(21), pp. 1962-9.

Couët, N., Desroches, S., Robitaille, H., Vaillancourt, H., Leblanc, A., Turcotte, S., Elwyn, G. & Légaré, F., 2013, Assessments of the extent to which health-care providers involve patients in decision making: a systematic review of studies using the OPTION instrument, *Health Expectations*.Cox, A., Jenkins, V., Catt, S., Langridge, C. & Fallowfield, L., 2006, Information needs and experiences: an audit of UK cancer patients, *European Journal of Oncology Nursing,* 10(4), pp. 263-72.

Coylewright, M., Montori, V. & Ting, H.H., 2012, Patient-centered shared decision-making: a public imperative, *The American Journal of Medicine*, 125(6), pp. 545-7.

Crabtree, B.F. & Miller, W.L., 1999, *Doing qualitative research,* Sage Publications, Thousand Oaks, Calif..

Deber, R.B., 1994, Physicians in health care management: 8. The patient-physician partnership: decision making, problem solving and the desire to participate, *CMAJ : Canadian Medical Association Journal,* 151(4), pp. 423-7.

Del Canale, S., Louis, D.Z., Maio, V., Wang, X., Rossi, G., Hojat, M. & Gonnella, J.S., 2012, The relationship between physician empathy and disease complications: an empirical study of primary care physicians and their diabetic patients in Parma, Italy, *Academic medicine*, 87(9), pp. 1243-9.

Del Fiol, G., Workman, T.E. & Gorman, P.N., 2014, Clinical Questions Raised by Clinicians at the Point of Care: A Systematic Review, *JAMA Internal Medicine*.

Dowie, J. & Elstein, A.S., 1988, *Professional judgment : a reader in clinical decision making,* Cambridge University Press, Cambridge [Cambridgeshire] ; New York.

Dreyfus, H.L., Dreyfus, S.E. & Athanasiou, T., 1986, *Mind over machine : the power of human intuition and expertise in the era of the computer,* Free Press, New York.

Duffin, J., 2010, *History of medicine a scandalously short introduction,* University of Toronto Press, Toronto.

Eddy, D.M., 1984, Variations in physician practice: the role of uncertainty, *Health Affairs*, 3(2), pp. 74-89.

Eilon, S., 1969, What Is a Decision? *Management Science*, 16(4), pp. B172-89.

Elstein, A.S., Schwartz, A. & Schwarz, A., 2002, Clinical problem solving and diagnostic decision making: selective review of the cognitive literature, *BMJ (Clinical research ed.)*, 324(7339), pp. 729-32.

Elwyn, G. & Buckman, L., 2015, Should doctors encourage patients to record consultations? *BMJ (Clinical research ed.)*, 350, p. g7645.

Elwyn, G., Edwards, A., Kinnersley, P. & Grol, R., 2000, Shared decision making and the concept of equipoise: the competences of involving patients in healthcare choices, *The British journal of general practice*, 50(460), pp. 892-9.

Elwyn, G., Edwards, A., Mowle, S., Wensing, M., Wilkinson, C., Kinnersley, P. & Grol, R., 2001a, Measuring the involvement of patients in shared decision-making: a systematic review of instruments, *Patient Education and Counseling*, 43(1), pp. 5-22.

Elwyn, G., Edwards, A., Wensing, M., Hibbs, R., Wilkinson, C. & Grol, R., 2001b, Shared decision making observed in clinical practice: visual displays of communication sequence and patterns, *Journal of Evaluation in Clinical Practice*, 7(2), pp. 211-21.

Elwyn, G., Edwards, A., Wensing, M., Hood, K., Atwell, C. & Grol, R., 2003, Shared decision making: developing the OPTION scale for measuring patient involvement, *Quality & Safety in Health Care*, 12(2), pp. 93-9.

Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., Cording, E., Tomson, D., Dodd, C., Rollnick, S., Edwards, A. & Barry, M., 2012, Shared decision making: a model for clinical practice, *Journal of General Internal Medicine*, 27(10), pp. 1361-7.

Elwyn, G., Lloyd, A., Joseph-Williams, N., Cording, E., Thomson, R., Durand, M.A. & Edwards, A., 2013a, Option Grids: shared decision making made easier, *Patient Education and Counseling*, 90(2), pp. 207-12.

Elwyn, G., Tsulukidze, M., Edwards, A., Légaré, F. & Newcombe, R., 2013b, Using a 'talk' model of shared decision making to propose an observation-based measure: Observer OPTION 5 Item, *Patient Education and Counseling*, 93(2), pp. 265-71.

Ely, J.W., Osheroff, J.A., Ebell, M.H., Bergus, G.R., Levy, B.T., Chambliss, M.L. & Evans, E.R., 1999, Analysis of questions asked by family doctors regarding patient care, *BMJ (Clinical research ed.)*, 319(7206), pp. 358-61.

Ely, J.W., Osheroff, J.A., Gorman, P.N., Ebell, M.H., Chambliss, M.L., Pifer, E.A. & Stavri, P.Z., 2000, A taxonomy of generic clinical questions: classification study, *BMJ (Clinical research ed.)*, 321(7258), pp. 429-32.

Feinstein, A.R., 1994, "Clinical Judgment" revisited: the distraction of quantitative models, *Annals of Internal Medicine*, 120(9), pp. 799-805.

Feinstein, Alvan R., 1967, *Clinical Judgment,* R.E. Krieger Pub. Co., Huntington, N.Y..

Fleiss, J.L., 1981, *Statistical methods for rates and proportions,* Wiley, New York.

Fossli Jensen, B., Gulbrandsen, P., Dahl, F.A., Krupat, E., Frankel, R.M. & Finset, A., 2011, Effectiveness of a short course in clinical communication skills for hospital doctors: results of a crossover randomized controlled trial (ISRCTN22153332), *Patient Education and Counseling*, 84(2), pp. 163-9.

Fowler, F.J., Gerstein, B.S. & Barry, M.J., 2013, How patient centered are medical decisions?: Results of a national survey, *JAMA Internal Medicine*, 173(13), pp. 1215-21.

Freedman, B., 1987, Equipoise and the ethics of clinical research, *N Engl J Med*, 317(3), pp. 141-5.

Freidson, E., 1988, *Profession of medicine : a study of the sociology of applied knowledge,* University of Chicago Press, Chicago.

Friedberg, M.W., Van Busum, K., Wexler, R., Bowen, M. & Schneider, E.C., 2013, A demonstration of shared decision making in primary care highlights barriers to adoption and potential remedies, *Health Affairs*, 32(2), pp. 268-75.

Frosch, D.L., May, S.G., Rendle, K.A., Tietbohl, C. & Elwyn, G., 2012, Authoritarian physicians and patients' fear of being labeled 'difficult' among key obstacles to shared decision making, *Health Affairs*, 31(5), pp. 1030-8.

Giacomini, M.K. & Cook, D.J., 2000a, Users' guides to the medical literature: XXIII. Qualitative research in health care A. Are the results of the study valid? Evidence-Based Medicine Working Group, *JAMA: the journal of the American Medical Association*, 284(3), pp. 357-62.

Giacomini, M.K. & Cook, D.J., 2000b, Users' guides to the medical literature: XXIII. Qualitative research in health care B. What are the results and how do they help me care for my patients? Evidence-Based Medicine Working Group, *JAMA: the journal of the American Medical Association*, 284(4), pp. 478-82.

Giorgi, A., 2009, *The descriptive phenomenological method in psychology : a modified Husserlian approach,* Duquesne University Press, Pittsburgh, Pa..

Glaser, B.G. & Strauss, A.L., 1967, *The discovery of grounded theory : strategies for qualitative research,* Aldine Pub. Co., Chicago.

Groopman, J.E., 2008, *How doctors think,* Houghton Mifflin, Boston.

Gulbrandsen, P. & Jensen, B.F., 2010, Post-recruitment confirmation of informed consent by SMS, *Journal of Medical Ethics*, 36(2), pp. 126-8.

Gweet, K.L., 2008, Intrarater reliability, *Wiley Encyclopedia of Clinical Trials*.

Gwet, K.L., 2014, *Handbook of inter-rater reliability : the definitive guide to measuring the extent of agreement among raters,* Advanced Analytics, Gaithersburg, MD.

Hammond, K.R., McClelland, G.H., Mumpower, J. & Conference on Human Judgment, 1.B.C., 1980, *Human judgment and decision making : theories, methods, and procedures,* Praeger ; [Washington, D.C.] : Hemisphere Pub. Corp, New York.

Hauer, K.E., Fernandez, A., Teherani, A., Boscardin, C.K. & Saba, G.W., 2011, Assessment of medical students' shared decision-making in standardized patient encounters, *Journal of General Internal Medicine*, 26(4), pp. 367-72.

Haynes, A.B., Weiser, T.G., Berry, W.R., Lipsitz, S.R., Breizat, A.H., Dellinger, E.P., Herbosa, T., Joseph, S., Kibatala, P.L., Lapitan, M.C., Merry, A.F., Moorthy, K., Reznick, R.K., Taylor, B., Gawande, A.A. & Safe Surgery Saves Lives Study

Group, 2009, A surgical safety checklist to reduce morbidity and mortality in a global population, *New EngJ Med*, 360(5), pp. 491-9.

Helsedirektoratet, 2011, *NCMP og NCSP: Klassifikasjon av helsefaglige prosedyrer 2011,* Fagbokforlaget, Oslo.

Hodgkin, P., 1985,Medicine is war: and other medical metaphors. *BMJ (Clinical research ed.)*, 291(6511), pp. 1820-1.

Hoffmann, T.C., Montori, V.M. & Del Mar, C., 2014, The connection between evidence-based medicine and shared decision making, *JAMA: the journal of the American Medical Association*, 312(13), pp. 1295-6.

Hunink, M.G.M., 2001, *Decision making in health and medicine : integrating evidence and values,* Cambridge University Press, Cambridge; New York.

Illich, I., 1982, *Medical nemesis : the expropriation of health,* Pantheon Books, New York.

January, C.T., Wann, L.S., Alpert, J.S., Calkins, H., Cigarroa, J.E., Cleveland, J.C., Conti, J.B., Ellinor, P.T., Ezekowitz, M.D., Field, M.E., Murray, K.T., Sacco, R.L., Stevenson, W.G., Tchou, P.J., Tracy, C.M., Yancy, C.W. & American College of Cardiology/American Heart Association Task Force on Practice Guidelines, 2014, 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society, *Journal of the American College of Cardiology*, 64(21), pp. e1-76.

Jefferson, L., Bloor, K. & Hewitt, C., 2015, The effect of physician gender on length of patient consultations: observational findings from the UK hospital setting and synthesis with existing studies, *J R Soc Med*, 18(4), pp. 242-8.

Jonsen, A.R., 1998, *The birth of bioethics,* Oxford University Press, Oxford.

Kahneman, D., 2011, *Thinking, fast and slow,* Farrar, Straus and Giroux, New York.

Kahneman, D. & Tversky, A., 1979, Prospect theory: An analysis of decision under risk, *Econometrica: Journal of the Econometric Society*, pp. 263-91.

Kasper, J., Hoffmann, F., Heesen, C., Köpke, S. & Geiger, F., 2012, MAPPIN'SDM--the multifocal approach to sharing in shared decision making, *PloS One*, 7(4), p. e34849.

Klein, G.A., 2003, *The power of intuition : how to use your gut feelings to make better decisions at work,* Currency/Doubleday, New York.

Krippendorff, K.H., 2004, *Content Analysis - 2nd Edition: an Introduction to Its Methodology,* SAGE Publications, Inc, Thousand Oaks.

Krogstad U, Hofoss D, Hjortdahl P. Continuity of hospital care: beyond the question of personal contact. *BMJ (Clinical research ed.), 324, p.36.*

Kuper, A., Lingard, L. & Levinson, W., 2008, Critically appraising qualitative research, *BMJ (Clinical research ed.)*, 337, p. a1035.

Kuppermann, M. & Sawaya, G.F., 2014, Shared Decision-Making: Easy to Evoke, Challenging to Implement, *JAMA Internal Medicine*, 175(2), pp. 167-8.

Landis, J.R. & Koch, G.G., 1977, The measurement of observer agreement for categorical data, B*iometrics*, pp. 159-74.

Landmark, A.M.D., Gulbrandsen, P. & Svennevig, J., 2014, Whose decision? Negotiating epistemic and deontic rights in medical treatment decisions, *Journal of Pragmatics*, 78, pp. 54-69.

Le Fanu, J., 2000, *The rise and fall of modern medicine,* Abacus, London.

Leppin, A.L., Humeniuk, K.M., Fernandez, C., Montori, V.M., Yost, K., Kumbamu, A., Geller, G. & Tilburt, J.C., 2015, Was a decision made? An assessment of patient-clinician discordance in medical oncology encounters, *Health Expectations* (epub ahead of print)

Légaré, F., Ratté, S., Gravel, K. & Graham, I.D., 2008, Barriers and facilitators to implementing shared decision-making in clinical practice: update of a systematic review of health professionals' perceptions, *Patient Education and Counseling*, 73(3), pp. 526-35.

Lov om pasient- og brukerrettigheter, from http://lovdata.no/dokument/NL/lov/1999-07-02-63. Accessed February 22nd 2015.

President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, 1982, *Making health care decisions :a report on the ethical and legal implications of informed consent in the patient-practitioner relationship*, Washington, D.C..

Makoul, G. & Clayman, M.L., 2006, An integrative model of shared decision making in medical encounters, *Patient Education and Counseling*, 60(3), pp. 301-12.

Malterud, K., 2001, Qualitative research: standards, challenges, and guidelines, *Lancet*, 358(9280), pp. 483-8.

Malterud, K., 2011, *Kvalitative metoder i medisinsk forskning: en innføring, 3. utgave,* Universitetsforlaget, Oslo.

Mann, D.M., Ponieman, D., Montori, V.M., Arciniega, J. & McGinn, T., 2010, The Statin Choice decision aid in primary care: a randomized trial, *Patient Education and Counseling*, 80(1), pp. 138-40.

March, J.G, 1994, *A primer on decision making: how decisions happen,* Free Press, New York.

Merriam-Webster, 2014, *Merriam-Webster's Dictionary and Thesaurus,* Merriam-Webster Inc, Springfield, MA.

Merriam-Webster online. http://www.merriam-webster.com. Accessed March 10th 2015.

Måseide, P., 2006, The deep play of medicine: discursive and collaborative processing of evidence in medical problem solving, *Communication & Medicine*, 3(1), pp. 43-54.

Merriam-Webster, I., 2005, *The Merriam-Webster dictionary,* Merriam-Webster, Springfield, MA.

Michel, P., Quenon, J.L., de Sarasqueta, A.M. & Scemama, O., 2004, Comparison of three methods for estimating rates of adverse events and rates of preventable adverse events in acute care hospitals, *BMJ (Clinical research ed.)*, 328(7433), p. 199.

Montori, V.M., Brito, J.P. & Murad, M.H., 2013, The optimal practice of evidence-based medicine: incorporating patient preferences in practice guidelines, *JAMA: the journal of the American Medical Association*, 310(23), pp. 2503-4.

Montori, V.M., Gafni, A. & Charles, C., 2006, A shared treatment decision-making approach between patients with chronic conditions and their clinicians: the case of diabetes, *Health Expectations*, 9(1), pp. 25-36.

Neumann, M., Scheffer, C., Tauschel, D., Lutz, G., Wirtz, M. & Edelhäuser, F., 2012, Physician empathy: definition, outcome-relevance and its measurement in patient care and medical education, *GMS Zeitschrift für Medizinische Ausbildung*, 29(1).

Noldus, L.P., Trienes, R.J., Hendriksen, A.H., Jansen, H. & Jansen, R.G., 2000, The Observer Video-Pro: new software for the collection, management, and presentation of time-structured data from videotapes and digital media files, *Behavior Research Methods, Instruments, & Computers*, 32(1), pp. 197-206.

Norman, G., 2005, Research in clinical reasoning: past history and current trends, *Medical Education*, 39(4), pp. 418-27.

O'Hare, J.A., 2008, Anatomy of the ward round, *Eur J Intern Med*, 19(5), pp. 309-13.

Parry, G., Cline, A. & Goldmann, D., 2012, Deciphering harm measurement, *JAMA: the journal of the American Medical Association*, 307(20), pp. 2155-6.

Patton, M.Q., 1999, Enhancing the quality and credibility of qualitative analysis, *Health Services Research*, 34(5 Pt 2), pp. 1189-208.

Pendleton, D., 1984, *The Consultation : an approach to learning and teaching,* Oxford University Press, Oxford.

Pfifferling JH., 1980, *A cultural prescription for medicocentrism.* in Eisenberg L, Kleinman A, eds. *The Relevance of Social Science for Medicine.* D. Reidel Publishing, Boston, MA, pp. 197-222.

Porter, R., 2003, *Blood and guts : a short history of medicine,* Penguin, London; New York.

Rapley, T., 2008, Distributed decision making: the anatomy of decisions-in-action, *Sociol Health Illn*, 30(3), pp. 429-44.

Robison, W.L. & Pritchard, M.S., 1979, *Medical responsibility: paternalism, informed consent, and euthanasia,* Humana Press, Clifton, N.J..

Roter, D.L., Hall, J.A. & Aoki, Y., 2002, Physician gender effects in medical communication: a meta-analytic review, *JAMA: the journal of the American Medical Association*, 288(6), pp. 756-64.

Saba, G.W., Wong, S.T., Schillinger, D., Fernandez, A., Somkin, C.P., Wilson, C.C. & Grumbach, K., 2006, Shared decision making and the experience of partnership in primary care, *Annals of Family Medicine*, 4(1), pp. 54-62.

Sackett, D.L., 2000, *Evidence-based medicine : how to practice and teach EBM,* Churchill Livingstone, Edinburgh; New York.

Schuur, J.D., Carney, D.P., Lyn, E.T., Raja, A.S., Michael, J.A., Ross, N.G. & Venkatesh, A.K., 2014, A top-five list for emergency medicine: a pilot project to improve the value of emergency care, *JAMA Internal Medicine*, 174(4), pp. 509-15.

Schwartz, A. & Bergus, G., 2008, *Medical decision making : a physician's guide,* Cambridge University Press, Cambridge, UK ; New York.

Shafir, A. & Rosenthal, J., 2012, Shared decision making: Advancing patient-centered care through state and federal implementation, *Boston, MA: Informed Medical Decisions Foundation*.

Shay, L.A. & Lafata, J.E., 2014, Where Is the Evidence? A Systematic Review of Shared Decision Making and Patient Outcomes, *Medical Decision Making*, 35(1), pp. 114-31.

Sim, J. & Wright, C.C., 2005, The kappa statistic in reliability studies: use, interpretation, and sample size requirements, *Phys Ther*, 85(3), pp. 257-68.

Simon, H.A, 1957, *Models of man: social and rational.* John Wiley & sons, New York.

Sinclair, S., 1997, *Making doctors: the institutional apprenticeship of medical students,* Berg Publishers, Oxford.

Skinner, T.C., Barnard, K., Cradock, S. & Parkin, T., 2007, Patient and professional accuracy of recalled treatment decisions in out-patient consultations, *Diabetic Medicine*, 24(5), pp. 557-60.

Sofaer, S., 1999, Qualitative methods: what are they and why use them? *Health Services Research*, 34(5 Pt 2), pp. 1101-18.

Stacey, D., Légaré, F., Col, N.F., Bennett, C.L., Barry, M.J., Eden, K.B., Holmes-Rovner, M., Llewellyn-Thomas, H., Lyddiatt, A., Thomson, R., Trevena, L. & Wu, J.H., 2014, Decision aids for people facing health treatment or screening decisions, *Cochrane Database of Systematic Reviews (Online)*, 1, p. CD001431.

Steele, S.J. & Morton, D.J., 1978, The ward round, *Lancet*, 1(8055), pp. 85-6.

Stewart M., Brown J.B., Weston W.W., McWhinney I.R., McWilliam C.L. Freeman T.R., 1995, *Patient-Centered Medicine: Transforming the Clinical Method.* SAGE Publications, Inc, Thousand Oaks.

Stickrath, C., Noble, M., Prochazka, A., Anderson, M., Griffiths, M., Manheim, J., Sillau, S. & Aagaard, E., 2013, Attending rounds in the current era: what is and is not happening, *JAMA Internal Medicine*, 173(12), pp. 1084-9.

Stiggelbout, A.M., Van der Weijden, T., De Wit, M.P., Frosch, D., Légaré, F., Montori, V.M., Trevena, L. & Elwyn, G., 2012, Shared decision making: really putting patients at the centre of healthcare, *BMJ (Clinical research ed.)*, 344, p. e256.

Strijbos, J.-W., Martens, R.L., Prins, F.J. & Jochems, W.M., 2006, Content analysis: What are they talking about? *Computers & Education*, 46(1), pp. 29-48.

Sumner W.G., 1906, *Folkways: a study of the sociological importance of usages, manners, customs, mores and morals.* Boston, MA, Ginn.

Towle, A. & Godolphin, W., 1999, Framework for teaching and learning informed shared decision making, *BMJ (Clinical research ed.)*, 319(7212), pp. 766-71.

Tversky, A. & Kahneman, D., 1974, Judgment under uncertainty: Heuristics and biases, *Science*, 185(4157), pp. 1124-31.

Uebersax, J.S., 1987, Diversity of decision-making models and the measurement of interrater agreement, *Psychological Bulletin*, 101(1), p. 140.

Vandvik, P.O., Brandt, L., Alonso-Coello, P., Treweek, S., Akl, E.A., Kristiansen, A., Fog-Heen, A., Agoritsas, T., Montori, V.M. & Guyatt, G., 2013, Creating clinical practice guidelines we can trust, use, and share: a new era is imminent, *Chest*, 144(2), pp. 381-9.

Wager, E., Tooley, P.J., Emanuel, M.B. & Wood, S.F., 1995, How to do it. Get patients' consent to enter clinical trials, *BMJ (Clinical research ed.)*, 311(7007), pp. 734-7.

Weed, L.L., 1971, The problem oriented record as a basic tool in medical education, patient care and clinical research, *Annals of Clinical Research*, 3(3), pp. 131-4.

Weeks, J.C., Catalano, P.J., Cronin, A., Finkelman, M.D., Mack, J.W., Keating, N.L. & Schrag, D., 2012, Patients' expectations about effects of chemotherapy for advanced cancer, *New EnglJ Med*, 367(17), pp. 1616-25.

Weindling, P., 2001, The origins of informed consent: the International Scientific Commission on Medical War Crimes, and the Nuremburg code, *Bull Hist Med*, 75(1), pp. 37-71.

Weiner, S.J., Kelly, B., Ashley, N., Binns-Calvey, A., Sharma, G., Schwartz, A. & Weaver, F.M., 2014, Content coding for contextualization of care: evaluating physician performance at patient-centered decision making, *Medical Decision Making,* 34(1), pp. 97-106.

Weiner, S.J., Schwartz, A., Sharma, G., Binns-Calvey, A., Ashley, N., Kelly, B., Dayal, A., Patel, S., Weaver, F.M. & Harris, I., 2013, Patient-centered decision making and health care outcomes: an observational study, *Annals of Internal Medicine*, 158(8), pp. 573-9.

Whitfield JB & Labaree LW. eds., 1956, *Mr. Franklin: A Selection from His Personal Letters.* Yale University Press. New Haven, CT.

Whitney, S.N., 2008, Whose decision is it? The microstructure of medical decision making, *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, 102(7), pp. 423-5.

Whitney, S.N. & McCullough, L.B., 2007, Physicians' silent decisions: because patient autonomy does not always come first, *The American Journal of Bioethics : AJOB*, 7(7), pp. 33-8.

http://www.wikipedia.com . Accessed March 15th 2015.

Wolderslund M., Kofoed P., Axboe, M., Ammentorp J., 2011, *Can audio recording of outpatient consultations improve patient outcome?* International Conference on Communication in Healthcare (ICCH), Chicago, USA, 16/10/11 - 19/10/11,

World Health Organization, 2004, *International statistical classification of diseases and related health problems,* World Health Organization, Geneva.

Wulff HR. & Gøtzsche PC., 2000, *Rational diagnosis and treatment: evidence-based clinical decision-making,* Blackwell Science, Oxford; Malden, MA, USA.

Wulff, H.R., Andur Pedersen, S. & Rosenberg, R., 2003, *Medicinsk filosofi,* Munksgaard, Copenhagen.

Zikmund-Fisher, B.J., Couper, M.P., Singer, E., Levin, C.A., Fowler, F.J., Ziniel, S., Ubel, P.A. & Fagerlin, A., 2010, The DECISIONS study: a nationwide survey of United States adults regarding 9 common medical decisions, *Medical Decision Making*, 30(5 Suppl), pp. 20S-34S.

13 Appendix

13.1 Consent form - patients

Pasientinformasjon for forskningsprosjekt "Bedre samtaler med pasienter og pårørende"

Vi spør deg med dette om du som pasient/pårørende ved Akershus universitetssykehus vil være med på et forskningsprosjekt. Formålet med prosjektet er å studere legers samtaler med pasienter og/el. pårørende. Det er frivillig å delta.

Legene får et kurs i hvordan de bør føre samtaler. Vi videofilmer samtaler med pasienter/pårørende før og etter kurset. Kameraet vil være stilt slik at vi ser legens ansikt tydelig, og ditt ansikt hvis det er mulig. Om du må kle av deg, vil det ikke bli filmet, men mikrofonen vil oppfatte samtalen likevel.

Du får et lite spørreskjema før samtalen, og to små spørreskjemaer etter.

Enten du vil være med eller ikke, får du samme medisinske behandling. Hvis du velger å være med, men ombestemmer deg senere, vil videoen og alle andre opplysninger om deg bli slettet så fort du gir oss beskjed. Det får ingen konsekvenser for din behandling, ditt forhold til legen eller sykehuset.

Datafiler som er opprettet med utgangspunkt i materialet, men der ingen opplysninger kan føres tilbake til deg, vil ikke bli fjernet. I disse filene finnes verken videobilder eller andre data som indirekte kan knytte informasjonen til deg. Du har ellers rett til å kreve innsyn i all informasjon som handler om deg.

Videoen vil kun bli sett av forskere med taushetsplikt. Taushetsplikten tillater ikke bruk av informasjonen til noe annet formål, selv ikke om det kunne vært til din fordel (for eksempel i forbindelse med en rettssak). Videoen blir lagret forskriftsmessig ved Universitetet i Oslo slik at uvedkommende ikke kan få tak i den. Det aktuelle prosjektet varer til 2011, men det kan være aktuelt å bruke videoene til flere studier av legers samtaler med pasienter/pårørende. Vi vil derfor be om ditt samtykke til lagring til og med 31. desember 2020, men du kan også velge å gi samtykke til lagring bare til og med 31. desember 2011.

Vi trenger ditt navn, adresse og telefonnummer av tre grunner. Vi ønsker å kontakte deg per telefon (eller personlig hvis du fortsatt befinner deg i sykehuset) ett døgn etter videoopptaket for å forsikre oss om at du fortsatt er villig til å delta. Dersom du ber oss slette videoene og/eller andre opplysninger, må vi være sikre på at vi fjerner riktig materiale. Dersom lovverket endres, slik at det stilles krav til lengre lagring av forskningsmateriale enn det som gjelder i dag (det er foreslått 10 år), må vi kunne kontakte deg for å opplyse deg om dette.

Følgende person er databehandlingsansvarlig for prosjektet og fungerer som kontaktperson:
Avdelingssjef/1. amanuensis og lege **Pål Gulbrandsen**
HØKH, Postboks 95, Akershus universitetssykehus/Universitetet i Oslo, 1478 Lørenskog.
Telefoner: 67929461 (arbeid), 95827288 (mobil), 67971277 (privat).

Navn og kontaktopplysninger på to andre kontaktpersoner:
Professor/psykolog **Arnstein Finset**, Avdeling for atferdsfag, Universitetet i Oslo. Telefon 22851435.
Stipendiat/lege **Bård Fossli Jensen**, Akershus universitetssykehus. Telefon 91100522.

Erklæring om samtykke

Jeg har mottatt skriftlig og muntlig informasjon og er villig til å delta i studien.

☐ Jeg gir samtykke til at opplysninger om meg, inkludert videoopptak, lagres ved Universitetet i Oslo til bruk for forskning på samtaler mellom leger og pasienter/pårørende til og med 31.12.2020.

☐ Jeg gir kun samtykke til at opplysninger om meg, inkludert videoopptak, lagres ved Universitetet i Oslo til bruk for det aktuelle prosjektet, dvs. til og med 31.12.2011.

Lørenskog, _____

(dato)

Navn pasient/pårørende:_____

Ev. den pårørendes familieforhold til pasient:_____

Navn pasient:_____

_____

Underskrift pasient/pårørende

Jeg har gitt muntlig informasjon om undersøkelsen til pasienten/pårørende.

_____

Underskrift lege/prosjektmedarbeider

13.2 Consent form - physicians

Erklæring om samtykke – leger

Undersøkelse av kvaliteten på legers samtale med pasienter

Jeg har lest skriftlig informasjon og fått muntlig informasjon om undersøkelsen som handler om hvordan kvaliteten på legers samtale med pasienter kan forbedres. Jeg godtar at mine konsultasjoner videofilmes som ledd i dette forskningsprosjektet, så fremt pasienten har avgitt informert samtykke.

Jeg er kjent med at jeg når som helst kan trekke tilbake mitt samtykke til oppbevaring av videoopptakene. Jeg er videre kjent med at videoopptakene kun vil bli brukt til forskning på kommunikasjon mellom leger og pasienter, og at jeg og involvert(e) pasient(er) vil bli kontaktet for ev. å avgi samtykke til bruk av et videoopptak i forbindelse med undervisning av leger eller medisinstudenter dersom det blir aktuelt.

- ☐ Jeg gir samtykke til at videoopptakene lagres ved Universitetet i Oslo til bruk for forskning på kommunikasjon mellom leger og pasienter til og med år 2020. Ev. nye prosjekter vil bli vurdert av Regional komité for medisinsk forskningsetikk.
- ☐ Jeg gir kun samtykke til at videoopptakene lagres ved Universitetet i Oslo til bruk for det aktuelle prosjektet, der effekten av et kurs i klinisk kommunikasjon skal vurderes, dvs. lagring til og med år 2011.

Lørenskog, _____

(dato)

Navn: _____Fødselsdato: _____

_____

Underskrift lege

DICTUM

Decision Identification and Classification Taxonomy for Use in Medicine

Manual – 1st draft September 2011
2nd draft December 2011
3rd draft, February 2012
Last update as of March 2015

Content

"A dictum is a statement or opinion of belief considered authoritative but not binding, because of the authority of the person making it"

Black´s Law Dictionary

Introduction

Physicians apply and refine their medical knowledge more or less continuously during work. This substrate of knowledge informs how they evaluate small bits of information and how they handle complex situations. Hence, they make a wide range of decisions, from judgment of a skin rash at the glimpse of an eye to difficult deliberation and shared decisions about how to best treat a breast tumor.

We aimed to understand how physicians' decision-making is influenced by patient-physician communication processes. Previous research has focused on difficult decisions involving treatment options or the use of screening tests, decisions that involve the patient. However, we wanted to examine *all* relevant clinical decisions physicians make, how communication contributes to these, and how the processes of decision-making contribute to communication. The literature provided no exhaustive tool for identifying and categorizing the wide array of decisions that appear when we studied videotapes of physician-patient encounters.

We developed DICTUM aiming to fill this void. It is important to note that we did not intend to assess **how** the decisions were made. This tool aimed at recognizing **clinically relevant decisions that surface during the encounter**.

The tool was developed through a content-driven iterative process informed by the experiences and perspectives of four physicians studying a sample of 40 out of 130 videotaped encounters from the Department of Internal Medicine in a Norwegian general hospital. The material comprised videos of authentic clinical encounters from ward rounds, outpatient clinics and emergency rooms, in which seven medical subspecialties were involved.

The development of the tool has dealt with three main obstacles;

1. What is a decision, and, more precisely; what is a clinically relevant decision?
2. When are these clinically relevant decisions made?
3. Do the decisions share properties allowing us arrange them in mutually exclusive categories?

Most of the time these decisions are made within a short and determinable time frame, thereby resembling an event. We propose that these events can be assessed with relation to two dimensions; a temporal dimension (past, present, future) and a topical dimension (10 categories of decision types). The present manual explains in detail how decisions can be identified and coded.

Since development, the taxonomy has been tested in seventeen different specialties. Its reliability has been tested and applied to a body of 372 encounters of which examples shown in this codebook are drawn.

Eirik Hugaas Ofstad, Jan Frich, Edvin Schei, Pål Gulbrandsen

Norway, 2015

General coding instructions using DICTUM

DICTUM identifies decisions as events in the clinical encounter. Each decision is given an event code, indicating a specific moment of the consultation. Since statements or passages of dialogue that constitute decisions last longer than a moment - and for practicality during coding - the code is entered as a point event at the end of the relevant statement.

The identification of decisions is sometimes made easy by shifts in the dialogue. However, in many interchanges and longer monologues it is harder to decide what should count as a decision. The following general rules have been agreed upon and thoroughly tested:

Several codes possible per turn:
More than one decision might be conveyed within one turn of speech. However, in order to be coded as separate decisions, they should *cover different categories in at least one of the taxonomy's two dimensions*. The physician may do this either within:

- *the same decision type* (if the physician makes a decision about one drug and goes on to make a decision about another drug).
- *different types* (decision about a drug followed by a decision scheduling the next control).
- *different temporality (see next paragraph)*

One code per topic per turn:
If the physician makes several decisions *within the same topic, temporality and the same turn* of speech it becomes more difficult to hold decisions apart, which is why only one code should be given.

Physicians do a lot of such "information-packaging" to their patients, for example; starting a drug, deciding upon dosage, intervals, informing about effects and side effects, checking for interactions etc. Our tests in the development phase have shown that it is feasible to code this sequence as one code. Detailed assessment of sequences like the one described above is more suited for sub analysis.

An exception to this rule (one code per turn per topic) is when the physician refers to decisions in different time dimensions, for example:

- Physician: "We decided to put you on a drug that you'll have to take four times a day" (*past*).
- Patient: "I think I will forget if I have to do it that often, do I have to?"
- Physician: "Ok, I think it is OK to have a double the dose morning and evening, reducing the frequency to twice a day (*present)*.
- Patient: "But I always seem to get stomach pains when I take any kind of medication."
- Physician: "Well, stomach pain is a possible side effect of this drug. If you get severe pain you should stop taking the pills." (*future*).

(See further instructions about coding of the time dimension on page 6)

General versus tailored information giving:
Often physicians try to explain medically related information to their patients, for example causes of a disease, how common it is, how it may be treated, how it affects survival rates in a population and so forth. In these situations statements reflecting general medical knowledge on a population level are not coded as decisions. If this information is *tailored*

for the current patient and describes or interprets his situation it is coded as a decision. (For example: "I think you got cancer due to your smoking" versus "A lot of patients get cancer due to smoking")

Questions are never decisions (unless...):
If a seemingly relevant medical rephrasing of what the patient just said is returned to the patient in the form of a question, *without further elaboration or categorizing* from the physician, it is not coded as a decision, even though it demonstrates the physician's expert role and power of definition.

Patient involvement:
When the patient asks a question and the physician responds, the response often contains a statement reflecting a clinically relevant decision.

Also a decision sometimes develops from an initial question which the physician may form to himself or to the patient (for example: "I wonder, should we stop this drug?"). At this point the statement is not coded as a decision. The code is made when the answer to the question is finalized, whether it reaches its conclusion through discussion with the patient, another physician or if the physician decides alone.

Options:
If the physician presents *more than one* option for the patient, the introduction of options is not coded as a decision. Even though on many levels it is an important decision, it is not an independent clinical decision, but a first step towards a clinical decision. The option decided upon is coded as a decision.

If the physician decides to check back with the patient (for example: "Can you tell me, what I just told you?"), this sequence is not coded as a decision.

If the physician suggests, recommends or orders a procedure, treatment or management of a problem which the patient does not give consent to, the physician´s initial request is coded as a decision. If request and denial follows one another it is registered as one code. If the physician promotes his decision several times it is coded as a repetition *(see further instructions about coding of repetitions on page 6).*

Decisions appearing outside the regular dialogue between physician and patient:
All statements observed in a video are included and subject to analysis. Clinically relevant decisions may be made or conveyed at any time. This includes situations where the physician dictates the patient´s chart or talks face-to-face or on the telephone with another physician, other health care personnel, relatives or next-of-kin.

DICTUM´s two dimensions; time and type

The taxonomy is based on the premise that it is possible to identify decisions in the patient-physician dialogue and that these decisions share essential properties allowing us to categorize them in mutually exclusive categories. We classify decisions in two dimensions; *a temporal dimension (3 categories) and a topical dimension (10 categories).* In addition, we have found it helpful to identify restatements or *repetitions*.

How decisions relate to time

All decisions are coded either as past, present or future, based on a judgment of whether the decision in question was actually made before the consultation and is now just conveyed to the patient *(past)*, or has emerged from the interaction with the patient *(present)*, or is stipulated as a hypothetical future event, depending upon some condition to be fulfilled *(future*).

Decisions are classified as past, present or future, and may be marked by;
the symbols ←, =, →
or in the coding software the keys p, . , f
Further examples will be specified under each topical category

Past: By "conveying established conclusion" we mean statements of decisions made before the encounter (minutes before or last week or last year) and brought into the dialogue as new information. For example: "You have had a heart attack" or "You will be discharged today".
However; if the planned course of action changes as a result of the dialogue we mark it as a present decision. If the information presented to the patient appears to be known by the patient, we do not code the information as a decision.

Present: Decisions that emerge as a result of the clinical dialogue and investigations made in the consultation. For example: "This requires an ultra sound" or "OK, I am going to start you on a new medication".
Sometimes it is hard to distinguish established conclusions from present ones. Whenever you as a coder are in doubt about this, decisions should be coded as present.

Future: Decisions are sometimes relegated to a future time dependent upon some condition to be fulfilled. These statements are initiated by conditional subordinating conjunctions such as "if**,** unless, in case, should you etc". For example: "If you don´t get any better you should double the dosage".

Repetition:

Most encounters contain repetitions; events where the physician restates decisions that have already been made or conveyed in the consultation. We have chosen to code repetitions because they are so frequent, and because they help us complete the identification of all decisions.
Every decision identified and coded is given the key r. If coded in the software, you will then be asked to punch in topical category and temporal category. If you code in an excel-sheet every repetition (r) should be given a chronological number. A consultation containing 15 decisions should have them sorted from 1 to 15 in sequential order (i.e. r1, r2, r3, etc).

How decisions may be categorized according to type: See next page.

DICTUM

DECISION TYPE (with coding key assigned) **TIME: Past (c), present (.), future (f), repetition (r)**

1. GATHERING INFORMATION (g)

Decision to obtain information from other source than patient interview, physical examination and reading the patient´s in-house chart.

1. Actively seeking external information from other party (other hospital, general practitioner, family member etc).
2. Discussing patient with other physician or health care personnel
3. Ordering new tests/diagnostic procedures for the patient

Excluded: Taking the patient's history, clinical examination and reading in the patient´s in-house chart.

2. INTERPRETATION OF TEST (e)

Simple assessments of clinical and paraclinical tests and examinations, either being a statement that findings are normal or a statement about a pathological finding.

Excluded: Simple assessments of patient history without further elaboration.

3. DEFINING PROBLEM (d)

Complex assessments that defines what the problem is and reflects a medically informed conclusion.

These statements differ from simple evaluative statements about a test or an examination, and they have to meet at least one of the criteria listed below in being;

1. a diagnostic conclusion
2. an evaluation of state of health
3. an etiological inference
4. a prognostic judgment

4. DRUG-RELATED (m)

Decision to start, refrain from, stop, alter or maintain a drug regimen,

including both prescription drugs and over-the-counter drugs such as vitamin supplements and herbal medicine, including all modes of administration; tablets, suppositories, intravenous, intra articulary, nebulizer etc.

5. SURGERY-RELATED (i)

Decision to intervene upon a medical problem, plan, perform or refrain from therapeutic procedures of a medical nature, including surgery, wound care, interventional radiology, and radiation therapy.

Excluded: Decisions concerning drugs administered using needles or other devices (nebulizers etc), are classified as Drug-related decisions.

6. LEGALLY RELATED (l)

Medical decision concerning the patient, which is based upon or restricted by a legal regulation.

7. CONTACT RELATED (c)

Decision regarding admittance or discharge from hospital, scheduling of control and referral to other part of the health care system.

8. ADVICE AND PRECAUTION (a)

Decision to give patient advice or precautions, thereby transferring responsibility from provider to patient.

9. TREATMENT GOAL (t)

Decision to set defined goal for treatment and thereby being more specific than giving advice.

10. DEFERMENT (n)

Decision to actively delay decision or a rejection to decide upon problem presented by patient.

1. Gathering information – (g):

Decision to obtain information from other source than patient interview, physical examination and reading the patient´s in-house chart.

1. Actively seeking external information from other party, e.g. other hospital, general practitioner, family member etc.
2. Discussing patient with other physician or health care personnel
3. Ordering new tests/diagnostic procedures for the patient

Excluded: Taking the patient's history, reading patient´s in-house chart and ordinary clinical examination, interpretable without help from a paraclinical department ***(including hands-on testing like measuring blood pressure, ophhtalmoscopy, monofilament test etc).***

Gathering additional information decisions could be subcategorized as; ordering test, consulting colleague and external information. Examples of category 1 decisions:

Order test: "I'll get an ultrasound of it tonight"
"There is no point in a new EEG now"
"You'll send in fecal tests after 4, 6 and 8 weeks…"
"We'll do the A1c and some blood tests afterwards"

Consulting colleague: "This is a bit special so I will discuss it with a colleague" (picks up the phone)
"I will discuss it a bit with my consultant"

External information: "We will get those images sent over and have them assessed"

Examples of how category 1 decisions relate to the temporal dimension:

Past: "We have decided to order some new tests of you" (on a ward round)

Present: "I would like to get a new liver biopsy from you." (to outpatient with liver malfunction of unknown cause)
"We must get the patients charts from his family practitioner" (to nurse after concluding on a lack of information about the patients medication)

Future: "If the pain in your neck should increase, we have to get some images of it" (to outpatient with cancer and suspected metastases to the bone)
"If I am in doubt, I will call my consultant" (to patient in the E.R. after the physician has suggested a diagnosis and subsequent treatment)

2. Interpretation of test – (e)

Simple assessments of clinical and paraclinical tests and examinations, either being a statement that findings are normal or a statement about a pathological finding.
Simple assessments differ from complex assessments (see next category).
Excluded: Simple assessments of patient history – without further elaboration *(i.e. "That's nice" (when patient informs of maximum walking length).* ***Simple responses to commands during physical examinations*** *(Instruction followed by i.e. "That's fine")*

Specification: Simple assessments are binary or polar in nature, and are articulated as;

- normative judgements (fine versus not fine, normal not normal) or
- in a descriptive manner implying a context-specific normative judgement (blood pressure: elevated versus not elevated).

Descriptive statements (e.g. citation of laboratory values) without elaboration or normative judgement are not coded as an evaluation of the test.

Specification: During medical procedures physicians tend to offer simple evaluations of the procedure itself as it goes along. If simple evaluations are given without further elaboration or categorization (i.e. during stress-ECG), we don´t code each of them as separate decisions, only the evaluation of the procedure as a whole is coded. This relates to the rule of "one code per topic per turn".

Interpretation of test decisions could be subcategorized as; good, ambiguous or bad.
Examples of category 2 decisions:

Good:	"140/80… I think that is very good"
	"I see that your A1c is 8,1, that is great"
	"The x-ray looks fine"
	"Everything was in perfect order; I found nothing wrong (after full neurological exam)
Bad:	"Your A1c was not so good"
	"You are a bit low on potassium"
	"Your blood pressure is high. 180/100 is high"
Ambiguous:	"It wasn't too bad, but it's not great either" (after lung auscultation)

Examples of how category 2 decisions relate to the temporal dimension:

Past:	"I checked your blood tests and they were fine" (to outpatient with leukemia)
	"HbA1c was not good" (to outpatient with diabetes)
	"The d-dimer was normal" (to patient with breathlessness in the E.R.)
Present:	"It sounds fine (to patient after auscultating lungs)"
	"They are slim" (when examining ankles in patient with heart failure prone to oedema)
	"This was a completely normal test" (to patient after stress-ECG)
	"Your pacemaker is working well" (to patient after pacemaker-test)
Future:	"If your white blood count continues to climb, it is very good (to outpatient with leukemia 2 weeks after chemotherapy)

3. Defining problem – (d)

Complex assessments that defines what the problem is and reflects a medically informed conclusion. These statements differ from simple evaluative statements about a test or an examination, and they have to meet at least one of the criteria listed below in being;

1. a diagnostic conclusion
2. an evaluation of state of health
3. an etiological inference
4. a prognostic judgment

Defining problem decisions could be subcategorized according into the above mentioned categories.

Diagnosis: ”This is a classic case of light asthma”
”Ganglion (cyst) it is called”
”Based on today’s exam I think it is more likely that you’ve had a minor stroke”
”This is basically what we call osteoarthritis”

Etiology: “I think it is paracetamol and dextropropoxyphen that has damaged your liver”
”It is the torn cruciate ligament that prevents your knee from stopping where it should”

Prognosis: ”The chemotherapy cannot remove what you have on your lungs”
”You can profit on training up to a year after the injury”

Evaluating state of health: “Your diabetes is very well regulated”
”He’s breathing nice and slowly, I think he has responded well to treatment”

Examples of how category 3 decisions related to the temporal dimension:

Past: “You have had a heart attack” (to patient on ward rounds the morning following admittance)
“You had atrial fibrillation when you were admitted” (to patient on ward rounds)
“We found out you have diabetes” (to patient on ward rounds the morning following admittance)
“We have been uncertain for a long time now about the cause of your hepatitis” (to outpatient with liver malfunction of unknown cause)

Present: “You don´t have cancer” (to outpatient with liver malfunction of unknown cause)
“It is possible that it is a deep vein thrombosis” (to patient with swollen leg in the E.R.)
“It may be a viral infection” (to patient on ward rounds the morning following admittance)
“You don´t tolerate opiates then” (to outpatient with cancer describing side effects of morphine)
“There is no indication of serious illness in you”(to patient on ward rounds the morning following admittance)
“It is your blood pressure that has caused your kidney failure, not diabetes” (to outpatient with kidney failure of previously unnamed cause)
“This is a disease which will never disappear” (to patient with heart failure)
“You have a good prognosis” (to patient with heart attack and stented coronary arteries on ward rounds the day of discharge)

Future: “If the test comes back negative, it means you don´t have the disease. (to young girl tested for hereditary disease)
“If the cancer continues to grow, this will probably be your last summer (to patient with advanced cancer)

4. Drug Related – (m)

Decision to start, refrain from, stop, alter or maintain a drug regimen, including both prescription drugs and over-the-counter drugs such as vitamin supplements and herbal medicine, including all modes of administration; tablets, suppositories, intravenous, intra articulary, nebulizer etc.

Specification: When several specifications concerning the same drug, i.e. dosage, administration interval, side effects and so on are given subsequently, they are coded as one decision, unless they differ in relation to time (past, present, future).

Drug-related decisions could be subcategorized as; start, stop, alter, maintain, refrain.

Start: ”We’ll start with azathioprine 50 mg”
”I was thinking you should get desloratadin, allergy pills”
”We’ll give a four day treatment of dexamethasone”
”I would like you to get some vaginal estrogen”

Refrain: ”We cannot give you chemo today”
”You should not take ibuprofen or other blood thinners before the surgery”

Stop: “It means that you can stop taking beta blockers”
”You should cut the iron tablets”

Alter: ”You’d better reduce to 50 (micrograms of levaxine)”
”Go down to 2 plus 2 (prednisolone 5 mg)”
”You should increase the levemir dosage 2 units at a time”

Maintain: ”You should continue taking salbutamol when you need to”
”Cortisone, you’ll take as earlier”
“As a foundation you should always take paracetamol 1 gram 4 times a day”.

Examples of how category 4 decisions relate to the temporal dimension:

Past: “I removed Paracetamol from your chart” (to patient on wards round three days after surgery)
“We have increased your blood pressure medication” (to patient on ward rounds before discharge)

Present: “I am going to give you some nitro glycerine” (to patient with chest pain in the E.R.)
“I recommend you take the medications we prescribe, and don´t take the medicine you have been given in Vietnam.” (to outpatient from Vietnam living in Norway)
“I am going to give you 2 litres of i.v. fluids”. (to patient admitted for dehydration)
“We are not going to increase your blood pressure medication” (to outpatient with hypertension)
“You have to start taking the medicine that protects your stomach from acid” (to patient with previous stomach ulcer)

Future: “Ideal dosage is 200 mg, if it is necessary we may need to increase dosage” (to patient with heart failure on ward rounds)
“If we don´t get good blood sugar control, we may need to introduce metformine” (to outpatient with diabetes)

5. Surgery-related – (i)

Decision to intervene upon a medical problem, plan, perform or refrain from therapeutic procedures of a medical nature, including surgery, wound care, interventional radiology, and radiation therapy.

Surgery-related decisions could be subcategorized using two different sets of modifiers;
1: start, stop, alter, maintain, refrain
2: surgery, focused care, radiological intervention, radiation therapy.

Surgery: ”It’s alright to get this operated”
”We cannot operate more on you”
Radiation: ”And I will refer you to radiation therapy”
Interventional radiology: ”As long as you are good we are not going to do anything now (angiography/PCI)”
Focused care: ”We’ll take off this part of the cast so that you’ll be able to bend your finger”
”I think you should go a couple of weeks without the (vaginal) ring”
”You don’t have to change on the wound every day, it only irritates, let it be”.

Examples of how category 5 decisions relates to the temporal dimension:

Past: “The conclusion from our multi disciplinary meeting is not to offer you surgery” (to outpatient with cancer)

Present: “We have to operate” (to patient with abdominal pain due to a ruptured abdominal aorta)
.
“We are going to do something about this” (to patient with hypertension of such serious nature that the physician states an intervention is necessary)
“We will put a bare-metal-stent inside your coronary artery” (to a patient with heart attack awaiting coronary angioplasty).
“This must be very difficult for you in your situation” (to outpatient, followed by non-verbal signs that the physician is alert and listening – not just a meaningless phrase).

Future: “If the metastases progress in your skeleton, we will give you radiation therapy” (to outpatient with advanced cancer and metastases to the bone)
“If the pain in your leg worsens, we’ll consider stenting your femoral artery” (to outpatient with maximum walking distance of 100 meters due to narrow arteries in his lower extremities)

Excluded: Decisions concerning drugs administered using needles or other devices (nebulizers etc), are classified as <u>Drug-related decisions.</u> Examples;

“I’ll give you an injection of cortisone in your shoulder”
“You’ll get blood thinning shots for a few days.”
“I have ordered intravenous fluids for you.”
“Give him salbutamol on the nebulizer 4 times a day”

6. Legally related – (l)

Medical decision concerning the patient, which is based upon or restricted by a legal regulation.

Legally related decisions could be subcategorized as; sick leave, drug refund, insurance, disability.

Drug refund: ”Esomeprazol and pantoprazol is the same, pantoprazol is cheaper and the State has decided that you should drive an Opel, not a BMW”.
”Because of this (muscular stiffness on simvastatin) you qualify for atorvastatin”
Sick leave: ”You will get a sick leave note from us”
”We’ll keep it like that (50% absent from work)”
”You will be in paid leave of work for at least three months”
Disability: ”The way you function right now you cannot drive your car”
Insurance: “The surgery will be covered for by your health insurance”

Examples of how category 6 decisions relates to the temporal dimension:

Past: “We have determined your loss of function as a result of the injury to be 15%” (to patient when discussing insurance)

Present: “I cannot write this prescription on Blå Resept (state given refund)” (to patient requesting state given refund for a prescription medication)
“You should not drive a car until further notice” (to patient after cardiac arrest)
“No, I don´t want your daughter to be a translator, we will send for one” (to patient not fluent in languages the physician speaks, related to government recommendations of having professionals translate physician-patient dialogue)

Future: “If you don’t get any better, we’ll have to consider applying for disablement pension” (to patient with chronic disease making him incapable to work)

7. Contact-related – (c)

Decision regarding admittance or discharge from hospital, scheduling of control and referral to other part of the health care system.

Contact-related decisions could be subcategorized as; admit, discharge, schedule control, telephone, referral to other part of health care system.

Schedule: ”I’ll schedule a control for you here in 3 months”
”I won’t schedule a new control here, seeing that you have a new appointment at the cancer centre.”
Admit: (To patient’s mom): ”My suggestion is that he is admitted to the bed ward”
”I think you should spend the night in our observation ward”
”She is so weak that she should be admitted”
Discharge: ”We are going to have to send you home while we wait for an opening (at the nursing home)”
”We thought you were going to get to go home today”
Telephone: ”I’ll call you when I get back the results”
Referral: ”I will refer you to a neurologist”
”I’m thinking I’ll send a referral to a physiotherapist”

Examples of how category 7 decisions relates to the temporal dimension:

Past: “As planned you are going to be discharged today” (to patient on ward round)
“We have decided to refer you to another hospital for a second opinion” (conveyed to patient on ward rounds after discussion with the departments team of physicians)

Present: “I want to see you again in three months” (to outpatient with heart failure)
“We are going to check you regularly for cancer” (to outpatient with liver malfunction of unknown cause)
“I am going to refer you to the pain clinic” (to outpatient with cancer and severe pain)
“I will refer you to physical therapy” (to patient after surgery)
“And then I await you being referred back to me” (to outpatient being admitted to another department)
“You are at least staying here until tomorrow” (to patient on ward rounds)

Future: “If things get worse, we have to consider more frequent controls” (to outpatient with autoimmune disease)
“If this does not work and you don´t get any better, we will consider referring you for a second opinion” (to outpatient with minimal improvement on final choice of treatment)
“If this NSAID cure doesn’t do the trick, I will refer you to a specialist.” (general internist to patient with tennis elbow)

8. Advice and precaution – (a)

Decision to give patient advice or precautions, thereby transferring responsibility from provider to patient.

Specification: When a series of topically different advice is given (smoking, training, diet), each specific advice is coded. If series of topically similar advice is given (eat food low on carbohydrates, vegetables, diet soda, not rice, not pasta, meat and fish) they are all coded as one decision if they are stated within the same turn.
When the physician instructs the patient to take contact in the future, if so and so should happen, this is coded as category 8: (advice and) precaution, not category 7: contact-related. The reason for this distinction is that the physician in such an event transfers the responsibility for the contact from provider to patient.

Advice and precautions could be subcategorized as advice (which could be divided into relevant subcategories) and precaution.

Smoking: ”I would recommend you to cut it completely”
“It will require effort from you – you will have to stop smoking”
Exercise: ”I would recommend you to increase your level of activity”
“I would stay away from soccer”
Diet: ”Mind the calories; sweetened beverages, potato chips, cakes, sauces…”
Weight: ”The weight increase should not continue, then you’ll have crossed a line”
Hydration: (To boy’s mom): ”He should get at least 3-4 glasses (to drink) per day”
“Be careful to drink a lot of water”
Alcohol: ”Together with warfarin, it’s not advisable to drink alcohol”
Mobilization/ Immobilization: ”Be careful with sudden movements and heavy lifting”
“Avoid activity that you notice makes this worse”
“Mind keeping the leg high while you are sitting”
Sleep: ”Staying up late lowers the threshold for cramps”
Precaution: ”If you were to get a fever, you have to contact a doctor”
“If you start bleeding heavily (from your bowels), you have to contact the hospital”
”But if it gets more painful in the chest or something like that, you’ll take contact”
”If it doesn’t get better, call 911”.

Examples of how category 8 decisions relates to the temporal dimension:

Present: “You have to be careful with the salt” (to outpatient with heart failure)
“Having good control of your blood sugar and blood pressure will be predictive of your future kidney function” (to outpatient with kidney failure)
“You may put your entire weight on the leg now” (after fracture of the of the shin)

Future = Precaution: “If you get any more chest pains, it is imminent that you contact your physician again” (to patient on ward round the day of discharge)
“If you get a new medicine it is vital that you tell the physician you have got chronic renal failure” (to outpatient with kidney failure)

9. Treatment Goal – (t)

Decision to set defined goal for treatment and thereby being more specific than giving advice.

Specification: Treatment goals are often set using quantitative measures (for example desired value for blood pressure, laboratory tests or walking distance), but may as well be composed by words alone. The process of setting treatment goals may be initiated by checking patient expectations, abilities and preferences.

Treatment goals could be subcategorized as; quantitative or qualitative.

Quantitative: ”The goal has to be that it should be 120/80”
”We want to get the A1c down between 7 and 8”
”I would like to see your viral counts under 50”

Qualitative: ”What you should work on the next year is building your strength”
”Seeing that this is a curative setting I don’t dare to lower your dose”
”The goal has to be to get as good as you were before”

Examples of how category 9 decisions relates to the temporal dimension:

Past: “Last year we agreed on a goal of HbA1c under 8” (to outpatient with diabetes)

Present: “120/80 is an ideal blood pressure for you” (to patient with kidney failure due to hypertension)

Future: “If the tests show what we fear, we will have to discuss the goals of your medical treatment.” (to patient with suspected cancer in advanced stage)

10. Deferment – (n)

Decision to actively delay decision or a rejection to decide upon problem presented by patient.

Specification: The code requires verbal or very clear non-verbal sign that the physician makes a decision about this, if the patient says something that the physician just does not pick up – we don't know if it is an active decision of deferment and we should not code.

Deferment decisions could be subcategorized as; active and specified, wait and see, change of subject, transfer of responsibility.

Transfer responsibility: "I don't know for sure, but they know all about it at the cancer centre"
"The issue of your driver's licence, you have to discuss with your family doctor"
Change subject: Patients asks about prescription for Viagra – physician changes topic
Wait and see: "We'll see how it goes"
"I would like to wait and see (with regards to grommets)"
"I think we'll wait and see for 4 weeks"
Active and specified: "I'll have to think about this (choice between sunitinib and interferon treatment)"

Examples of how category 10 decisions relates to the temporal dimension:

Past: "We have decided to postpone this until your next consultation". (to outpatient with chronic heart valve failure who wishes surgery. The internist refers to previous discussion with his superior)

Present: Patient; "I am troubled with nausea and dyspepsia" (to outpatient with liver failure)
Physician; "But let us talk more about this with the liver biopsy or not."
Patient; "My knee is what is really bothering me". (on ward round at the cardiac department)
Physician; (silence). "Well, right now we are focusing on your heart".

Future: "If you make these requests the next time, I will not discuss it any further". (to outpatient with substance abuse problem)

14 Paper I-III

14.1 Paper I

I

II

III