

ORIGINAL ARTICLE

Between diagnostic precision and rapid decision-making: Using institutional ethnography to explore diagnostic work in the context of Cancer Patient Pathways in Norway

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Abstract

Alongside other Nordic countries, the Norwegian government has introduced Cancer Patient Pathways (CPPs) for faster diagnostic assessment and timely treatment to improve the quality of cancer care. A key aspect of CPPs is the introduction of time limits for each phase of the diagnostic investigation. Occurring simultaneously are ongoing advances in medical technology, complicating the process of diagnosing and treating cancer. In this article, using institutional ethnography, we examine: *how does the CPP policy influence physicians' experiences of diagnostic work?* Data were collected from May 2018 to May 2019, through semi-structured interviews with physicians across five hospitals in Norway ($N = 27$). Our findings indicate that the implementation of various strategies aimed at enhancing quality in cancer care collide, compelling physicians to negotiate between diagnostic precision and rapid decision-making. We conclude that attention to interfaces between multiple guidelines and their implications for practice is crucial for understanding and developing quality of care.

*[Correction made on 28 February, after first online publication: A block quote was initially omitted in the 'Resource management between diagnostic precision and demands of efficiency' section due to a production error and has been reinstated in this version.]

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KEYWORDS

cancer, Cancer Patient Pathways, diagnostic work, institutional ethnography, temporality, quality of care

INTRODUCTION

Alongside other Nordic countries, the Norwegian government has introduced Cancer Patient Pathways (CPPs) for faster diagnostic assessment and timely treatment to improve the quality of cancer care. Thus, rapidity is placed at the forefront of what it means to provide quality cancer care and has become a core indicator of healthcare professionals' performance. Consequently, how well (or poorly) they perform in their work is measured according to the time spent on getting the patient through the system. Occurring simultaneously are ongoing advances in medical technology, complicating the process of diagnosing and treating cancer within a fixed timeframe. In this article, based on qualitative interviews, we examine: *how does the CPP policy influence physicians' experiences of diagnostic work?* As the theoretical framework of the study is guided by principles of institutional ethnography (IE), the particular focus is on the social organisation mediating these experiences. IE provides a lens to illuminate the conditions of people's experiences and enhance our understanding of how guidelines are incorporated into practice. The article enters the sociological discussions pertaining to tensions arising with the growing implementation of guidelines regulating professional practice. Specifically, we aim to show how different ruling discourses, articulated in guidelines targeting both precision/individualised diagnosis and rapid diagnosing, intersect and influence physicians diagnostic work.

Diagnostic complexity and regulation of practice

Lawson and Daniel (2011: 403) state that 'one of the most complex problems facing the healthcare profession has been and continues to be that of making correct diagnoses and insuring that optimal treatments follow'. According to Jutel and Nettleton (2011), a diagnosis presents a complex interrelationship between being both a category and a process, whereby both are subject to ongoing changes that are increasingly blurring the lines between healthiness and illness. Characteristic of these developments is the expansion of diagnostic labels to encompass risk factors for diseases, along with the development of new medical technologies to increase the accuracy of diagnoses, consequently affecting both the understanding of diseases and the processes related to diagnostic work.

As such, the diagnostic development is moving towards 'finer-grained and more dynamic taxonomies' (Green et al., 2019: 1) following continued advances in 'precision medicine' (also referred to as 'personalised medicine'), which is 'a form of medicine that uses information about a person's genes, proteins, and environment to prevent, diagnose, and treat disease' (National Cancer Institute, n.d.). Precision medicine is anticipated to be the future of medicine. By enabling medical professionals to accurately identify the underlying mechanisms of a disease, therapeutic interventions may be tailored to match the biological make-up of the individual patient, thus optimising the quality of care (Collins, 2010; Gundert-Remy et al., 2012; Marcon et al., 2018). Precision medicine is deemed especially relevant for cancer treatment due to the vast array of variations between people diagnosed with the same type of cancer, alongside the fact that genetic factors are assumed to play a pivotal role in cancer pathogenesis (Diamandis et al., 2010).

In addition to the evolution of diagnostic tools and technologies related to diagnostic precision and custom-made treatment modalities, medical practice is increasingly regulated through a range

of guidelines, such as clinical practice guidelines and care pathways (Kredo et al., 2016; Nigam, 2012; Timmermans, 2005). Clinical practice guidelines, which are based on expert panels' systematic reviews of available evidence, support decision-making pertaining to diagnostic and treatment processes (Timmermans, 2005). Care pathways, like CPPs, are (usually) anchored in, but are not the same as, clinical practice guidelines. They inform different steps in the care trajectories of patients with specific diagnoses and are more 'explicit about the sequence, timing and provision of interventions' (Kredo et al., 2016: 123) than clinical practice guidelines.

The essential goal of introducing such extensive regulations on health practitioners is to improve consistency, safety, efficiency and the overall quality of care (Kredo et al., 2016). However, given that guidelines 'purport to tell professionals how to conduct their work' (Timmermans & Kolker, 2004: 178), they represent a controversial aspect of medical practice. There are ongoing debates about the extent to which guidelines may undermine professional judgement, discretion and autonomy, which are necessary for accommodating the unique needs of individual patients (Cheraghi-Sohi & Calnan, 2013; Gabbay & Le May, 2004; Greenhalgh, 2002; McDonald et al., 2005; Ponnert & Svennson, 2016; Timmermans, 2005). For example, a study by McDonald et al. (2005) demonstrates that there are diverging views between different groups of professionals, such as nurses and physicians, concerning the relevance of rules and guidelines for quality of care. In their study, nurses' trust and reliance on guidelines clearly outweigh that of physicians who argued that discretion and autonomy are of far greater significance for quality than standardised guidelines.

The development and use of guidelines in health care are inextricably linked to the discourses of evidence-based medicine and new public management (Ponnert & Svennson, 2016; Timmermans, 2005). Hence, multiple actors both inside and outside the medical profession have vested interests in imposing guidelines on health care: for healthcare professionals, they aid decision-making and ensure that their work aligns with the professional standards of the current state of play, while for actors representing powerful institutions such as the state and managed care organisations, guidelines are tools in the quest for increased accountability, efficiency and cost reduction (Nigam, 2012; Timmermans & Kolker, 2004).

Cancer Patient Pathways (CPPs)

Cancer is a leading cause of death with increased prevalence in many countries across the world (Bray et al., 2018). The World Health Organization (WHO) estimates that between 2008 and 2030 there will be a 45% increase in cancer deaths on a global scale, and the number of new cancer cases will grow with a staggering 80% in low-income countries and 40% in high-income countries during the same time period (World Health Organization, n.d.). Hence, cancer has turned into a major public health problem, subject to extensive political scrutiny. Through the collective effort of researchers, politicians and patient activists, optimising cancer care is now a top priority in many countries across the world (Timmermann & Toon, 2012). In Norway, there has been a continuous development of national cancer plans and strategies over the last decades. The aim is to reduce prevalence and mortality, and enhance patient satisfaction, participation, and quality of life. A longstanding ambition, explicitly stated in cancer policies, is that Norway will be a leading example of providing good patient trajectories (Norwegian Ministry of Health & Care Services, 2013; Norwegian Ministry of Health & Care Services, 2018).

Inspired by—and based on—Danish experiences with a similar initiative, the CPPs target the logistical and organisational aspects of the diagnostic trajectory (Norwegian Directorate of Health, 2016a). The CPPs were implemented in 2015, and while being a continuation of the work towards providing

exemplary trajectories, they are also a response to the growing recognition by health professionals that identifying and treating malignant cancers as quickly as possible is significant for improving prognosis (Neal, 2009).

CPPs aspire to enhance the quality of cancer care by providing a well-organised and predictable care trajectory without non-medical delays for potential cancer patients. Therefore, a maximum time limit is assigned to each phase of the diagnostic investigation (see the example for breast cancer below). Hospitals' compliance with these timeframes is monitored through a coding system and systematically documented through monthly reports which are published on a national website. There are no explicit sanctions for breaching these deadlines, but the hospitals' reputations are at stake as these numbers are official and frequently conveyed to the media. There are 28 CPPs for different types of cancer diagnoses (Table 1) (Norwegian Directorate of Health, 2016a).

It is important to note that cancer policies, such as the CPPs, are embedded within a wider health and political context which also impacts the implications of CPPs for practice. In 2009, the Norwegian government released a white paper named *The Coordination Reform* (Norwegian Ministry of Health & Care Services, 2009) that highlights evolving trends relevant to future priorities in the public health-care sector. A key concern is that the growing numbers of both elderly people and people with chronic and complex illness is detrimental to the country's economic carrying capacity. The white paper articulates a political development wherein more money is not considered a sustainable solution to the challenges of future health and welfare services, but rather how to develop, run and organise the health and welfare services are explored as alternatives (Håland & Melby, 2017).

Accordingly, the development of CPPs builds on policies where a focus on logistics and organisation is a core health political strategy. For that reason, CPPs did not trigger more funding to aid the accompanying demand for speeding up the work processes involved in cancer diagnostics—a major argument is that the implementation of CPPs does not increase the workload in terms of adding more patients. The success or failure of meeting these new deadlines rests on healthcare providers' abilities to make logistical adjustments and to coordinate smooth transitions between services.

INSTITUTIONAL ETHNOGRAPHY, TEMPORALITY AND AUTONOMY

This study uses institutional ethnography (IE) to examine the implications of CPPs for professional practice. Because CPPs directly targets the temporal dimension of cancer diagnosing, we also engage with concepts of temporality and temporal capital to bolster the theoretical basis.

TABLE 1 CPP timeframes for breast cancer (Norwegian Directorate of Health, 2016b)

Pathway description	Timeframe
From receipt of referral to first appointment in diagnostic ward	7 calendar days
From first appointment in diagnostic ward until end of diagnostic evaluation (decision is made)	7 calendar days
From end of diagnostic evaluation to start of treatment	
Surgical treatment	13 calendar days
Medical treatment	10 calendar days
From receipt of referral to start of treatment	24/27 calendar days

Institutional ethnography

Institutional ethnography (IE) is a method of inquiry designed for the (inductive) investigation of how the social world is organised, from a specific standpoint within lived experience (Smith, 2005). The primary focus is on discovering the way power and dominance—conceptualised as ruling relations/re-lations of ruling—shape our everyday reality both explicitly and implicitly (Smith, 1990, 1999, 2005). Ruling relations refer to the social relations that coordinate people's activities from locations in other places. This includes all the various sites engaged in regulating and organising society, such as government bureaucracies and media as well as various professions and discourses of a scientific, technical or cultural nature (Smith, 1990, 1999). In contemporary society, virtually all forms of social organisation and exertions of power are mediated by a variety of texts and documents. Thus, IE pays particular attention to texts, such as guidelines like CPPs, as they provide material links between activities in local and extra-local settings (Smith, 1990, 2005). Importantly, the investigative gaze is always on relations. This entails that people are not perceived as subservient victims of domination. Rather, they actively participate in and (re)produce certain strands of ruling by enacting particular texts, concepts and ideas in their local contexts (Smith, 1999). The concept of ruling relations enables us to discover how textually mediated ideas and principles impact people's lives (Campbell & Gregor, 2004).

IE is gaining increased attention internationally, and there is a growing body of IE literature focusing on different aspects of healthcare (Malachowski et al., 2017). Previous studies have for example generated insights into: the social processes related to the formation of knowledge work in multi-disciplinary healthcare teams (Quinlan, 2009), nurses' stress (McGibbon et al., 2010), inequalities in cancer care (Sinding, 2010), the transformation of nurses' work following an update of electronic health records (Campbell & Rankin, 2017), and institutional discourses influencing the work of informal carers (Øydgard, 2017). However, as the majority of IE health studies moves from the standpoint of nurses and patients (Malachowski et al., 2017), studies taking the standpoint of physicians, such as this one, are lacking. Arguably, exploring the standpoint of physicians is both interesting and becoming increasingly more relevant as the autonomy traditionally inherent in their profession appears to be challenged by the ongoing implementation of a tighter managerial/policy control (Evetts, 2002; Flynn, 2002).

Standpoint in IE represents the starting point for exploring how ruling relations shape the experiences of people in a particular setting (Smith, 2005). However, IE is a diverse enterprise and researchers engage with IE from different starting points (Devault & McCoy, 2006). In this study, the CPP policy constitutes the entry point into the work processes and activities of physicians involved in cancer diagnoses. By taking the standpoint of physicians, we explore how their work is shaped by different types of ruling relations, namely different forms of guideline authority in conjunction with professional autonomy in diagnostic work. This article contributes to the field of IE and health sociology by illuminating how diagnostic work is influenced by the intersection between CPPs, clinical practice guidelines (both national and international), overarching healthcare policies (such as The Coordination Reform and cancer care strategies), as well as some of the professional discourses embedded within these textual forms of ruling (e.g. early detection, precision medicine, efficiency and logistics, and defensive medicine).

Temporal capital and regulation of autonomy

The implementation of CPPs has made the relevance of time particularly prominent for what it means to provide quality cancer care, treating cancer as an acute state that calls for immediate action

(Sidenius et al., 2020). Zerubavel (1987) highlights the diverse value placed on time in society, and how the amount of time vested in certain social relationships and activities signifies different meanings in different contexts. He argues that waiting provokes a sense of worthlessness, degradation and a lack of respect, and thus, the act of making people wait conveys that they do not really matter. The longer the wait, the less they matter. He states that 'shorter waiting time entails speed [...] The rapidity with which doctors and nurses attend some patients, for example, is indicative of their relatively high priority to them as emergencies' (Zerubavel, 1987: 345).

In the context of CPPs, time (spent on patients) is sliced into measurable parts subject to monitoring and control which arguably introduces a more precise mechanisation (Sabelis, 2001) of physicians' (and other healthcare providers') time. To put it bluntly, the less time spent on a patient, the better. This is justified by the aim of relieving potential cancer patients of the painful experience of waiting and at the same time improve efficiency. The assumption is that by accelerating the pace from suspicion to diagnosis and treatment, time can be mobilised as an ally to improve prognosis (Neal, 2009). That way, speed becomes a significant symbol of what, or rather *whom*, is deemed important and worthy of prioritisation by the healthcare services, as well as a symbol of quality of care (Zerubavel, 1987).

A relevant concept to better understand the relationship between CPPs shrinking timeframes and physicians' work is 'temporal capital' as introduced by Wang (2013). Complementary to IE, temporal capital connects the utilisation of time to social structures of power as it refers to 'the amount of time individuals or groups have under their control, but is necessarily differentiated given one's position within the relevant hierarchy' (Wang, 2019: 1555). Wang (2013) likens the relationship between time and temporal capital to a pie where time makes up the whole of the pie, while temporal capital is a slice of the pie. And some people have more control over these slices of time than others which makes temporal capital unevenly distributed in and across social sites and can be more or less negotiated depending on the conditions of practice.

Physicians can be perceived as having a large degree of control of this capital due to their position in the medical hierarchy (Wang, 2019). However, as the CPPs introduce a tighter timeframe for physicians to conduct diagnostic work, the policy explicitly carves out the temporal capital available. Thus, temporal capital may also be seen as an expression of the temporal dimension of professional autonomy which refers to individual physicians' 'freedom to exercise their professional judgement in the care and treatment of their patients' (Hashimoto, 2006: 126). The introduction of CPPs implies that there is less temporal flexibility in decision-making and the negotiation of what constitutes appropriate professional judgement in cancer care.

Methods and material

The findings discussed in this article are connected to a larger ongoing collaborative project, using a qualitative cross-sectional design with semi-structured interviews, to evaluate the implementation of CPPs in Norway, across four CPPs: lung, prostate, breast and malign melanoma. The aim of the interviews was to gather information on the participants' subjective definitions and experiences (Brinkmann, 2018), focusing on how health personnel experience the introduction of, and practical work with, CPPs. The sample was selected to include different groups of health personnel with experiences in using CPPs within the four cancer diagnoses and consists of interviews with health personnel working in five hospitals in Norway, including both small and large hospitals from geographical regions across the country. Data were collected from May 2018 to May 2019. This article draws on interviews with physicians. The sample consists of oncologists and physicians working in clinics, surgery, radiology, nuclear medicine, and pathology or who were administrative managers ($N = 27$).

The interviews were carried out by one (8) or two research team members (19).

Both authors participated in interviewing and had access to the entire body of data gathered by the research team. The sample consists of 25 individual interviews and two interviews with physicians in which two administrative workers participated. All interviews were recorded and transcribed verbatim either by the first author (13) or research assistants (14).

Ethical approval for this study was granted by the Norwegian Centre for Research Data (Project number 58,724). All participants received written information about the project prior to interview and signed a consent form.

Data analysis

A crucial aspect of IE analysis is to find a procedure that explicates the workings of ruling relations in the investigated setting. In this study, we analysed the interviews by searching for problematics in the data. Problematics refer to disjunctures in informants' knowledge, namely the researcher's identification of something puzzling or paradoxical in the empirical accounts. They do not necessarily reflect the personal problems experienced and conveyed by the standpoint informants but may be grounded in accounts in the data that reveal tensions or conflicts between different types of knowledge, for instance between formal/authorised and practical/experiential knowledge (Campbell & Gregor, 2004; Rankin, 2017).

The analysis revealed a set of tensions in the work processes related to cancer diagnosis shaped by the intersection of multiple guidelines for cancer care, ultimately challenging CPPs' 'ideal' that a strict, timebound care trajectory equals enhanced quality of care for all cancer patients. These tensions/small problematics informed the conception of an overarching problematic located in the disjuncture between concurrent demands for faster *and* more precise diagnoses. Furthermore, the data were sorted by indexing work related to arriving at a cancer diagnosis. As recommended by Campbell and Gregor (2004), we processed the information and expanded our analysis by alternating between discussing, writing and rewriting the accounts presented in the interviews.

BETWEEN DIAGNOSTIC PRECISION AND RAPID DECISION-MAKING

We labelled the overarching problematic, discovered in the analytic process described above 'between diagnostic precision and rapid decision making', informed by tensions/small problematics termed 'diagnosing cancer; interdependency and demands for collaboration', 'sometimes things take more time: when fixed timeframes collide with complexity' and 'resource management between diagnostic precision and demands of efficiency'. Tensions/small problematics are interconnected and build on each other: we start by explicating the collaborative context of diagnosing cancer as described by our informants, before moving on to describe the tensions between diagnostic complexity and rapid decision-making. This is followed by an associated tension in resource management.

Diagnosing cancer; interdependency and demands for collaboration

Inferring a cancer diagnosis from the symptoms observed is often a stepwise and complex process carried out by specialists from various disciplines (Lawson & Daniel, 2011; Lyratzopoulos et al., 2015). Our data

suggest that diagnostic work is performed along two adjoining dimensions: (a) coordination between various specialist services, namely the selection and organisation of necessary tests; and (b) multidisciplinary communication and mutual recognition of findings. Diagnosis encompasses three disciplinary pillars of investigation: clinical testing, imaging procedures and laboratory testing of cellular tissue.

The CPP guidelines recommend regular multidisciplinary (MDT) meetings to ensure diagnostic precision and quality in treatment (Norwegian Directorate of Health, 2016a). This entails that once the necessary examinations are complete, with descriptions of the conclusions from radiology and pathology, representatives from all the disciplines involved in diagnosis and potential treatment are supposed to convene, discuss the diagnostic implications and suggest appropriate treatment. According to informants, the participants in MDT meetings usually include a medical specialist in the field (e.g. lung doctor, urologist), radiologists, pathologists, surgeons and oncologists. Nurses and secretaries may also be present.

When asked to elaborate on how they establish agreement in MDT meetings, physicians express using a combination of diagnostic guidelines and professional discretion. As one physician puts it:

“Everybody uses that [guidelines from NBCG (Norwegian Breast Cancer Group)], and if you, sort of, have done your homework, at least you have a basis to discuss, so that it doesn't boil down to 'I mean' because then, you are actually supposed to mean that which is written in that [guideline], and then you could say 'yes, but you can't make everything fit, so here, yes that isn't, the size [of the tumour], yes it is this and that advanced, yes, maybe, no, we think it should...' and then we establish agreement in that [MDT] meeting. And it is mostly the surgeons and oncologists, but the radiologists are the ones with the most knowledge of the findings, and it is the pathologist who describes: what does this tumour represent? Yes, it represents so and so, perhaps she [patient] should have hormone treatment, not chemo...at this stage [in the discussion] you can address everything you deem relevant.”

(Physician 19, hospital 3)

We find that, in diagnosing, physicians draw on knowledge that may be traced to a variety of ruling relations vested in the regulation of cancer care. The statement shows that guidelines are central in diagnostic work and not necessarily perceived as something separate or opposing of professional judgement. Statements from other informants echo that professional judgement (when used correctly) is supposed to align with the regulations for practice. In this case, the informant refers to national guidelines developed by NBCG (2020) which is a breast cancer group constituted by professionals representing different disciplines involved in diagnosing and treating breast cancer. Similarly, other informants describe their reliance on national as well as international guidelines and research from organisations such as The International Society of Urological Cancer (ISUP) and the World Health Organisation (WHO). In addition, they draw upon their own and their colleagues experience which together makes up a complex interplay between formal and informal knowledge that is collaboratively adjusted to best serve each patient's needs. Particularly, in cases of distinct polarisation between opinions, the informants state that the final decisions are often made by those with the most experience, or the person that is actually in charge of the discussed treatment.

This is in accordance with literature suggesting that although guidelines may facilitate effective decision-making processes and promote greater uniformity of practice, they are insufficient when physicians are faced with unique variations between patients; indeed, professional autonomy and discretion is an important mediator when physicians negotiate between different interpretations of a patient's condition and/or need for treatment (Gabbay & Le May, 2004; Greenhalgh, 2002; McDonald et al., 2005; Timmermans, 2005).

Although MDT meetings are described by most physicians in our study as a well-established practice long before the implementation of CPPs, the explicit emphasis on MDT in the CPP policy has placed greater demands on radiologists and pathologists to attend such meetings. This is expressed by some informants as creating a paradox in the sense of being a win–lose situation:

“It takes from our time to go to these meetings and prepare and follow up, foremost to prepare and go to the meetings, it is not like we've had this in our work schedule prior [to CPPs], so you could say in quotation mark that it ‘steals’ time from diagnosing, but having said that, it is important that all the disciplines are present in an MDT meeting because we have a lot to contribute.”

(Physician 15, hospital 3)

MDT meetings are portrayed as important; they enhance the quality of care by ensuring that decisions are informed by various perspectives, are professionally interesting and constitute an important arena for learning. However, as illustrated in the statement, for pathologists and radiologists, the requirement to be present in these meetings on a regular basis is time-consuming, taking time away from diagnostic examinations in already highly pressured areas of the diagnostic trajectory. Radiologists and pathologists often work across multiple pathways in a wider scope than most clinicians. Indeed, in one hospital, a manager (also a physician) of the imaging department explained that they (the radiologists) are supposed to attend between 12 and 15 MDT meetings during the week.

This demonstrates that CPPs regulate physicians' temporal capital (Wang, 2019) towards investing time in collaborative meetings, forcing them to engage in new ways to manage their limited amount of time. It also indicates that CPPs, by demanding both rapid decision-making and comprehensive collaboration in the form of MDT meetings, may generate conflicting quality priorities. On the one hand, they improve quality by allowing representatives from each discipline to elaborate upon their findings and viewpoints, creating a comprehensive foundation for decision-making. On the other hand, considering that rapidity is regarded as crucial, the extensive amount of time required by certain professions may adversely impact quality by taking resources away from laboratory work processes.

Sometimes things take more time: When fixed timeframes collide with complexity

The interview accounts in our study provide a complex picture of overlapping processes and negotiations that shape the work related to diagnosing cancer. It is evident that much diagnostic work can be accomplished within a streamlined and predictable organisation of events, in compliance with both CPP and clinical guidelines. However,—by following the principles of IE (Smith, 1990, 1999, 2005) to search for tensions in the data and examine the social organisation of diagnostic work—we find that there is a parallel dimension of contemplations and problems related to change and unpredictability that is deeply embedded in practitioners' daily work.

Physicians express that the CPP timeframes are on a collision course with the dynamic development of new technologies for detection and treatment, and the ongoing changes in national clinical practice guidelines. Accordingly, some speak of CPP timeframes as provoking ‘a loyalty squeeze’ between the desire to comply with the timeframes and the desire to achieve diagnostic precision. One physician says:

“Then there is often, at the MDT meeting, that we see, or discuss ‘perhaps we should do an MR on this one’, we won’t get that the next day, perhaps we can get it after a week, then we do an MR examination and then we surprisingly find ‘Oops, there is cancer in the opposite breast as well’, then she [the patient] has to come for new testing, and she has to be discussed at a new MDT meeting, which will result in poor numbers. On the other side one could have said, if one thinks very... being the good girl in class, let’s skip that MR test, the probability is low, we don’t have time, the numbers will be poor, there is a long wait for MR, and then we just put it straight through to surgery, the numbers will be fine. I don’t think the patient will appreciate that.”

(Physician 10, hospital 3)

The physician conveys that there are often discussions related to doubt over whether there is enough evidence to establish the scope of the patient’s disease. Addressing these doubts poses certain consequences which may conflict with CPP timeframes. The experience of being caught in a loyalty conflict between diagnostic precision and compliance with timeframes suggests that an interesting contradiction emerges in the context of time-based monitoring. Namely, that the political interests of the hospital/government may be detrimental to both professional judgement and quality of care, considering that ‘being the good girl in class’—which is a recurring statement in the interviews with reference to CPPs—connotes reaching deadlines rather than a nuanced and thorough professional approach.

The informants express that shrinking timeframes (CPPs) coupled with changes to the diagnostic criteria outlined in the clinical practice guidelines are difficult to balance. Two physicians, both working with the CPP related to malignant melanoma, illustrate how changes in diagnostic procedures amplify the workload in a way that impacts the temporal aspect of diagnostic work:

“There has been a change in the regulations of who shall receive sentinel node diagnostics, it has dropped to even thinner melanomas, that is, even earlier stages will have sentinel node diagnostics. This is rather traumatic when it comes to resources for us in the plastic surgery department because it means that we can’t simply do it [surgery] in the polyclinic and that extra little piece of skin, now they [patients] have to first be subjected to a radioactive examination to find the lymph node, and we have to book an operating room because it can be more challenging to find such a knot, and it is painful for the patient: he or she must undergo anaesthesia. So, the things we used to be able to do three of in one hour, we now need three hours... or spend a long time in the operating room.”

(Physician 2, hospital 1)

“There are a lot more now, so in that sense we get more patients, yes, but especially, we get more work due to the fact that more people fall within that kind of diagnostic package.”

(Physician 26, hospital 5)

The statements reveal that cancer diagnosis is evolving both as a process and a category (Jutel & Nettleton, 2011)—the criteria for diagnostic testing are changing so that more patients will be included, while the scope of examination increases. Both aspects create more work: greater quantity, as the number of patients and the number of examinations for each patient are growing; and greater demand for precision, which requires more comprehensive examinations. There are two significant ruling discourses involved in the formation of the experiences exemplified above: the idea that early detection yields greater

prognosis for survival (Neal, 2009), and the idea that the best way to cure cancer is through precision/personalised medicine (Diamandis et al., 2010).

Precision medicine, in terms of finding the best treatment to match the genetics of each patient, alters the workload in the laboratory as well. The informants report increased demands for what they termed 'special examinations' that provide 'greater diagnostic opportunities' by enabling physicians to classify subtypes of cancer and detect metastases. These special examinations are described as comprehensive testing, often requiring additional rounds of testing depending upon the quality of the material sent to the laboratory. Frequently patients must undergo extra biopsies so the pathologists can attain an adequate amount of material with which to work.

One physician (pathologist) describes it in the following manner:

"Then [after the pathologist receives the processed tissue sample] this cycle may start all over again because maybe we didn't see, I mean, we don't know how complex a sample is before we see it in the microscope; often we need special examinations and then we have to send an order back to the lab [and say] 'you have to cut more cuts' or maybe even all the way back to the macro-cutting and the initial handling of the tissue and say that 'I need more, I haven't seen enough, you have to take more outwards to the resection rand, to the rand, or to the edges of the preparation, or I don't have enough tumour tissue, we couldn't find the tumour, we have to make a new search'. So, there may be several rounds performed at the different stations."

(Physician 11, hospital 3)

This highlights the complexity and uncertainty associated with calculating exactly how much time is required to make accurate diagnosis. In addition, physicians explain that not all diagnostic modalities that are necessary for diagnostic precision are available in the hospital where they work. Therefore, tissue blocks are shipped back and forth across locations before findings can be included in the final report, which requires that there is some temporal flexibility to work with.

Clearly, cancer diagnoses rest upon an intricate interaction between actors across locations and sometimes even across hospitals. Physicians are negotiating the disjuncture between the demands of complex, time-consuming tests and procedures necessary to achieve diagnostic precision *and* the demands of compliance with timeframes. Considering the notion that waiting symbolises low priority (Zerubavel, 1987), the findings of this study suggest, on the contrary, that the 'dreaded' waiting time imposed on (some) patients might signify dedication, vested time and respect. Sometimes it takes more time to figure out how to best help the patient.

Resource management between diagnostic precision and demands of efficiency

As mentioned in the introduction, the CPPs are connected to a wider health political goal, outlined in, for example, The Coordination Reform, which focuses on altered logistics to improve health and care services (Norwegian Ministry of Health & Care Services, 2009). We find that the disjuncture (Smith, 1990) between CPP timeframes and diagnostic precision is closely tied to the predicament of how to manage resources. Challenges related to pathway duration and limited availability and accessibility of technology and expertise were frequently brought up in the interviews.

Physicians report that the desire to obtain both diagnostic precision and meet CPP timeframes requires new time-saving tactics to circumvent the long waiting times faced by patients referred to diagnostic technologies. One such strategy involves the ordering of multiple tests at once to obtain a comprehensive image of the patient's illness, within the CPP timeframe. Several physicians

underscore that narrow timeframes, in combination with logistical challenges in the imaging sections of the hospitals, cause physicians to bypass a stepwise collaborative thinking process, thereby putting many patients through unnecessary examinations. This development troubles a physician in a nuclear medicine department. As a nuclear radiologist, she is on the receiving end of referrals for PET scans:

Physician: So, it creates excess exposure to radiation for the patient, extra expenses for society, cost, and it is unnecessary for the patient, perhaps, a young patient, a 30-year-old should not go through CT and PET if it is not necessary because it creates double the amount of radiation dosage, but in order to make the two weeks [in the CPPs] they refer simultaneously, and that is unfortunate.

Interviewer: That is a good point, yes.

Physician: Yes, it's unfortunate, in the old days, they [clinicians] would first refer [patients] to CT, if that didn't provide a clear answer then a PET scan would be ordered, it was like CT doesn't provide a clear answer, what does PET show? It's not like that anymore.

Interviewer: I understand, you just add on to make sure that you will get it in due time...

Physician: We probably conduct 30 per cent more PET scans now, which is costly and exposes them [patients] to radiation.

(Physician 12, hospital 3)

The physician emphasises the ramifications of multiple referrals across individual and collective factors. The practice poses a potentially unnecessary risk factor in terms of irradiations for the person as well as a waste of collective financial resources. The excerpt illustrates how the implementation of CPP timeframes alters practice, as diminished temporal flexibility drives the cultivation of new tactics for bypassing time-consuming mechanisms, including both waiting times for examinations as well as multiple rounds of collaborative discussions. The intention is to gather as much data about the patient's illness as quickly as possible to reach the most precise diagnostic conclusion within the assigned timeframe. However, as the nuclear radiologists warned, this practice comes at a price, affecting both the individual patient and society in general.

Excess testing (and overtreatment) is a highly prevalent and much debated topic, conceptualised as 'defensive medicine', which is presumed to be propelled by physicians' fear of liability as well as a general lack of tolerance for both uncertainty and failure that permeates both the larger medical culture and Western culture in general (Hoffmann & Kanzaria, 2014). Similarly, Schattner (2008) argues that the ordering of unnecessary diagnostic tests is a costly and growing problem that may adversely affect healthcare quality by causing excess waiting times for other patients in greater need of the same tests. The direct association between the implementation of CPPs and increased excess testing noted by our informants indicates that the CPPs' guidelines may push medical professionals towards a more unbalanced and undiscerning approach to diagnostic testing.

Correspondingly, Hofmann and Welch (2017: 1) note that advances in medical technologies are accompanied by unintended harm, such as 'false alarms and indeterminate findings that can worry patients, drive more testing, increase clinical workload, and distract clinicians from more important work'. Discussing the importance of access to medical technology, one physician provides an interesting observation. He explains that a major argument for attaining the funds to establish a PET scanner in their hospital was the inconvenience and logistical challenges associated with sending patients to various locations to undergo the necessary examinations. The idea was that greater accessibility would reduce pressure and waiting times. Reflecting upon this, he describes a different outcome from the one he expected:

Physician: We discovered that time didn't go down, because we, when we had it [the PET scanner] locally we sent a larger number of patients who we selected, you could say we [used to] select the most appropriate [candidates] for transfer to [another hospital], the others maybe we didn't reflect as much upon, while when we had it locally, in this building, it became quick and easy to send them in and we would find a lot more, we had to spend a lot more time examining other issues we found.

Interviewer: You mean, except cancer, or still cancer?

Physician: Yes, with a PET scanner you find a lot of spots here and there, and then you have to make further examinations to find out whether they [patients] have cancer or not, so it yields more examinations, but I think it provides more accurate treatment.

This shows the unpredictable relationship between resources, workload and efforts to reduce waiting times for patients. The experience aligns with other accounts of how greater sensitivity in diagnosis and treatment generates more work. Other informants similarly emphasise that this is a welcome development that signals professional progress and greater patient care.

Much of the work discussed by our informants pertains to resource management, necessary diagnostic modalities, and places where it is possible to make cuts and adjustments. Therefore, resources, or a lack thereof, were highlighted as a major barrier to achieving faster diagnostic assessment, with the respondents consistently arguing that either the CPP timeframes need to be extended or something in the diagnostic process needs to be dropped, lest the system collapse.

CONCLUDING REMARKS

A hallmark of contemporary healthcare is the growing cultivation of diagnostic precision and the regulation of practice through a diverse range of guidelines (Green et al., 2019; Kredt et al., 2016; Timmermans, 2005; Timmermans & Kolker, 2004). Existing literature stress that the use of guidelines among medical professionals has been overestimated, as research demonstrates that guidelines are in themselves insufficient for altering established practices and that individual autonomy outweighs guidelines in terms of significance for practice (Gabbay & Le May, 2004; Greenhalgh, 2002; McDonald et al., 2005; Timmermans, 2005). Contributing to this body of literature within health sociology, our study finds that physicians express that guidelines are both welcomed and essential, yet there is a distinct or more expansive stock of knowledge that is drawn upon to a greater extent in ambiguous cases that remains unaccounted for by the guidelines.

Guided by the principles of IE, this study contributes to knowledge of the complex social organisation of diagnostic work, and how this work is shaped and negotiated by ruling relations through different types of (conflicting) guidelines. Thus, IE has provided us with an analytical lens enabling us to discover and investigate tensions and dilemmas in the interface between multiple guidelines and diagnostic work, expanding existing knowledge in this field. Using IE, this study has revealed that diverse social processes (interests) targeting cancer care management are proving increasingly difficult to balance, compelling medical professionals to negotiate between two types of guidelines: one demanding rapid decision-making (CPPs) and one demanding diagnostic precision (clinical practice guidelines). Furthermore, in cases where guidelines present conflicting demands, physicians rely on their professional autonomy and discretion to prioritise clinical guidelines over CPP guidelines, thus justifying the breaching of CPP timeframes. CPPs play into the very core of professional practice—the possibility of governing and prioritising professionals' own time—and represent a regulation of their temporal capital (Wang, 2013). However, physicians' professional autonomy and discretion, and high position in the medical hierarchy, enable them to 'reclaim' the power of their temporal capital and,

to some extent, prioritise their time as they find medically appropriate. Thus, contrary to previous research in this field (see for example McDonald et al., 2005), we find that physicians do not reject guidelines, but interact with and negotiate between them, however, finding themselves in a ‘squeeze’ between different targets to an even greater extent than before.

Importantly, clinical practice guidelines are just one of many aspects of cancer care subject to continuous change according to the accumulation of new knowledge and technological advances, complicating the work processes related to cancer diagnostics. Our findings suggest that CPP timeframes are already pushing the boundaries of what it is possible to accomplish with the resources currently available. The pervasive (ruling) emphasis on the importance of both precise and rapid diagnostic assessment creates a situation in which medical professionals must negotiate between conflicting priority demands. Ultimately, these tensions pertain to values concerning what should count as quality of care. The tensions also raise some questions: will physicians always be able to prioritise one over the other? Is it always the right priority? More importantly, who should decide what is most important for quality?

Given that CPPs represent a relatively new reform in Norway, more research into the numerous aspects of work involved in making cancer diagnoses within this framework is required to gain further insights into its consequences for practice. As modern health care is increasingly relying on evidence-based medicine and the regulation of medical practice through guidelines, knowledge regarding the interface of multiple guidelines and their ramifications for practice is crucial in order to expand the sociological understandings of politics, power and professional work.

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CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTION

Siri Christine Kvernmo Næss: Conceptualization (lead); Data curation (equal); Formal analysis (lead); Funding acquisition (supporting); Investigation (equal); Methodology (lead); Project administration (supporting); Resources (equal); Software (equal); Supervision (supporting); Validation (equal); Visualization (equal); Writing-original draft (lead); Writing-review & editing (lead). **Erna Håland:** Conceptualization (supporting); Data curation (equal); Formal analysis (supporting); Funding acquisition (lead); Investigation (equal); Methodology (supporting); Project administration (lead); Resources (equal); Software (equal); Supervision (lead); Validation (equal); Visualization (equal); Writing-original draft (supporting); Writing-review & editing (supporting).

DATA AVAILABILITY STATEMENT

Data consists of interviews and cannot be shared due to ethical reasons/anonymity reasons.

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