Caring Futures: Developing Care Ethics for Technology-mediated Care Practices (QUALITECH)
1. **Excellence**

1.1 State of the art, knowledge needs and project objectives
Demographic projections indicate an increasing elderly population with an overall greater disease burden – and a corresponding resource deficit in health, care and welfare services (Horizon 2020). More efficient and innovative services is put forth as the solution to these demands (HELSEVEL), affecting a range of end-users. Implementation of new technology is part of this solution to compensate for a shortage of human personnel resources in the future. However, the evidence on ethical implications of new implementations in current technology-mediated care practices is scarce. QUALITECH is a research project emerging from this knowledge-deficit about care ethics, as an intervention to secure quality care in a future where care practices will be increasingly technology-mediated. We do so firstly, by cross-sectoral empirical research on care-ethical tensions between the current calls for increased use of new technologies in contemporary healthcare and welfare services on the one hand, and long-standing, deep-rooted relational and professional traditional care cultures on the other. Secondly, we revisit care ethics to redevelop state of the art care ethical theory at a crucial time of reinvention of public welfare in order to contribute to ethically sustained caring futures, to the benefit of users in primary and specialist healthcare, welfare services, and to society as a whole.

Care ethics arise from moral concerns inevitably bound up with basic human conditions like vulnerability and dependency, which highlight our reliance upon each other (Gilligan 1982; Hollway 2006; Pettersen 2011). In professions such as nursing, midwifery and social work, caring is traditionally concerned with interpersonal relationships. Tensions can arise when technology-implementations oversee the ethics implicated in care as relational practice. The evidence base on how technological innovations impact on care ethics in established care practices is surprisingly scarce (Stahl 2016). Previous research has described *intentions* to use technologies but there is insufficient knowledge on users' *attitudes* towards technologies, and how they *experience* implementations (Karlsen et al. 2017). This is perhaps because technology innovations are more powerfully shaped by the supply-side logics of manufacturers than by the demand-side logics of users and care systems (Lehoux et al. 2017). While suppliers and policy makers promote technology as a cost and labour- saving 'technomagic' solution for society's needs (Wastell 2011) – there is a limited understanding of how new technology implementations can ensure improvement of care. Care technologies are introduced into services with the objective to increase targets and efficiency, materialising through top-down processes where managers are central to implementation (Macaulay & Norris 2013). But managers tend to focus more on technology as product and service, and less on technology as part of a human relationship with corresponding ethical issues (Korhonen et al. 2015). In contrast, care ethics emphasise how decisions in care must always be founded in concrete caring relationships and contexts rather than in detached or instrumental reasoning. Unresolved tensions between instrumentalism and care ethics in management decisions may thus compromise quality in care, which should emerge from collaborative attempts to attune knowledge and technologies between care giver and receiver (Mol 2008). In order to secure our caring futures, the value propositions of new technologies should not only concern cost-saving benefits but must also include consideration of ethical, professional and cultural values (Buttieg et al. 2018). A contributing tension is the striking deficit within care ethical theory specifically, and the diametrically opposing views in other ethical discourses generally (Vandemeulebroucke et al. 2018), concerning the already inextricable interplay between humans and technologies in caring practices. Knowledge of the relationships between care ethics and technology-mediated care practices must therefore urgently be strengthened and broadened to meet one of society's greatest challenges in an ethically thoughtful and responsible way. **Knowledge need:** *QUALITECH intervenes in current splits and deficits between a care-ethically ignorant societal technology-drive and technology-ignorant care ethical theory which necessitate a new empirical and theoretical knowledge base.*

Technology use in health, care and welfare services is increasing and becoming progressively diverse. But knowledge of these changes remains fragmented. Within nursing sciences, for example, the concept of technology is somewhat ambiguous, and its practical and ethical implications in nursing are thus far largely unidentified (Korhonen et al. 2015). Studies from other care sectors indicate that care-ethical tensions can result from introducing new technology into professional practice. Wastell and White (2014) show how embedded digital systems in social work invite more risky forms of practice, challenging professional autonomy. Standardised digital assessment templates were implemented in 2007 in Child Welfare Services in Norway, and today nearly all agencies rely on this technology (Lauritzen et al. 2017). Heggdalsvik et al. (2018) and Kjær (2017) describe deleterious effects of digital templates on professionals' ability to make sense of case files and produce coherent case narratives, impinging on established professional ethical codes. Contrary to the intention, digitalization is said to have *reduced* efficiency, thus inducing a range of unsafe practices and

putting children at greater risk. Because knowledge is sparse on the care-ethical implications of digital templates new research is needed to understand their impact on users in Child Welfare. **Knowledge need:** *QUALITECH tackles a scarcity of knowledge of how digital standardisation in services affect care practices, professional autonomy and ethical conduct through conducting practice-near and comparative research.*

When new technology is introduced new ethical dilemmas may arise, affecting professionals' motivation to change their caring practices. Ideals and realities in care practice are informed by professionals' self-understanding, in turn shaped by their life and work experiences, as well as their societal context (Ramvi 2015). Caring professionals need to be in touch with their own responses, emotions and vulnerabilities in order to engage in effective therapeutic relationships with users. Such reflexivity reflects life-long learning as a 'dynamic subjective experience of (socially situated) realities' (Salling Olesen 2017). As a practice, caring implies a capacity for ethical conduct (Levine, 2013), where the ability to put oneself in another person's place is central. For professionals, ethical capacity thus requires 'use of self' and reflecting on experiences at work (Froggett, Ramvi & Davies 2015; Ramvi & Gripsrud 2017). Ethical conduct demands sensitivity to unequal power distributions in caring relationships (Moser 2006) and to relational dilemmas (White et al. 2015). Professionals are therefore concerned about how new technology plays into therapeutic relationships. Some feel that provision of innovative technology-based care may not be the most appropriate or preferred use of their skills. Caring professionals may worry that future technologies will challenge therapeutic relationships or replace the need for professional care altogether. Despite such concerns, there is a policy-driven impetus toward rapid implementation of new technology to alleviate care work for vulnerable population groups, such as the elderly (Demensplanen 2020). If professionals feel reluctant to use new technologies and their concerns are not addressed by policy makers and management, such implementations invite risky forms of practice. **Knowledge need:** *QUALITECH expands the knowledge base on the relationship between professionals' self-understanding and their ideals in low- and high-tech care practices, and how this relates to their motivation for taking new technology into use and their ethics of care.*

New technology should facilitate sound care delivery without compromising care ethics. However, leading legislative and policy discourses downplay this moral imperative. To exemplify, the Healthcare Personnel Act upholds safety for patients and quality in health and care services to ensure public trust. It emphasizes professionals' obligation to provide 'considerate care' but ignores how technology can challenge ethical principles like beneficence and nonmaleficence and jeopardize sound care (ch. 2, §4). Welfare policy similarly reveals a lack of attention to the ethics of care technologies (White Papers no. 11; no. 25; no. 29). Hence, the assumed benefits of new technologies in future care are far from clear. However stark our demographic outlook is, and whatever promises technological innovation may hold for sustaining care in the future, traditional relational care practices still remain vital for improving the health and quality of life for a large number of care receivers. New technologies will therefore have to be designed, implemented and adopted into use and understood to be of value to users, whether at the receiving or providing ends of care. In light of increasingly technology-mediated care practices in public welfare, a central concern is how uses of technology can enable user-participation and agency (Pols 2017; Puig de la Bellacasa 2017). Vulnerable users may be unable to voice their care needs, and risk inadequate involvement in technology development and implementation. The plight of vulnerable end-users accentuates the need for developing professional and institutional care ethical proficiency alongside technological solutions for efficiency, in order to ensure improved quality in services for the future, concerns integral to QUALITECH's agenda to cast light on end-users' experience-near knowledge. **Knowledge need:** *QUALITECH responds to a demand for new knowledge by developing an empirically-based care ethics paradigm through investigations of policy and practice, enrolling technology-suppliers, management and end-users of new care-technological solutions (patients, clients and professionals).*

The **overarching aim** in this project is theory-building through developing a novel care ethics paradigm for technology-mediated practices, as an intervention for caring futures. To do so, QUALITECH's **primary objective** is to address a current theoretical knowledge gap in care ethics by developing experience-near and practice-near empirical knowledge of ethical challenges in technology-mediated care across sectors and users in health, care and welfare (WP5). **Secondary objectives** operationalize the research in order to: 1) highlight and problematize new care ethical dilemmas and quality of care in digitalized technology-mediated child welfare (WP1); 2) expand knowledge of how healthcare professionals' self-understanding and ideals in high- and low technology-mediated care influence their motivation for taking new technology into use and their care ethics, and to support reflective practice (WP2); 3) advance knowledge of how cultural imaginaries about care robots and other techno-bodies impact on users' understanding and experience of quality care and care ethical dilemmas (WP3); and 4) safeguard healthcare management implementation of new technologies by expanding understanding of care ethical aspects in their decision-making, and develop a new guideline for management implementation of care ethical values (WP4)**.**

1.2 Novelty and ambition

We have identified a serious ethical discrepancy emerging from current splits and deficits between a care-ethically ignorant societal technology-drive and technology-ignorant care ethical theory – a substantial societal, cultural and scientific challenge. A new knowledge base is therefore urgently needed to secure our caring futures. QUALITECH responds to this challenge through an ambitious research project. We take on the task of generating a novel care ethics paradigm in response to the increasing use of, and need for, new technology in care and the current lack of understanding of technology-mediated practices in science and theory. We identify this as a highly sustainable research area. Against a background of disciplinary and theory divisions in practice-research, QUALITECH utilizes transdisciplinarity for 'integrative activity, reflection and practice that addresses crosses and goes through and beyond the limits of established disciplinary borders, in order to address complex problems that escape conventional definition and intervention' (Stenner 2014 p.1989). QUALITECH has emerged through ongoing dialogues with academics and user groups (primarily clinical and educational institutions and practitioners), where together we have identified a pressing need for better empirical and theoretical understanding of new technologies in care, and how they relate to user experiences and patient-provider caring relationships, which are inextricably bound up with care ethics. User-commitment at all levels in the health, care and welfare sectors, including at the policy-level, is necessary for the anticipated benefits of QUALITECH to be fully realized. We believe that a crucial *and* challenging implication will be the need to raise awareness of the importance of care ethical reflection for users involved in technology-mediated care practices. From a care ethical perspective, this is not something that can be simply imposed on end-users. Nor can we assume that policy makers will embrace implementation of our findings, if it means more resource-demanding or costly solutions. Neither ethics nor technologies can be safely implemented top-down. Rather care ethics for technology-mediated practices is an ongoing way of thinking and acting in relationships that must be encouraged, supported and developed at all levels of society in order for the true impact of our research to materialize itself in caring futures. Beyond the project period, we will integrate our theoretical outputs in a book to be entitled *Caring Futures: Technology-mediated Care and Ethics*, aimed at academics, professionals and students of the caring professions (see the "Impact"-section for our ambition to consolidate the project into a more permanent infrastructure). To transcend the existing knowledge-split between technology-mediated care and care ethics, QUALITECH addresses what is at stake at micro, meso and macro levels through scientific investigations across user-groups and institutional sectors in healthcare and welfare. We scrutinize implementation of technology in care – and current care ethical theory – in order to safeguard technology-mediated care practices for caring futures. A unique and ambitious characteristic of QUALITECH is evident in our bold choice of a transdisciplinary methodology, which encourages investigations of hitherto unchartered entanglements between care policies, care practices, lived experiences, narratives, imaginaries and relationships. Our theoretical path to a new care ethics paradigm, does not veer away from the subtle complexities and knowledge value inherent in care practical realities and users' experiential knowledge. A particular concern in QUALITECH is to develop understanding of the relationship between past, present and future technology-mediated practices and experiences. This includes attention to users' imaginations and associations as to what a caring future could look like. As part of our empirical investigation, QUALITECH therefore implements a novel psychosocial methodology, the Visual Matrix, which generates and captures data on imaginary topics that are otherwise difficult to put into words. There is core methodological competency in the project group, as Froggett, Hellstrand, Hollway, Ramvi and Gripsrud have all contributed to the conception and realization of Visual Matrix since 2013 (Froggett et al. 2015, Ramvi et al. 2019, Gripsrud et al. 2018), and will continue to do so through this project. To address current knowledge needs, QUALITECH advances transdisciplinarity in a novel scientific and theoretical knowledge exchange around care ethics and technology-mediated care, involving scientific and stakeholder partners in dialogue.

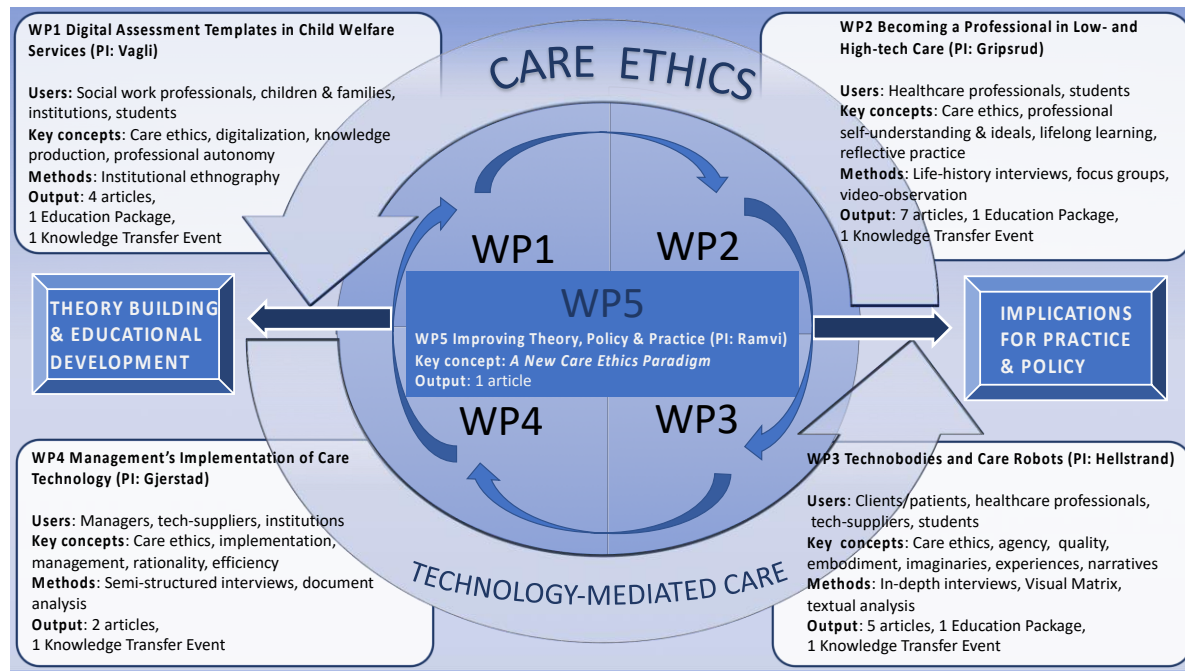## 1.3 Research questions and hypotheses, theoretical approach and methodology

In this project, we propose that technology-mediated care practices require a new care ethics paradigm to sustain caring futures. QUALITECH is therefore guided by the following **research questions**, which interconnect with each other and tie together the project's aims, objectives and methodology: *1. What are the current care ethical tensions and dilemmas within existing technology-mediated care practices, across different care sectors? 2. How can care ethics be developed theoretically to sustain quality of care in the public health, care and welfare services, in light of the increasing need for technologies in the future?*

QUALITECH is concerned with societal conditions for sustainable caring futures in technology-mediated care across public sectors. This is in line with the Norwegian Government's long-term plan for research that addresses large societal challenges and development of academic excellence (White Paper 4, 2018-19), to which the RCN adheres. QUALITECH executes user-driven, needs-based, multi-strand research in answer to HELSEVELs call for new knowledge about improved quality, competence, efficiency and personalized care

in the services, and to society's call for expanding the knowledge base on how to tackle large-scale technological, demographic and cultural changes. We rely on both established and innovative qualitative methods to generate experience-near and practice-near knowledge. These are methods which can enable rich and in-depth understanding of how users and institutions create meanings and establish knowledge production in technology-mediated care. We take on the ambitious task of developing a much-needed empirical and theoretical expansion of a narrow focus on technology simply as a tool. Technology does not have intrinsic characteristics (Gjelsvik, Gjerstad & Nødland 2016), nor is it an externalized futuristic tool – rather, technology is already integral to everyday life and care practices. Our understanding is that technology is not one generic phenomenon but represents specific functions. This merits qualitative investigations which probe into specific relations between people and their technologies in particular contexts (Pols 2017), a concern that establishes the empirical basis for theory-development in our project. We develop the concept *technology-mediated care practices* as a canopy covering various established and new technologies in public health, care and welfare services. Our concern is to learn about how technology gains meaning in different contexts and for different users-groups, through meetings between people, and between people and technology. By studying how new technologies become entangled with care practices and how they correspond with users' expectations of quality care we will address emergent care-ethical questions. Through empirical investigations of existing technology-mediated care practices, we can contribute to a more sophisticated theoretical understanding of how material and relational aspects must become care-ethically intertwined to secure caring futures.

The project's paradigmatic intervention will both draw from *and* challenge classic care ethics (e.g. Gilligan 1982), seeking to make a substantial theoretical contribution. Classic care ethics emphasize the inter-subjective caring relationship but fail to consider how technology mediates such caring practices. To expand knowledge in this underdeveloped area, QUALITECH invites a broad range of participations, which we conceptualize as a *collaborative practice approach*, meaning ongoing partnership between stakeholders and end-users, including professional practitioners, educators, clients/patients, and researchers. This is fully in line with Horizon 2020's Responsible Research and Innovation (RRI), to which the RCN also subscribes in its policy. RRI encourages bringing together societal actors (e.g. citizens, researchers, organizations) during research and innovation processes to better align process and outcomes with society's values, needs and expectations. The project is based on integrated elements and actions that promote institutional change, and encourage uptake of RRI by users, stakeholders and institutions through co-creation activities. Through the collaborative practice approach, we not only open up for awareness of practice-near issues in our research processes but contribute to formal and informal science training for users-groups, as well as facilitating more targeted dissemination and communication of results e.g. through educational packages and knowledge-transfer events.

Greenhalgh & Papoutsi (2018 p. 1) have recently called for a paradigm shift in care services research that can allow for studying 'dynamically changing inter-relationships and tensions' that can lead to 'rich theorising' and 'generative learning'. This is within the remit of QUALITECH's design, which delivers four empirical Work Packages (WPs) to expand knowledge of current technology-mediated caring policy, practice and experience with a view towards 'generative learning' (WPs1-4) leading onto 'rich theorising' (WP5), which in turn informs a new care ethics paradigm. In WP5 we draw on a psychosocial approach to welfare (Froggett, 2002) to interpret micro, meso and macro-level implications of findings within and across empirical strands. The project has a clear and systematic work plan aimed at achieving our stated objectives during a four-year period and is designed as cross-sectoral empirical research strands (WP1-4) which deliver four empirical cases. The cases start as freestanding investigations, which each lead, through analyses, to identification of ethical tensions/dilemmas to inform our interpretation work in the synthesizing theory-strand (WP5). Each empirical WP has been designed methodologically to respond to a secondary objective, whereas WP5 responds to the primary objective. Figure 1 is an overview of the project; below it is a more detailed description of methods employed in the empirical WPs. In addition to these empirical work packages, we have gathered the project's communication activities (WP6) and running management activities (WP7) into separate work packages (not included in figure 1, see below).

WP1 Digital Assessment Templates in Child Welfare Services (PI: Vagli)

Users: Social work professionals, children & families, institutions, students
Key concepts: Care ethics, digitalization, knowledge production, professional autonomy
Methods: Institutional ethnography
Output: 4 articles,
1 Education Package,
1 Knowledge Transfer Event

WP2 Becoming a Professional in Low- and High-tech Care (PI: Gripsrud)

Users: Healthcare professionals, students
Key concepts: Care ethics, professional self-understanding & ideals, lifelong learning, reflective practice
Methods: Life-history interviews, focus groups, video-observation
Output: 7 articles, 1 Education Package, 1 Knowledge Transfer Event

CARE ETHICS

THEORY BUILDING & EDUCATIONAL DEVELOPMENT

WP1 WP2

WP5

WP5 Improving Theory, Policy & Practice (PI: Ramvi)
Key concept: *A New Care Ethics Paradigm*
Output: 1 article

WP4 WP3

IMPLICATIONS FOR PRACTICE & POLICY

TECHNOLOGY-MEDIATED CARE

WP4 Management's Implementation of Care Technology (PI: Gjerstad)

Users: Managers, tech-suppliers, institutions
Key concepts: Care ethics, implementation, management, rationality, efficiency
Methods: Semi-structured interviews, document analysis
Output: 2 articles,
1 Knowledge Transfer Event

WP3 Technobodies and Care Robots (PI: Hellstrand)

Users: Clients/patients, healthcare professionals, tech-suppliers, students
Key concepts: Care ethics, agency, quality, embodiment, imaginaries, experiences, narratives
Methods: In-depth interviews, Visual Matrix, textual analysis
Output: 5 articles, 1 Education Package, 1 Knowledge Transfer Event

Figure 1: A care ethics paradigm for technology-mediated caring futures. The model illustrates four empirical research strands, each of which explore different yet related aspects of how technologies are used, experienced and imagined in contemporary care practices, including ethical tensions/dilemmas. These strands contribute different cases for exploration and understanding of care ethics in existing technology-mediated care practices, focusing on different user-groups in Child Welfare Services (WP1); professionals in low-tech or high-tech healthcare (WP2); technology-enabled professional and patient users (WP3); managers in municipal and specialist healthcare (WP4). What interconnects these user-groups is that they represent or confront vulnerability, which particularly warrants ethical awareness in caring. WP5 facilitates integrative interpretations, theoretical synthesis and implications for policy, practice and education across the empirical cases of WPs 1–4, developing the new theoretical care ethics paradigm as an intervention.

WP1 *Digital assessment template technology in child welfare services – a comparative study.* This researcher-project uses institutional ethnography (e.g. Nilsen, 2017; Vagli 2009) to investigate digitalized work practices in two municipal child welfare agencies in Norway. Fieldwork is conducted, gathering observational and interview data on social work professionals to study the use of digital assessments tools in their everyday work. All data, including a sample of digital texts from assessment templates, are subject to ethnomethodological discourse analysis to develop understanding of professionals' knowledge production in relation to vulnerable adolescent service-users. Due to sparsity of research on digitalized child welfare in Norway, findings undergo comparative analysis with research from the UK.

WP2 *Becoming a caring professional in technology-mediated relational care practices?* This project consists of four part-studies. Study 1a) is a Post-doc project based on Life-history interviews (Salling Olesen, 2012) with healthcare professionals in high-tech (n=6); and low-tech care (n=6). Life-history interviews generate rich narratives from a sample small enough to allow for extensive in-depth interpretation. Study 1b) is a researcher project based on six focus groups (n=35) to cover variations in professionals' ideals in high-tech and low-tech care healthcare sectors, and their attitudes to technology-mediated care. Interviews and focus- groups (in 1a and 1b) are audio-recorded and transcribed for analysis. Analysis: both data sets illuminate professionals' self-understanding/becoming as a social practice, linked to subjective life-history and life-long learning, as well as societal reproduction and future innovation (Salling Olesen, 2012). Study 1c) is a PhD project with a focusing on relational medical practice concerning life-death issues, and the use of technology when life is at stake. Study 2 is an educational project. Following Hansen's (2006) Sophos Model, two 20-minute documentary films will be produced as stimulus material for midwives' reflection groups. Films portray 2 routine antenatal ultrasound consultations with 2 different midwives and 2 pregnant women at an outpatient clinic (subject to consent). 3 groups of 3-5 midwives are subsequently recruited for 2-3-hour group sessions, watching the film twice. The researchers facilitate 1) free associations and comments during screening and 2) a post-screening reflection group on care ethics in technology-mediated midwifery care. All three groups are video-recorded (subject to consent) to make data available for transcription and analysis. Films and data are used to develop a Sophos model to support group reflective practice in technology-mediated midwifery care, providing an Educational Package to the newly established (2019) midwifery program (UiS). Analysis: identifies whether the model contributed to midwives' reflective practice and care ethics in light of increasingly technology-mediated professional practice.

WP3 *The impact of robots and other caregiving techno-bodies on agency and quality of care.* This project consists of three studies. Study 1 is a PhD-project consisting of two parts: A) a textual analysis of technology-mediated care narratives in contemporary science fiction, visual media, policy documents design marketing, and B) in-depth interviews (n=30) with professionals working with anthropomorphic or zoomorphic care

5

robots in Norway and in Finland. The two parts lead to a comparative analysis of narratives and imaginaries in cultural texts, including professionals' stories of technology-mediated care in two Nordic contexts. Interview participants are enrolled through Norwegian and Finnish health and welfare service providers. Study 2 is a researcher project, using Visual Matrix (VM): an innovative qualitative method (Ramvi et al. 2019) designed to facilitate a group's associations and imaginaries on topics that are difficult to put into words (Gripsrud et al. 2018). Three VMs will be conducted for one hour each with selected technology users (n=10), caregivers (n=10) and providers (n=10) who engage with care robots. Enrolment is through service providers in Norway. Stimulus material is based on findings from Part 1, e.g. excerpts of fiction or poetry. Study 3 is a researcher project using in-depth interviews (n=12-15) with Parkinson's patients who have an implanted Duodopa medicine pump and live at home, inviting participants' life-world narratives on living with on-the-body medical technology. Analyses (studies 1–3): compare individual and cultural storytelling practices and imaginary and associative thinking as ways to uncover tensions between quality care and care ethics in technology-mediated care. All interviews and VM are audio-recorded and transcribed for analysis.

WP4 *Managers' implementation design for technologies in care practices*. This researcher project enrols managers (n=10) from different administrative levels in nursing homes and municipal home care services who are involved in implementation of technologies, and supplier representatives (n=3), for semi- structured interviews. Data will illuminate care ethics in technology designs that are claimed to improve quality and efficiency. The technologies represent diverse usages for professionals/patients/users and are applied in different contexts (institutions or homes). We expect technologies to represent different health service logics and different tensions between care ethics and economic rationalities. Relevant policy and other documents are also collected. Analysis: inductive-deductive, comparing technology policy designs in different institutions/services to shed light on possible dilemmas and controversies and how they can be dealt with – leading to the development of new care ethical guidelines for management's technology implementation.

WP5 *A care ethics paradigm for caring futures*. WP5 synthesizes empirical data with an aim of theory development. By interrogating how care ethics in technology-mediated care practices are translated across different user-groups in the four empirical WPS, we identify cross-sectoral differences and common denominators by first 'thinking in cases' (Forrester, 2017), before we move on to theorisation of empirical findings. Method: 1) a seminar to exchange preliminary findings and ideas during the midway-symposium (*PG + SAB*). 2) A 2-day workshop (*PG+SAB*) where empirical findings and identified care ethical tensions are presented from WPs 1–4. We work together to elaborate key care ethical tensions emerging from each empirical case. 3) A second 2-day workshop (*SAB+SG with selected experts from WP1–4*), where the panel works on interpretation of care ethical tensions identified in the first workshop, across the cases and in synthesis. Findings lead us to conceptualise a new care ethics paradigm with implications for policy, education and practice – an intervention for caring futures (see figure 1).

Project risks: We acknowledge that QUALITECH is a high-risk project, mainly due to its ambition to develop a new care ethics paradigm as an intervention for caring futures. Theory-building from qualitative empirical data requires good quality data. Risk is therefore related to poor-quality data/analysis, which we safeguard against by involving senior experienced researchers in data collection/supervision of PhDs who collect data. Access to the field (WP1) could be challenging and may require prolonged negotiations to establish contact and approvals. Safeguards here will be to identify several potential institutions as field sites, so there is a backup. The frequent contact between WP-PIs in the steering group ensures that any problems that arise in relation to data collection and analysis can be addressed and dealt with as collective challenges to be solved together. Our senior international collaborators contribute to critique and safeguard data quality and contribute to sound analyses strategies in all WPs into the project. A strength and characteristic of qualitative research is that it can be malleable and adapted to fit changing circumstances in the course of the research process. This is not a threat to the quality of the research output as long as such changes are duly and transparently accounted for in the reports. Risk is also associated with the novelty of our project as the realisation of a new transdisciplinary methodology, which materialises as theory-building in WP5. The main obstacle here would be challenges related to establishing constructive dialogues across disciplinary and theoretical backgrounds. Having worked together on the design of QUALITECH over three years, we know how such ruptures can be prevented and will continue with our working ethics for thinking and talking together, allowing differences to work as synergies. **Transdisciplinarity:** is described under "Novelty and ambition" (p. 7). **Ethics:** Our research ethics invites awareness of how researchers are affected by, and affect, engagement with participants and data. We acknowledge the necessity for ethical considerations in research involving user- groups, some of which are vulnerable, and will obtain approvals from Regional Ethical Committees (REK), Data Protection Officers/Norwegian Centre for Research Data (NSD), adhering to guidelines from the National Committee for Research Ethics in Social Sciences and the Humanities (NESH). Participants will be fully informed and consented. Recorded data will be anonymized, with secure data storage provided by UiS, according to new EU GDPR legislation/NESH guidelines. **Gender:** The majority of professionals in the welfare sector are women, hence a gender perspective is prevalent throughout the project. **Stakeholders/users**: QUALITECH

enrolls end-users in primary and specialist health service, child welfare, and higher education, with implications and interventions for reflective practice and professional development delivered through Education Packages (EP) and Knowledge-Transfer Events (KTE) (see figure 1) as bilateral exchanges are key to creating relevance and synergies between research, diverse practices and user-perspectives.

2. Impact

2.1 Potential impact of the proposed research

QUALITECH provides much needed knowledge about care ethical tensions in technology-mediated practices with a view towards filling current knowledge deficits both within care ethics and within research on care technologies. The project delivers a range of scientific knowledges and outputs, as well as outputs targeted at benefiting stakeholders and users in healthcare and welfare and educational sectors (see e-form for details) to ensure scientific and societal impact. In terms of both short- and long-term impacts, QUALITECH adheres thoroughly to HELSEVEL's call for practice-near research in environments responsible for education of professionals, to develop research networks across disciplines and institutions, to contribute to collaboration between researchers, service-providers and users at all levels, and to increase innovation through dissemination, communication and implementation of results. For an overview, see Table 1 below:

Stakeholders/users	Knowledge potential	Implementation/usage	Knowledge Exchange
Scientific community	New empirical, methodological, theoretical knowledge	Informing future empirical and theoretical contributions; setting a scholarly agenda	Dissemination (conferences, articles); final conference
Child Welfare Services & care professionals	Care ethics in digitalisation or services: professional judgment, autonomy, and sound practice	Ethical technology-implementation, competency-building	WP1: KTE; communication
Specialist Health Care Services & care professionals	Care ethics for professionals in high/low-tech healthcare practices; motivation to use new technology	Ethical technology-implementation, competency-building	WP2: KTE; communication
Primary Care Services	Care ethics vs instrumentalism in management implementations of new technologies to ensure quality services	Ethical technology-implementation, competency-building	WP4: KTE; communication
Higher Education	New models for learning, teaching and reflecting about care ethics in technology-mediated care practices	Ethical education of social workers and health care personnel for caring futures	WP1, WP2, WP3: EPs; communication
End-users (professional, clients, patients, next-of-kin)	Co-production of new knowledge to inform tailored care ethics for technology-mediated care	Ensuring good quality technology-mediated care and user agency	WP1, WP2, WP3: KTEs; communications
End-users (technology producers/suppliers)	Increased awareness of care ethics vs 'techno-magic' in development of new care technologies	Ensuring ethically sound care technology development and implementation	WP3, WP4: KTEs; communications

Table 1: *Stakeholders & impact.* QUALITECH complies with the Ministry of Health and Care's task plan for increased user orientation in services by promoting a collaborative practice approach, with user-involvement and knowledge-exchange at the forefront. Stakeholder contributions include higher education institutions and students (future care personnel), care providers (management, personnel), as well as users at the receiving end of care (clients, patients, next of kin). End-users have participated in the proposal's planning stages, identifying relevant areas for our investigations of care ethical tensions in technology-mediated care practices.

Scientifically, QUALITECH's impact will be to provide a new empirical and theoretical knowledge base for understanding ethical tensions and how these can be addressed to promote and protect good quality technology-mediated care in the future. QUALITECH develops new methods, theories, and concepts through a new transdisciplinary methodology designed to explore, describe and understand the entanglement of ethics in technology-mediated care practices, responding to the need for new knowledge production. The project expands the knowledge base for both cultural and experiential conditions for technology-mediated care, emphasising care ethics as a crucial aspect of societal decision-making and development in public welfare. As a regionally anchored collaborative practice approach, QUALITECH facilitates and sustains such new ways of thinking and acting together in concrete and transformative ways in our local context. We do so in order to secure lasting effects. The project's short time frame may limit the potential for more wide- ranging impacts: QUALITECH alone cannot solve all the issues raised by an increasingly technology- mediated caring future. A longer-term research strategy is therefore needed. New technologies keep coming and changing, therefore the research field is constantly changing too. A next step for QUALITECH is to establish a structure that can allow us to further our impact, for example through dialogue with policy makers and technology manufacturers. We are therefore in the process of conceptualizing a longer-term structural consolidation of the project at the University of Stavanger. A QUALITECH network or centre will generate sustained awareness of the care ethics paradigm regionally, nationally and internationally. Our strategic long- term planning allows us to

develop further research, as well as creating lasting synergies between researchers and practice-based stakeholders involved in the project. QUALITECH is intended as a durable stimulus for regional research-based innovation and collaboration, while facilitating competency-building through engagement with national and international research partners.

Societally, QUALITECH intervenes in a societal challenge with global reach: the undefined area of care ethics for increasingly technology-mediated care futures, with ramifications for future care policy development. QUALITECH's impact is to equip society to better tackle future care ethical challenges by casting light on challenges within high and low-tech care practices from the perspectives of end users-groups that rely on technology in everyday life. Understanding of what quality of care means for care-givers and care-receivers will be enhanced, suggesting new ethically sustainable applications for care technology. WPs 1-5, cast light on five of the UNs 17 sustainable developments goals; no. 3 (our care ethics paradigm secures good health and wellbeing); no. 4 (our EPs improve quality in higher education); no. 5 (gender is clearly an aspect of our research); no 8 (we will generate a knowledge base with relevance for contemporary care work). Overall, the project contributes to ethical awareness and education which also concerns basic conditions for sustaining peace, justice and strong institutions (no. 16).

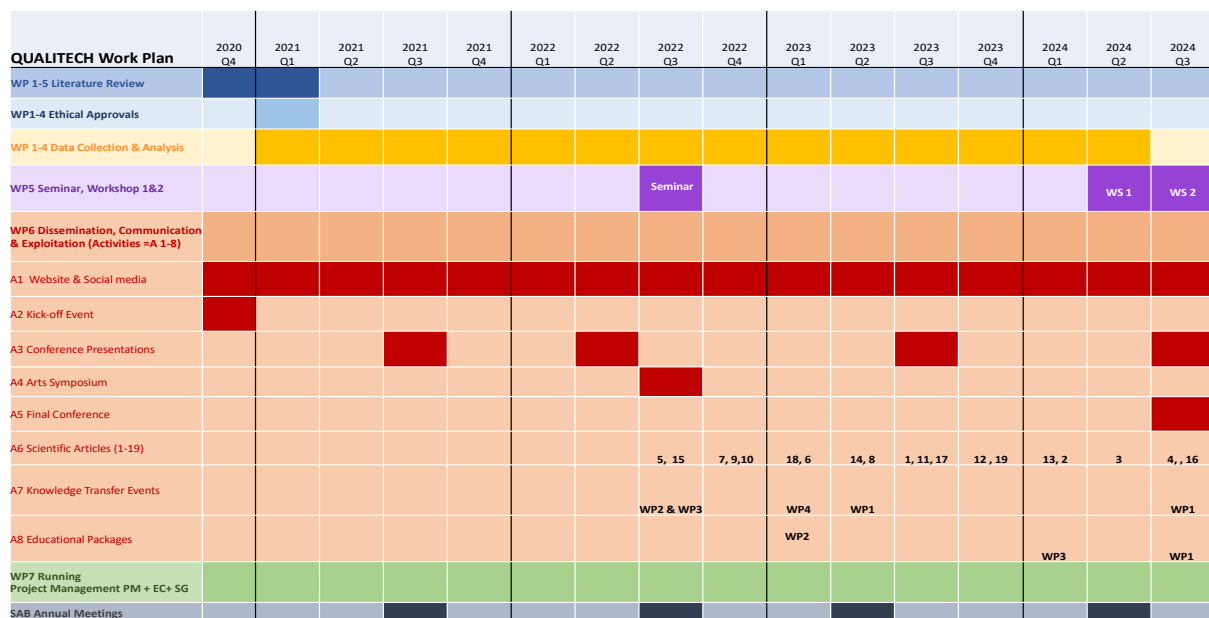## 2.2 Measures for communication and exploitation

Gripsrud is PI for WP6, QUALITECH's progressive dissemination, communication and exploitation strategy (see e-form for more details). The PI coordinates and monitors this work with the project co-ordinator, Department of Strategy and Communication at UiS. Scientific dissemination: This project will deliver 19 peer reviewed articles in Nordic and international journals. An international conference is planned for 2024 in Stavanger, Norway – *Conceptualizing Care Ethics for Technology-Mediated Caring Futures* – which we intend to co-host with the new Networks for Welfare Research and Health and Technology, and Faculty of Health Sciences at UiS. The conference signals our determination to raise awareness of our project's findings and to continue to develop care ethics for technology-mediated practices by inviting further discussion with new audiences, to ensure more wide-ranging and lasting impacts. During the conference we will use smart-phone polling to create technology-mediated interactions – engaging attendees in our research question, empirical findings and care ethical paradigm. This technology will also allow us to gage attendees concerns in relation to care ethics in technology-mediated care, as well as the relevance of our project for their various fields of practice. User communication: Contact with users is already established and integrated in the project. To secure communication across user-groups, each WP organizes cross-sectoral KTEs, including a transdisciplinary midway arts symposium on 'Art, Technology & Care' with the artist collective I/O/LAB and Norwegian Smart Care Cluster, hosted by Sølvberget – Stavanger Library and Culture House. Communication: QUALITECH delivers a webpage and establishes an active presence in social media (Facebook, Twitter, Instagram) using the **#qualitech** hashtag. We launch a podcast series and cater to users in the professional and research communities through LinkedIn, ResearchGate, and Academia. Through our communication platform, we create a buzz for attendees across sectors, user organizations, advocacy groups, health, care and welfare institutions, politicians and policy makers, diverse research communities and professional practitioners, as well as educators of professional practitioners, and technology providers to ensure maximum exploitation.

3. Implementation

3.1 Project manager and project group

Project Manager (PM) is Professor **Ellen Ramvi** – a pioneer of Psychosocial Studies and Professional Relationships in Welfare. The PM is responsible for overall project management (WP7) collaborating with and supervising WP1-4. In order to address administrative challenges and complexities in the running of the project, the PM is supported by an Executive Committee (EC), which includes three key researchers behind the project proposal (Ramvi, Gripsrud & Hellstrand). Ramvi has collaborated with and headed a range of national and international projects with Scandinavian, Canadian and British colleagues, and has researched extensively the field of relationally-intense work and care ethics in healthcare, welfare and education. Ramvi has comprehensive expertise on qualitative investigation, including method development, and works at the Department of Caring and Ethics, Faculty of Health Sciences, University of Stavanger (UiS). She is presently PI for a WP in MULTICARE, an RCN-financed project. Ramvi heads the research group Professional Relationships in Welfare Professions (UiS), which is concerned with improving the understanding and quality of relational care work. QUALITECH has a strong transdisciplinary project group (PG) consisting of 11 *regional* and five *national* researchers, and five distinguished *international* scholars – demonstrating substantial theoretical and empirical competency. The PG is selected not only for its academic expertise, but also to strengthen and broaden research and education on care ethics for technology-mediated care in South-Western Norway.

3.2 Project organisation and management

QUALITECH Work Plan	2020 Q4	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3
WP 1-5 Literature Review																
WP1-4 Ethical Approvals																
WP 1-4 Data Collection & Analysis																
WP5 Seminar, Workshop 1&2								Seminar							WS 1	WS 2
WP6 Dissemination, Communication & Exploitation (Activities =A 1-8)																
A1 Website & Social media																
A2 Kick-off Event																
A3 Conference Presentations																
A4 Arts Symposium																
A5 Final Conference																
A6 Scientific Articles (1-19)								5, 15	7, 9,10	18, 6	14, 8	1, 11, 17	12, 19	13, 2	3	4, , 16
A7 Knowledge Transfer Events								WP2 & WP3		WP4	WP1					WP1
A8 Educational Packages										WP2				WP3		WP1
WP7 Running Project Management PM + EC+ SG																
SAB Annual Meetings																

Figure 2: **Work plan.** Four empirical strands (WPs 1-4) generate experience-near and practice-near knowledge on technology-mediated care across sectors. WP5 develops theory with a view towards a novel care ethics paradigm. Each WP is a freestanding entity but we facilitate an ongoing dynamic space for theoretical exchange and collaborative learning between WPs. PIs are responsible for WP-activities. The work plan indicates milestone events, including midway symposium, Knowledge Transfer Events (KTE) and Educational Packages (EP), as well as a running communications' strategy and academic dissemination (WP6). WP7 is the project management, led by the Project Manager (PM), supported by the Executive Committee (EC) and Steering Group (SG). A UiS Project Coordinator will ease administrative workload. SAB involves international scholars to oversee quality and progress: Professor of Social Theory, Humanism and Materialities *Jeanette Pols*, University of Amsterdam; Professor of Psychosocial Welfare *Lynn Froggett*, University of Central Lancashire*;* and Professor of Philosophy and Ethics *Tove Pettersen*, University of Oslo.

Infrastructure: The post-doc and PhD-fellow in WP2 and PhD-fellow in WP3 are supported by the PG and the UiS education and research community. The PhD-fellows will be enrolled in PROFRES – a national PhD research school for professions-oriented and practice-relevant research, administered by UiS in partnership with the University of Agder, Nord University and the University of Southeast Norway. WP1 contributes an EP to PROFRES. The PhD-Fellows will be encouraged to pursue mobility with collaborating international institutions. As an inter-faculty project QUALITECH adheres to UiS' strategy to be a driver for regional knowledge-development and an international research institution that consolidates lifelong learning, research-based innovation and value- creation. Health is another priority area for UiS and QUALITECH strengthens the new Faculty of Health Sciences at Health Campus Ullandhaug, where Stavanger University Hospital (SUS) will relocate in 2023. As a regionally anchored project, we consolidate the newly established Networks for Health and Technology and Welfare Research, emerging from a strategy to encourage regional collaborations between UiS, SUS and NORCE. Project collaborators who visit Stavanger will be accommodated at the new campus hotel Ydalir.

WP	PI	National collaborators	International experts	Tasks
WP1	Dr **Vagli** (UiS)	Prof **Solveig Botnen Eide** (UiA): Dr **Ann Christin Eklund Nilsen** (UiA): **Nora Simonhjell** (UiA)	Prof **Sue White** (Sheffield University, UK); Emeritus Prof **David Wastell** (Nottingham University, UK)	<u>Data collection</u>: Vagli. <u>Data analysis</u>: Vagli, Botnen Eide, Eklund Nilsen, Simonhjell.
WP2	Dr **Gripsrud** (UiS)	**Post-doc-Fellow**; **PhD-Fellow**; Dr **Christina Risa** (midwife, UiS); Dr **Signe Egenberg** (midwife, SUS); prof **Ellen Ramvi** (UiS)	Professors **Wendy Hollway** (Open University, UK), **Henning Salling Olesen** (University of Roskilde, DK)	<u>Data collection</u>: Post-doc, PhD-fellow, Gripsrud, Ramvi, Risa, Egenberg. <u>Data analysis</u>: post-doc, PhD fellow, Gripsrud, Ramvi, Risa, Egenberg, Hollway, Salling Olesen
WP3	Dr **Hellstrand** (UiS) *main supervisor PhD*	**PhD-Fellow**; RN **Ingrid Leiknes** (UiS); Dr **Roger Søraa**, co-supervisor (NTNU); Artist **Hege Tapio** (i/o/lab)	Post-doc **Aina Koistinen**, (University of Jyväskylä, FIN)	<u>Data collection</u>: PhD-fellow, Koistinen, Leiknes. <u>Data analysis</u>: PhD-fellow, Hellstrand, Sørå, Koistinen, Leiknes

WP4	Dr **Gjerstad** (UiS)	Senior researchers **Svein Ingve Nødland** & **Inger Lise Teig** (NORCE)		Data collection: Gjerstad, Nødland. Data analysis: Gjerstad, Nødland, Teig
WP5	Professor **Ramvi** (UiS)	Members of SG & PG	SAB: Professors **Jeanette Pols, Lynn Froggett, Tove Pettersen**	Interpretation of empirical findings. Theory-development.
WP6	Dr **Gripsrud** (UiS)	Project coordinator, Department of Strategy and Communication, UiS	Ray Kane (animation)	Communications strategy
WP7	Professor **Ramvi**	Ramvi PM; EC; PIs for WP1-4 are in the SG, Project Coordinator UiS		Running project management

Table 2: Organisation of WPs, team members and allocation of tasks. To ensure stakeholder exchanges, all empirical WPs engage users from primary care and specialist health services, as well as engaging users (professionals, students, patients/clients) through the Knowledge Transfer Events (KTEs).

4. References

Buttigieg, S.C.& van Hoof, J. (2018). The Conceptualization of Value in the Value Proposition of New Health Technologies. *International Journal of Health Policy and Management* 7(2): 186-188.

Froggett, L; Ramvi, E., Davies, L. (2015). Thinking from Experience in Psychosocial Practice: Reclaiming and Teaching 'Use of Self'. *Journal of Social Work Practice* 29 (2): 133-150.

Froggett, L. (2002). *Love, Hate and Welfare: Psychosocial Approaches to Policy and Practice*. Bristol: The Policy Press

Forrester, J. (2017). *Thinking in Cases*. Cambridge: Polity Press.

Gilligan, C. (1982) *In a Different Voice*. Cambridge, MA: Harvard University Press

Gjelsvik, M., Gjerstad, B. & Nødland, S. I. (2016). Velferdsteknologi – mer enn bare teknologi *MAGMA*, 7/2016, s. 74-86.

Greenhalgh, T. & Papoutsi, C. (2018). Studying complexity in health services research: desperately seeking a paradigm shift. *BMC Medicine*. 16(95). https://doi.org/10.1186/s12916-018-1089-4

Gripsrud, B.H., Mellon, K. & Ramvi, E. (2018). Depth-hermeneutics: A psychosocial approach to facilitate reflective practice for teachers? *Reflective Practice: International and Multidisciplinary Perspectives*.

Gripsrud, B.H., Ramvi, E., Froggett, L, Hellstrand, I. & J Manley, J. (2018). Psychosocial and symbolic dimensions of the breast explored through a Visual Matrix. *NORA: Nordic Journal of Gender and Feminist Research*.

Hansen, H. K. (2006) *Ældreomsorg i et pædagogisk perspektiv*. PhD. University of Roskilde. Forskerskolen i Livslang Læring, RUC.

Heggdalsvik, I. K., Rød, P. A., & Heggen, K. (2018). Decision-making in child welfare services: Professional discretion versus standardized templates. *Child & Family Social Work*.

Hollway, W. (2006). *The Capacity to Care: Gender and Ethical Subjectivity.* London: Routledge

Lauritzen, C, Vis, S.A, Havnen, K.J.S., Fossum, S. (2017). Barnevernets undersøkelsesarbeid – fra bekymring til beslutning Evaluering av Kvellomalen Delrapport 2. Tromsø: Regionalt kunnskapssenter for barn og unge Nord (RKBU Nord)

Lehoux, P. et al. (2017) Providing Value to New Health Technology: The Early Contribution of Entrepreneurs, Investors, and Regulatory Agencies. *International Journal of Health Policy and Management* 6(9): 509-518

Levine, D. P. (2013). *The Capacity for Ethical Conduct: On Psychic Existence and the Way We Relate to Others*. London: Routledge

Karnon, J. Edney, L. & Afzali, H. (2018) The political economy of the assessment of value of new health technologies. Journal of Health Services Research & Policy. DOI: 10.1177/1355819617751816

Karlsen, C. et al. (2017) Experiences of the home-dwelling elderly in the use of telecare in home care services: A qualitative systematic review protocol. *JBI Database System Rev Implement Rep*. 15(05): 1249-1255.

Kjær, B. (2017). Fra profesjonelt skjønn til strukturerte maler i barnevernundersøkelser. *Tidsskrift for familierett, arverett og barnevernrettslige spørsmål*, *15*(04), 305-328.

Korhonen, E.S., Nordman, T. & Eriksson, K. (2015) Technology and its ethics in nursing and caring journals: An integrative literature review. *Nursing Ethics* 22(5): 561-76

Macaulay, M. & Norris, D. (2013). Ethical innovation in the public services. In Osborne & Brown (eds.) *Handbook of Innovation in Public Services*. Edward Elgar Publishing: 238-249.

Mol, A. (2008) *The Logic of Care: Health and the Problem of Patient Choice.* London: Routledge

Nakrem, S. et al. (2018). Care relationships at stake? Home healthcare professionals' experiences with digital medicine dispensers – a qualitative study. *BMC Health Services Research* 18(1): 26 pp.

Nilsen, A.C.E. (2017). When texts become action. The institutional circuit of early childhood intervention. *European Childhood Education Research Journal*. 25(6): 918-929.

Pettersen, T. (2011). The ethics of care: Normative structures and empirical implications. *Health Care Analysis* 19(1): 51-64

Pols, J. (2017). Good relations with technology: Empirical ethics and aesthetics in care. *Nursing Philosophy* 18(1): e12154.

Puig de la Bellacasa, M. (2017). *Matters of Care: Speculative Ethics in More Than Human Worlds*. Minneapolis: UM Press.

Ramvi, E., Manley, J., Froggett, L., Liveng, A., Lading, Å., Hollway, W. & Gripsrud, B.H. (2019). The Visual Matrix method in a study of death and dying: Methodological reflections. *Psychoanalysis, Culture & Society*.

Ramvi, E. (2015). I am only a nurse: a biographical narrative study of a nurse's self-understanding and its implication for practice. *BMC Nursing* 14(23). DOI: 10.1186/s12912-015-0073-y

Salling Olesen, H. (2017). Learning and experience: a psycho-societal approach. In Milan et al. (Eds) *The Palgrave International Handbook on Adult and Lifelong Education*. London: Palgrave Macmillan: 169-189.

Stahl, B.C. & Coeckelbergh, M. (2016) Ethics of healthcare robotics: Towards responsible research and innovation. *Robotics and Autonomous Systems* 86: 152-161.

Stenner, P. (2014) Transdisciplinarity. In T. Teo (Ed.), *Encyclopedia of critical psychology* (pp. 1987-1993). New York: Springer

Vagli, Å. (2009) Behind closes doors: Exploring the institutional logic of child protection work. Uni of Bergen. Dr philos thesis.

Vandelmeulebroucke, T. et al. (2018). The use of robots in aged care: A systematic review of argument-based ethics literature. *Arch Gerontol Geriatr* 74: 15-25.

Wastell, D. & White, S. (2014). Making sense of complex electronic documentation: socio-technical design in social care. *Applied Ergonomics*, 45(2):143-9.

Wastell, D. (2011). *Managers as Designers in Public Services: Beyond Technomagic*. Axminster: Triarchy Press.