

# Multistakeholder Service Design Framework for Design of Patient Care Pathways - A case of joint management of pain patients in the health, labour and welfare services in Norway

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## Abstract

Offering pain management services is a cohesive effort involving several stakeholders such as health, labour and welfare services. Globally, efforts are being made to develop streamlined patient care pathways, but there remains a specific need to improve and build the health care delivery services, for pain prevention, assessment, treatment, management, and follow-up. This raises the need for customised service design frameworks that provide guidance to both designers and healthcare providers in systematically involving multiple stakeholders to design patient-centered health care pathways. This paper presents a human-centered design case of service design for joint management of pain patients in the health, labour, and welfare services in Norway. This paper contributes directly to both the service design literature and health practice by proposing a multistakeholder service design framework. Paper also highlights strategic challenges and proposed solutions in the ongoing efforts in planning new national patient care pathways

Keywords: Service Design, Human centered design, Patient Care Pathways, Welfare Services

## Introduction

Chronic pain is a complex problem, and it is one of the causes leading to reduced quality of life and functioning, family problems, and loss of ability to work (Zimmer et.

al, 2022). The extent of long-term and complex pain conditions often leads to seeking disability benefits and long-term sick leave hence a serious public health and economic issue. Globally, it has been estimated that 1 in 5 adults suffer from pain and that another 1 in 10 adults are diagnosed with chronic pain each year (Golberg & Mc Gee, 2011). About 30 percent of the adult population in Norway report that they have chronic pain (Nielsen et al, 2019). Offering pain treatment and management services is a cohesive effort by several health sectors of society. It involves contributions of several stakeholders including public welfare services, specialists, general health professionals, and general practitioners. Health researchers have stated the need for pain management services to be beyond the sole responsibility of any one public health entity or of public health personnel, and to be a part of wellcoordinated public welfare support (Inst. Of Medicine US, 2011). Although global efforts are being made to develop streamlined patient care pathways, there remains a specific need to improve and build the health care delivery services, for pain prevention, assessment, treatment, management, and follow-up (Gorgon, et al, 2022).

Recent studies in Norway indicate that affected patients lack coordinated care from the various healthcare providers and other relevant agencies (Helsedirektoratet, Norway, 2022; Hervik, et al, 2021). Many patients experience a lack of cooperation between the various stakeholders; this applies both between the municipal and specialist healthcare services and between the healthcare system, the Norwegian Labour, the Welfare Administration (NAV), and other relevant bodies. In Norway, The Ministry of Health and Care has recently given the Directorate of Health the task of developing improved patient care pathways for chronic and complex pain conditions. (NFR project no 331986, 2022). Ongoing efforts are being made toward determining the needs and challenges before new care pathways for chronic pain management are tested and adjusted in a scientific way while being implemented throughout the country. In specific, Trondelag region will focus on the innovation in improving services with pain patient care pathways. Several of the national digital health services and patient pathways are currently being evaluated for patient needs (SINTEF, 2022). However, but none of the studies so far have developed an overview service design framework mapping the pain patient journey involving all the three main stakeholders. Recent research points to the need for a more systematic application of service design methodologies by health organizations involved in developing patient-centered healthcare pathways (Ramos, et al, 2021). Studies also reveal how involving patients in co-design can benefit patients with chronic pain (Wainwright, et al, 2014).

Addressing the above need by applying service design methodology and design thinking methods, the paper has a twofold aim- Firstly, to investigate the needs and challenges of patients and all key multi-stakeholders involved in the pain management pathway. (b) Secondly, the paper proposes an integrated service design framework



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incorporating multiple stakeholders along with strategic solutions and challenges regarding implementation. This is presented as an approach to provide an improved and integrated service, optimize information exchange for all the stakeholders involved in the patient care pathway. Hence, this paper contributes directly to both service design literature and health practice by contributing to the ongoing efforts in planning new national patient care pathways.

## Methodology

A human-centered design (HCD) methodology also popularized as design thinking was used as a basis for the study presented in the paper (Norman, 2012). HCD is characterized by involving users in the problem identification, idea development, and agile testing of the solutions. HCD has widely been applied in the development of health products (Jalote-Parmar, et al, 2010) and services (Carr, et al, 2011). Further, the study also applied a combination of service design methodology (Stickdorn, et al, 2018) and participatory design techniques (Simonsen & Robertson, 2013) to involve users and various stakeholders to design services. The study was conducted in two stages: Study A- to investigate the existing service design challenges between multistakeholders and Study B- to verify and get feedback on the service design proposal.

Study A- A contextual inquiry method (Beyer & Holtzblatt, 1998) was used to investigate the key challenges in the patient pain management services provided through Norway's National Welfare Scheme in the Trøndelag region. Semi-structured interviews were conducted with all the main stakeholders involved in the service delivery including advisors (case manager, job specialist and medical advisor) from the regional Norwegian Labour and Welfare Administration (NAV), a multi-specialty group of clinicians from the Pain centre at St Olav's Hospital (physiotherapist, psychologist, pain doctor and coordinating nurse) and general practitioner from primary health care and patients undergoing pain management treatment at the hospital. A total of (n-13) interviews with stakeholders were conducted (Figure 1). All the interviews took place at St Olav's Hospital, Trondheim, Norway.

Interviews were conducted by applying service design framework as a base for plotting the problems and defining the existing stakeholder journey map. Two interviewers conducted the interviews with one stakeholder at a time. During every interview, a user journey was created collaboratively with each stakeholder, mapping key touchpoints and interaction challenges with other stakeholders. The interviewee could also use post-it to write their comments and place them in the user journey. The affinity map technique (Beyer & Holtzblatt, 1998) was used to analyse and integrate all



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the findings from the interviews (Figure 2). The analysis resulted in mapping the current service design blueprint for the following four main stakeholders- Patient, NAV Veiledler (Advisor), General practitioner, and Psychologist at the Pain centre. Figure 3 illustrates as a sample the current user journey of the patient.

Study B- All the findings mapped in the user journeys was verified by the chief medical adviser of NAV to ensure technical correctness. After this, the user journeys for every stakeholder were integrated into a single solution service blueprint. The timeline illustrates all stakeholder interactions on the patient workflow and marks the key pain points (Figure 4). To verify and take feedback on the proposals, the integrated service blueprint along with key findings was shared in a focus group session (Sanders, 2011). A medical coordinator, a physiotherapist from the Pain Centre, a General Practitioner, and a medical advisor from NAV were present in the focus group.

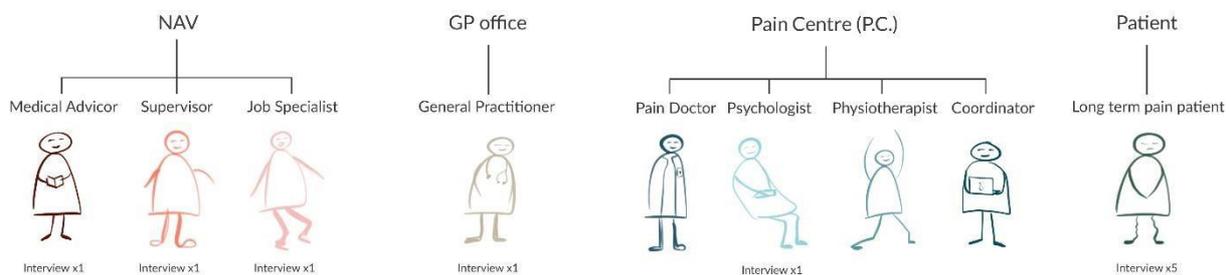


Figure 1. Interview plan of all the stakeholders



Figure 2. Affinity Map of the stakeholder interviews



## AS-IS USER JOURNEY

Patient

● Obligated  
 ● Optional

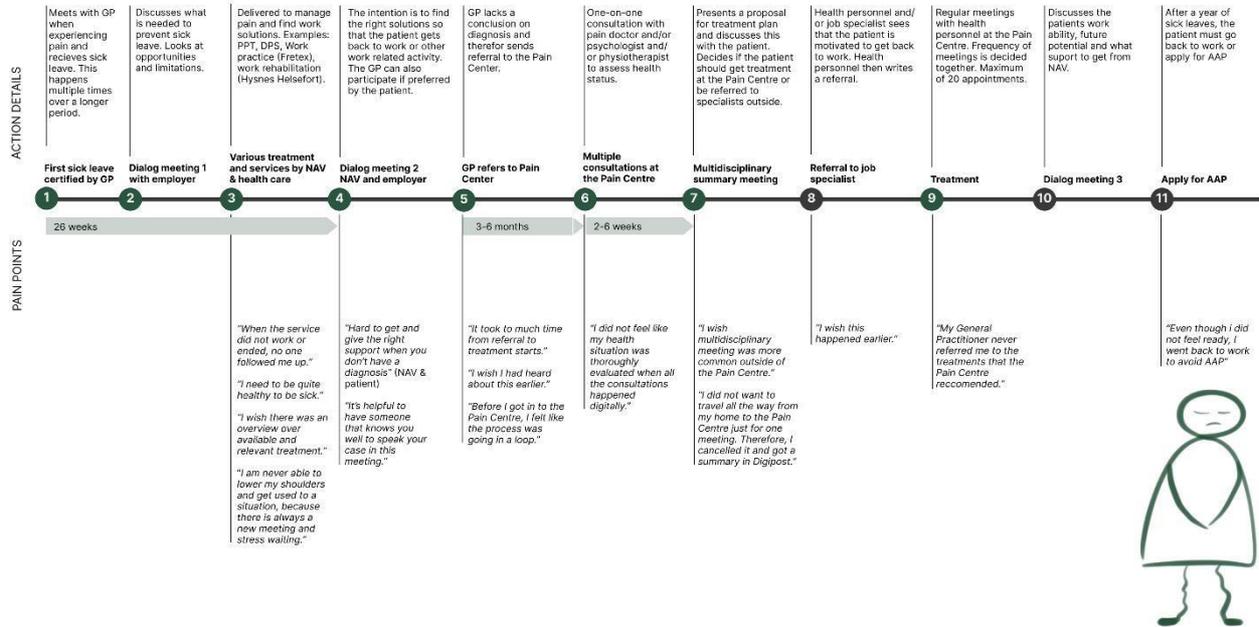


Figure 3. A part of the current service blueprint of the chronic pain patient accessing the health and welfare services from multiple stakeholders

## Results

The results of the study assisted in documenting the key challenges in the patient pain management services for all different stakeholders expected to collaborate through the national welfare scheme. The analysis of all the different stakeholder workflows aided in creating an integrated service framework of the patient journey including every touchpoint and interaction between the stakeholders. The results also revealed strategic findings and generic issues, which may aid in a further decision making while implementing patient pain management services.

### Current service design blueprint of key stakeholders

The service blueprint as seen in Figure 3, illustrates the patient journey at the onset of chronic pain identification in consultation with the General Practitioner. It shows all the touch points with various health care stakeholders the patient interacts with while getting treated and accessing the welfare services. The blueprint also demonstrates



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the pain points and expectations of the patient at each stage in the comments as extracted from the interviews.

## Proposed solution - Multistakeholder service design framework

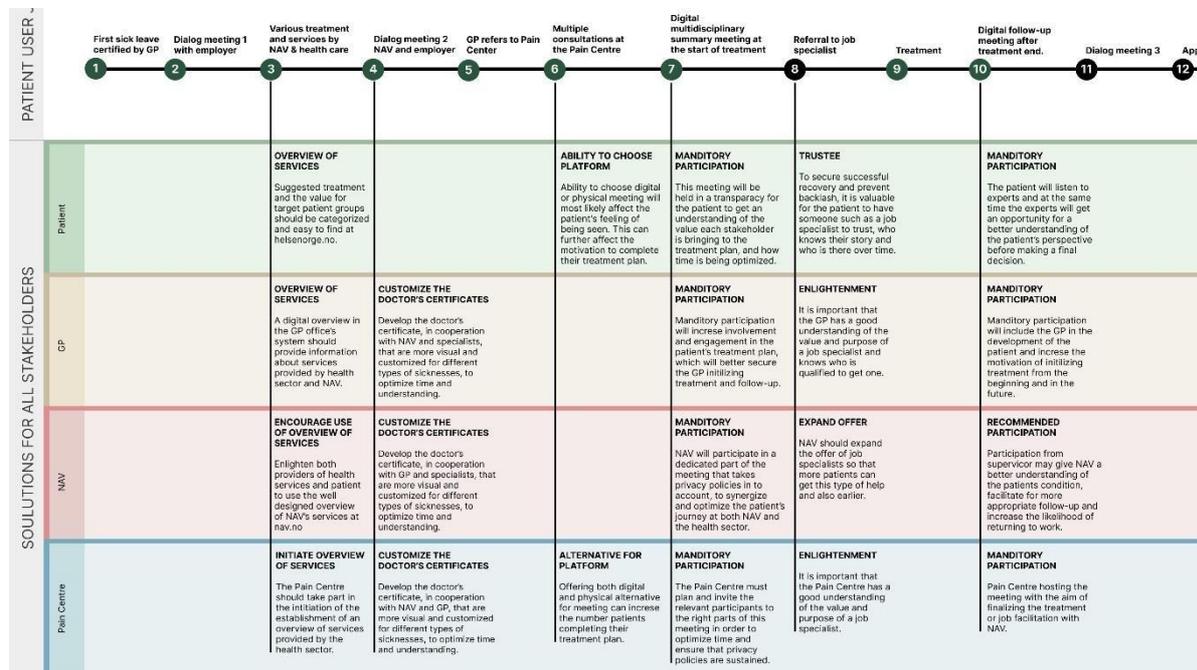


Figure 4. Proposed multi-stakeholder service design framework for mapping the patient user journey with all key stakeholder interactions on single process

An integrated multi-stakeholder service design framework was formulated to illustrate the patient journey and indicated interaction/solutions related to each stakeholder (Figure 4). The integrated framework brings together all stakeholders on pain patient workflow to illustrate representative key information exchange and action requirements for the management of welfare services. Currently the stakeholders work in silos and often don't have an overview of how their actions impact the overall patient workflow and hence the quality of treatment and welfare service management. This visualization aids in all the stakeholders viewing their responsibilities for interaction and information exchange in the pain patient workflow.

### Strategic challenges and proposed solutions for the patient care pathway

Analysis of the interviews revealed key issues in the patient care pathway. These issues highlight the need for strategic solutions to optimize patient care

- *Overview of services provided by and for different stakeholders*

The three main stakeholders involved in the patient care pathways for the treatment in pain management often work in silos. They often have a limited



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overview of the entire process involved with the overall treatment plan and procedure of the patient. As stated by several patients during the interviews—*“One must rely on self-searching for the various treatment services available, rather than being informed of the same”*. Consequently, there are procedural delays and breakdowns caused due to missing and often lack of timely information on procedures to the patient and other stakeholders. The proposed service design blueprint is a way to gather all available and relevant services to create a comprehensive overview for all stakeholders involved. In addition, it will reduce the patients’ responsibility to find services on their own. A process diagram should be made suited for all different stakeholders, this will lead to a unifying effect and will optimize the efforts of treating patients.

- *Specialized training for NAV advisors for a better understanding of chronic pain management*

NAV advisors handle various kinds of users to provide social and economic security while encouraging a transition to activity and employment through national schemes such as unemployment benefit, work assessment allowance, sickness benefit, pensions, and cash-for-care benefits. This makes it challenging for the supervisors to deeply understand specific user needs such as in this case chronic pain management. Consequently, it becomes difficult to deeply understand patient needs and be able to offer relevant services.

Additionally, this lack of understanding of the pain management process, can make it difficult for the NAV advisors to collaborate with General Practitioners and specialists in the Health Sector on creating a coordinated plan for the users. This may cause delays in the process. It also creates a feeling amongst the users that they are not seen and heard. As a solution, either specializing NAV advisors in pain management or providing regular domain-specific training will raise the general awareness of pain amongst NAV advisors. This will make it easier to offer the right services and more efficient pain patient handling.

- *Integrated digital service platforms for communication between stakeholders. of services provided by and for the different stakeholders*

Communication between the various stakeholders is established on different digital platforms. Hospitals are often slow to adapt to digital tools and at various occasions, still use paper-based documentation and communication.

Responses for queries are not necessarily sent with the same format and platform among different stakeholders. This leads to variation in routines and



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delays in communication, which creates uncertainty between both the patients and the stakeholders offering the services. By digitizing and reducing the number of platforms and having common formats for communication between stakeholders, the flow of information will be faster and easier to access. This can further reduce cases of missing and/or incomplete information and reduce waiting time for both service providers and patients. Additionally, to create a common understanding of the treatment process and better trust in the stakeholders, some common meetings involving all stakeholders can be held at strategic points in the patient treatment workflow.

- *Patient feedback system for experiences with different stakeholders with the GP as an intermediary point*

Patients often use several different services in the health and welfare during their sometimes long period of illness and treatment. These services are in some cases terminated for various reasons like positive development of patient, lack of results, dissatisfaction from the patient, or lack of need for treatment. Experience and information related to the patient from one service are not necessarily shared with subsequent services the patient uses. This leads to long and inefficient patient journeys and a lot of mistrust in the patient for the overall handling of treatment. As a solution, an integrated, digital feedback system could be established and it could be made mandatory to inform the GP about the patient's experience at the end of treatment, with the opportunity to share this with subsequent stakeholders' services used by the patient. This digital system should share patient treatment data between the different services so that redundant and repetition of information and delays can be avoided for a more efficient and adapted treatment.

## **Discussions- *Service design considerations***

The above results also bring into light the following methodological and contextual implementation issues which need to be considered before designing and deploying new services related to new pain management patient care pathway. Since multiple stakeholders are involved, it is critical that the following issues are considered in detail for creating a better understanding of the implementation context.

- *Integrated service design framework to integrate the voices of all stakeholders.*

Although, service design as a standard and generic methodology is seen as



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beneficial to bring the point of view of various stakeholders. The standard service blueprint does not allow all stakeholders to be integrated into a single framework. The standard touchpoints proposed in the generic blueprint were insufficient and not applicable in this case. Hence when mapping the final service blueprint, a multi-stakeholder integrated framework was newly formulated to integrate the process workflows of several stakeholders commonly working with the patient care pathway (Figure 4). Thus, this customization brings to light that service design methodology would benefit from further design of domain-based blueprints/ frameworks rather than using a generic service design blueprint. Additionally combining it with the HCD has helped ideate and test proposed solutions with the stakeholders for technical correctness.

- *Common understanding of work culture between stakeholders*

The pain management care pathways involve three main stakeholders-general practitioners, NAV, and specialist healthcare services from central hospitals. All these stakeholders represent different organizations that represent different domain knowledge and professional work culture. For example, when the specialist doctors make recommendations, they do so in their professional language, and it is sent to NAV's supervisor who is not trained to understand these professional languages which causes time and action delays. Hence, while designing and implementing new solutions, both the work and domain cultural issues need to be thoroughly investigated and considered.

- *Distribution of work and economics among stakeholders*

An integrated patient care pathway will involve several stakeholders to do perhaps extra work or even change their existing workflows. This may cause issues to fair and new distribution of the work and economic management between stakeholders. A comprehensive understanding and analysis are required to understand the existing workflows of each stakeholder, and their work overlaps and anticipates changes in the new patient care pathways. This will help in better work and economic coordination with mutual agreement between stakeholders.

- *Patient Data sharing protocols among stakeholders*

With newer laws in patient data protection, not all information is available for all stakeholders about the overall patient treatment plan or status. A comprehensive analysis is required to understand and perhaps create an



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information agreement between stakeholders along with the national policy of data protection. This will lead to developing new data sharing protocols among various stakeholders at different points of the overall timeline of patient care pathways. New service designed for shared information will reduce data and time delays in overall treatment.

- *Integration of digital and physical data sharing platforms among stakeholders*  
Each stakeholder is using several digital platforms along with physical channels of communication between the entire space of the patient care pathway. A challenge is that each organization has to continuously update digital platforms, which must interface with the new proposed health platform. Due to differences in platform, sometimes some information is lost and often delayed. Additionally, the overlay of physical and digital information sources leads to several pockets of information exchange through physical information is still not integrated. A more comprehensive information flow analysis is required to understand the existing digital systems used by various stakeholders to see how patient care pathway related information can be seamlessly integrated.

## Conclusion

Long lasting and complex painful conditions are a major health and social problem that leads to reduced quality of life and loss of ability to work. Patients often experience a lack of coordinated care from the various stakeholders involved in providing pain management services. This is applicable to various stakeholders such as general practitioners, NAV, and specialist healthcare services at the main hospitals along with the patients themselves. This study illustrates a case of service design for joint management of pain patients in the health, labour, and welfare services in Norway. The results of this study indicate the need and possible solutions to optimize the current pain patient care pathway by applying service design methodology. This paper proposed a multistakeholder service design framework to document the voices and needs of the various stakeholders involved in the patient care pathway on a single service blueprint. Initial study with stakeholders indicates that this framework increased the understanding of the information gaps, misunderstandings, and breakdowns in the patient care pathway between stakeholders. Further work is required to refine and test the proposed multistakeholder framework so that this can be applied as a generic tool for patient welfare pathways for other health issues such as mental care pathways. The paper also presents service design challenges and proposes strategic solutions towards designing sustainable patient care pathways.



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