

Design thinking in healthcare

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Question

This report was conducted to provide an overall snapshot of evidence around two related issues:

- A. A description of how design thinking has been used in healthcare
- B. A description of validated tools used to assess empathy/compassion

Search methods

An internet search was undertaken for both issues.

For issue A, search terms used: Design thinking methodology AND healthcare

For issue B, search terms used: empathy AND review AND scale OR scales OR measure OR measures OR measurements OR tools OR tool

Results

Issue A: 400 pieces of information were screened. Eleven examples of DT being used in healthcare are included in Table 1.

Issue B: Four systematic reviews (Yu (2008, 2009), Pedersen (2009), de Silva (2014)), were identified that summarised tools used to measure empathy.

Whilst, the search methods used in this report are not exhaustive, we attempted to overcome any limitation regarding the search and strengthened this report by assessing the reference list and citing papers of the included items for other relevant papers.

Summary of findings

Issue A:

A report prepared by Swedish Healthcare provides a succinct summary about design thinking (DT) (Tideholm 2015). Originally DT was mostly used in contexts with designing new products, but have come to include other areas such as services, strategic work and education (Liedtka, 2014). It has been used most industries and contexts amongst the most common are product development, problem identification, strategy, management work and workflow improvements (IDEO, 2015). Companies that have worked or are working with DT include Ford, Microsoft, eBay, JetBlue, Commonwealth Bank of Australia, 3M, GE, P&G, Philips Electronics, etc.

In their review of how DT is used within organizations in various industries, Carlgren, Elmquist & Rauth (2014) found that it is used both as a part of the formal product development process, but also as a supplementary method in order to find new more radical solutions. They also found that the extent to which the companies had adopted the methods varied greatly, from a whiteboard with post it

notes, to dedicating an entire warehouse as "experimentation playground" for DT work. The way DT is used to foster innovation comes down to what role innovation and innovation work has for the organization.

In healthcare, DT has been carried out as a method for improvement work and innovation within different organizations in recent years, primarily in the United States. The purpose of using DT and how it has been implemented varies, but usually the work is oriented towards product development, process improvement, or redesigning patient or employee experiences. Following, a selection of organizations where DT has been implemented will be described as an illustration of the diversity in how it has been applied in different settings. Some examples from the Swedish Report include: GE Healthcare; Memorial Hospital of South Bend; Mayo Clinic; Chief Andrew Isaac Health Clinic in Fairbanks and, Kaiser Permanente. Other examples from a broad internet search are also included in the table below. Within healthcare, DT is a relatively young concept still under development and search for definitions and appropriate forms to apply it. Several examples were identified but not all initiatives have reported outcomes.

Table 1. Provides details of identified settings where DT has been used in healthcare.

Table 1. Details of identified settings where DT has been used in healthcare

Location	Setting	Initiative/Process	Outcomes
<p>Kaiser Permanente Innovation Consultancy</p> <p>It is an approach that explores the value of human centered design in health care. The KP team brings fresh methods that liberate patients, frontline providers and managers to discover, design and implement new ways to improve the care experience of our patients and the work experience of our caregivers.</p>	<p>Diverse settings including different hospitals</p>	<p>The Innovation Consultancy and its partners developed a customized design thinking curriculum and collaborative learning network aimed at transforming health care professionals into “catalysts” — champions of human-centered design and on-the-ground innovators within their hospital systems and clinics. Catalysts help apply innovation and designs skills to discover new ways to advance their work.</p> <p>Aim: to improve the success of their Prevention & Wellness program</p>	<p>The 2013 participants showed a statistically significant improvement in their innovation skills, such as generating ideas, taking calculated risks, being entrepreneurial, developing workplace relationship effectiveness, and turning ideas into products, processes and services. Specific systemic changes reported include:</p> <ul style="list-style-type: none"> • Cultural change around innovation • Application of innovation techniques to other issues • Introduction of new technology and programs • Improved processes <p>Currently, more than 80 trained catalysts in California and New Jersey are leading 160 innovation projects across health care systems, public health institutions and safety net organizations</p>
<p>KP – related work:</p> <p>https://hbr.org/2010/09/kaiser-permanentes-innovation-on-the-front-lines</p> <p>https://xnet.kp.org/innovationconsultancy/projects.html</p>	<p>Diverse settings</p>	<p>Improving nurse knowledge exchange for better patient care</p> <p>https://www.ideo.com/work/nurse-knowledge-exchange/</p> <p>Exercise as Medicine (2013)</p> <p>A cross regional set of pilot behaviour change solutions to support our members in increasing their physical activity levels. This set of solutions builds off of the existing Exercise as A Vital Sign program at Kaiser Permanente.</p> <p>https://xnet.kp.org/innovationconsultancy/projectmove.html</p> <p>Getting Home (2003)</p>	

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		<p>A set of approaches including a "Journey Home Board" and supporting bedside literature and conversations that better connect both the mum and the care team in the baby's journey home from the hospital.</p> <p>https://xnet.kp.org/innovationconsultancy/journeyhome.html</p> <p>Sanctifying Medication Administration (2007) KP MedRite is a three-part system that provides a safe, reliable and human-centered approach for nurses to administer medications to our patients in Kaiser Permanente hospitals.</p> <p>https://xnet.kp.org/innovationconsultancy/kpmedrite.html</p> <p>Ghost Town No Longer (2009) NKEplus is a build on the original Nurse Knowledge Exchange that moved nursing shift changes to the bedside – improving communications between nurses and the patient to create a safer, stronger start to every shift.</p> <p>https://xnet.kp.org/innovationconsultancy/nkeplus.html</p> <p>Re-Thinking How We Manage Pain (2010) KP Painscape standardizes nursing practice for managing patients' acute pain and helping nurses coordinate during shift change to help the patient stay ahead of their pain.</p>	
<p>The Centre for Care Innovations — is a vital source of ideas, best practices and funding for California's health care safety net. By bringing people and resources together, to accelerate innovations for healthy people and healthy communities. They are:</p> <ul style="list-style-type: none"> • Thought leaders — providing clear, unbiased and reliable research and evaluations on what works and what's ahead • Facilitators — hosting a collaborative search for solutions that will improve health care delivery and transform the safety net into a model to emulate 		<p>The New Jersey Innovation Catalyst Initiative. It is designed to help safety net healthcare organizations solve problems by thinking and working differently, considering what's possible rather than just what's feasible. Building on CCI's success with similar initiatives in California, The Nicholson Foundation and CCI aim to grow a network of trained innovators ("Catalysts") in organizations that serve New Jersey's safety net, who can lead care</p>	<p>2013 Final Evaluation Report Findings by White Mountain Research Associates</p> <p>http://www.careinnovations.org/uploads/Catalyst_2013_Final_Report.pdf</p> <p>Key findings from the design thinking training, based on responses from the Catalysts, the following types of systemic change were identified.</p>

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<ul style="list-style-type: none"> Grant makers — offering critical resources to service providers in the field <p><i>Current CCI programs include:</i></p> <ul style="list-style-type: none"> Spreading Innovations <p>CCI is committed to making sure effective ideas take root—and helping safety net organizations put these innovations into practice without having to reinvent the wheel. Our Spreading Innovations program takes proven programs and helps them make the jump from one organization to another.</p> <ul style="list-style-type: none"> Innovation Catalyst <p>The Catalyst program creates a network of trained innovators who can introduce and champion innovation within their own organizations, and help other safety net organizations discover new ways to advance their work.</p> <ul style="list-style-type: none"> Data Analytics Innovation Centre for the Safety Net Safety Net Innovation Network Reimagining Care Challenge <p>The Innovation Catalyst Program and New Jersey Innovation Catalyst Initiative.</p> <p>The Catalyst program creates a network of trained innovators who can introduce and champion innovation within their own organizations, and help other safety net organizations discover new ways to advance their work.</p> <p>In 2013, 22 Catalysts were accepted into the program—14 from eight safety net organizations and 8 from three Kaiser Permanente locations:</p> <ul style="list-style-type: none"> Hill Country Community Health & Wellness Centre Kaiser Permanente - Greater Southern Alameda Area (GSAA) Kaiser Permanente - Los Angeles Medical Centre (LAMC) Kaiser Permanente - South Bay Medical Centre LADHS Olive View-UCLA Medical Centre Petaluma Health Centre Riverside County Health System San Francisco Public Health Department/SF General Hospital San Joaquin General Hospital San Mateo Medical Centre 		<p>transformation efforts. Our objective is to support leaders who are interested in enhancing their knowledge of human-centered design, building or improving innovation strategies, and applying them to critical challenges in their organizations.</p> <p>In Phase 1, with a grant of \$10,000, each selected organization's team of three to five receives training in human-centered design and innovation. The curriculum focuses on four key areas: Empathy, Exploration, Experimentation, and Entrepreneurship. Then they apply these skills to the problems identified in their proposals to create innovative solutions.</p> <p>In phase 2, the initiative supports testing of new and innovative ideas that have the potential to significantly impact the focus areas outlined below to improve care for safety net populations. At the end of Phase 1, teams will have proposed the solution they would be interested in testing and implementing in Phase 2. Teams that progress to the second phase will be eligible to receive an additional \$25,000, as well as further coaching and support. In this phase the Initiative will focus on projects that seek to improve access to care, increase patient engagement, or address social determinants of health.</p> <p>http://www.careinnovations.org/programs-grants/catalyst</p>	<p>These are early signs that Catalysts are indeed making inroads at their institutions across a continuum of change activities around innovation:</p> <ul style="list-style-type: none"> Spurred culture change around innovation Applied innovation techniques to other issues Introduced new technology Introduced new programs Process improvement


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<ul style="list-style-type: none"> West County Health Centres CCI 2015 cohort of innovation catalyst grantees were made up of California-based clinics supported by BSCF. A second group of organizations outside of California is supported by Kaiser Permanente Community Benefit.			
Calvary Health Care (with The Strategy Group)	http://thestrategygroup.com.au/wp-content/uploads/2015/09/TSG-Case-Study-FA.pdf	<p>Design Thinking at Calvary Health Care aimed to:</p> <ul style="list-style-type: none"> understand the potential communication problems in an integrated care setting from the clinical perspective, and how these problems are preventing optimum care outcomes for the patients observe integrated care in real time, with a view to developing insights and solutions to the observed communication problems develop solutions to delight end users, solving real problems in a very meaningful and insightful way develop a model of research and engagement that can be used in other integrated care settings. <p>Observations of daily clinical life at Calvary Health Care gave The Strategy Group a front row view into the typical activities of an integrated care organisation.</p> <p>While the insights gained from this process differed across integrated care units, many common problems were observed, including:</p> <ul style="list-style-type: none"> confusion from clinicians about roles and responsibilities across unit boundaries limited care coordination for patients who are receiving care for a variety of conditions limited communication of clinician directives and patient wishes across unit boundaries a lack of resources, systems and processes to support communication and information sharing between integrated care units. 	<p>Using Design Thinking and empathy-based observations, The Strategy Group was able to understand the key issues and pain-points in the delivery of integrated care at Calvary Health Care.</p> <p>Working with clinicians and stakeholders from Calvary Health Care and Telstra, five key communication and information technology solutions were formulated:</p> <ol style="list-style-type: none"> In-building mobile coverage Portable patient records Multi-platform integrated messaging for clinicians, patients and carers Multidisciplinary rostering solution Closed community social media to facilitate patient, carer and clinician communication. <p>Design Thinking ensured the identification of meaningful and impactful solutions that will help Calvary Health Care and its clinicians to deliver more integrated, efficient and safe healthcare for patients, their families and carers.</p>

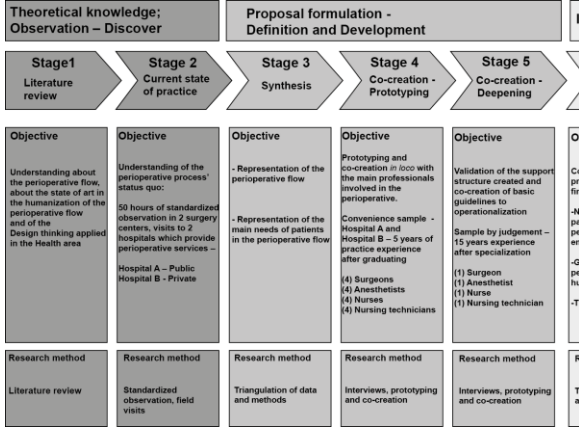
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		These common problems highlighted an unintentional disconnection in the delivery of care across integrated care units, and the resulting impact on patients.	
Google search – design thinking in healthcare - 408 results			
Broward Infusion Centre with Phillips Healthcare Transformation Services	Philips created an exceptional patient experience for the Broward Infusion Centre leveraging design thinking in healthcare. Our Healthcare Transformation Services consulting team worked closely with the Broward staff to gain insights into the patient needs, workflow, and patient flow to create an innovative patient environment based on data, patient flow, and experience inputs. We helped them to improve efficiency and create a service culture. Broward has revamped all aspects of the patient experience and designed for an anticipated increase in patient service needs.	Redesign and co-creation of new service delivery set-up and flow	“Customer satisfaction score improved to 100% in the 2 months” Nurse Manager Winner of Patient Experience 2014 Award Winner (Avatar)
A Design Thinking Approach to Effective Vaccine Safety Communication. Seeber et al. Current Drug Safety, 2015, 10, 31-40	The Vienna Vaccine Safety Initiative, an international think tank aiming to promote vaccine safety research and communication, and the School of Design Thinking in Potsdam, Germany, the first school for innovation in Europe.	The problem: To encourage parents, children, and medical staff to communicate openly the prevention of infectious diseases, all parties should be actively involved in the discussion about vaccine safety and effectiveness. The solution: A 12-week (advanced track) Design Thinking project dedicated to facilitating the dialogue between doctors and parents regarding the prevention of infectious diseases. The process:	As a result they can generate ground-breaking ideas by combining their expertise and different points of view. The team agreed to address the following design challenge question: “How might we enable physicians to encourage parents and children to prevent infectious diseases?” The current article describes, step-by step, the ideation and innovation process as well as first tangible outcomes of the project.

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		<p>How Design Thinking Works</p> <p>The iterative work process is influenced by the way product designers would approach a given problem. The process of Design Thinking involves several consecutive steps to be repeated and iterated in a circular manner. The first step for the Design Thinking team is to understand the scope or content of a given design challenge, to frame a user-centered approach and to observe potential end-users of a service or product for additional insight and empathy. This includes the uncovering of unconscious motives, latent needs and central conflicts. Next, the Design Thinkers aim to generate a point of view, as a consensus process within the multi-disciplinary team to define a “design stance” representing perspectives gained from qualitative research. Only after the initial steps have been reiterated multiple times, does the team finally move on to the ideation of possible solutions. Aiming to maintain a visual and intuitive approach to the design question at hand, rapid prototyping is key, leaving sufficient time to test and generate end-user feedback. Whenever issues are encountered, the previous steps are reiterated until user feedback finally indicates a breakthrough. Similar to product designers, multiple prototypes are generated to allow for selection and refinement of the most impactful and user-friendly approach. Multiple iterations and feedback loops force the team to keep the “big picture” and the end-user perspective in mind.</p>	<p>Summary:</p> <ol style="list-style-type: none"> 1. In 2011, a non-profit collaborative Design Thinking project was conducted at the School of Design Thinking in Potsdam in collaboration with the Vienna Vaccine Safety Initiative in Berlin, Germany. 2. The project focused on the quest for innovative solutions to the following design challenge: “How might we enable physicians to encourage parents and children to prevent infectious diseases?” 3. Parental anxieties and confusion were identified as key triggers for emotional conflicts regarding the risks and benefits of routine childhood immunization. The time of prenatal care is crucial as a starting point for child safety and vaccines. 4. Rapid prototypes were developed to help shifting the focus of vaccine benefit-risk communication with first-time parents from the stressful first months of life to prenatal care. 5. As a first concrete deliverable, a novel digital vaccination record was developed, the VAccApp™, a modern m-health tool encouraging active vaccine communication between doctors and patients. 6. The VAccApp™ will be at hand in emergency situations, may serve as backup to paper-based records and as a tool for patient empowerment providing validated and evidence-

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<p>Designing With Empathy: Humanizing Narratives for Inspired Healthcare Experiences. Carmel-Gilfilen et al Health Environments Research & Design Journal. 2016, Vol. 9(2) 130-146</p> <p>Related link: http://conf.idec.org/2014/innovati-on-by-empathetic-design-narratives-of-learning/#more-133</p>	<p>outpatient cancer care facility</p>	<p>The project involved designing a two-story prototype facility of approximately 46,000 square feet and focused on designing public areas including the lobby, public restrooms, a resource centre, and pharmacy; clinical areas for radiation and infusion along with their support spaces; and staff areas including offices, conferencing spaces, and break areas. In addition, the program specifically required empathetic design be considered but did not explicitly prescribe how that would be accomplished. Empathy was interpreted differently by each team and offered amenities such as a cafe, healing gardens, spaces for alternative medicine, and those that supported spirituality as well as wellness and advocacy. The intent of this case study is three-fold; 1) to explore the multiple dimensions of empathy from patient, family, and staff perspectives 2) to explore, embrace, and incorporate insights on empathy through the use of narrative inquiry, 3) to propose processes and strategies that lead to innovative solutions that contribute to the knowledge base on empathy in healthcare.</p> <p>The process: The studio project involved iterative phases dedicated to research, narrative inquiry, and collaboration.</p> <ol style="list-style-type: none"> 1. An initial literature review about issues relating to empathy, cancer care, the patient experience, caregiver needs, and design factors. 2. Benchmarking, observations, and interviews gathering first-hand experiences from cancer patients and survivors. 	<p>based vaccine-related information using demystification techniques.</p> <p>Narrative results presented only: Opportunities for rethinking the patient and staff experiences surfaced via education and engagement spaces, waiting areas, art therapy spaces, and advocacy rooms</p> <p>Patient reception , waiting spaces and treatment areas were produced and included: Public empowerment zone Private empowerment zone Advocacy centre Story wall Healing gardens Art therapy space Private infusion treatment Semiprivate infusion treatment</p> <p>Implications for Practice:</p> <ul style="list-style-type: none"> • Designers can and should play a critical role • in shaping a holistic healthcare experience by creating empathetic design solutions that foster a culture of care for patients, their families, and staff. • Narrative inquiry can encourage design creativity and innovation in considering the end users of the spaces—patients, caregivers, and families—from a whole-person perspective. • Narrative inquiry offers an effective means to surface

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		<p>This intensive evidence-based process informed the stories crafted verbally, visually, and in writing. As the process unfolded the student teams then created process books, and translated the central themes of their stories into a focused project solution, incorporating impactful story-telling in key presentation points during the process.</p>	<p>misconceptions about end users and tensions between stakeholders that can be reconsidered in the design to create more satisfactory outcome.</p> <ul style="list-style-type: none"> • Narrative inquiry can be learned as a design tool and can be integrated into predesign research, schematic design, and in final solutions to reinforce empathetic solutions showing strong alignment between individuals and environments. <p>Summary: http://conf.idec.org/2014/wp-content/uploads/sites/2/2014/01/ABS2690_InnovationbyEmpatheticDesign-Appendix.pdf</p>
<p>Mayo Clinic</p> <p>The design thinking and the health services: the competitive differential through the humanization of patient experience (Caulliraux 2015)</p>	<p>Analysis about the Mayo Clinic was performed through the systematic review of academic and technical literature.</p> <p>Context The lab evolved into a dedicated centre – Centre for Innovation (CFI) – that works as a kind of an incubator for new ideas to be achieved. The new concepts explore all the stages of the care supply, considering the preventive health, the initial contact made by phone, the medical appointment,</p>	<p>As mentioned in Case study by Yale business school, (2012): The divergent thinking is the key for the fusion of the Design Thinking with the medical practice in the Mayo Clinic. By bringing together professionals from different disciplines in conducting participatory research centered on the human being – the essence of the Design Thinking – the issue is framed and developed under a light different from the usual. The work process includes planning, research, synthesis, prototyping and implementation.</p> <p>(link to image: https://bjopm.emnuvens.com.br/bjopm/article/viewFile/V12N2A11/BJOPMV12N2A11)</p>	<p>In order to change the traditional care model of Mayo Clinic, the CFI, initially understood what led the clients to look for the hospital – high quality and specialized care. By understanding the essence of the value proposition, the CFI was able to start to explore and develop based in their clients' demands. The objective was to migrate from the old centralized model of care, to a concept of integrated care delivery network, which aims to be connected to 200 million people in 2020.</p>

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	<p>the diagnosis, the problem treatment and the aftercare.</p>	 <p>The main point of the process is the research, through which the current scenario is mapped, allowing the coherent idealization of future scenarios. In the experimentation phase, one seeks to achieve promptly several concepts, aiming its fast trial and the insights generation. In the synthesis stage, the several findings are organized and prepared for the prototyping, through which the concepts will be achieved, tested, evaluated and refined.</p>	<p>The innovation needs propitious environment to happen. Therefore, the CFI possesses several specific spaces to develop new concepts. The “Healthy Aging and Independent Living Lab”, for example, is an initiative performed together with a local institute, in where live 400 elderly. A lab was created in loco, consisting of an area for common use of residents. In this area, new products and services what may facilitate the independent and health life of the elderly, are tested.</p> <p>Design Thinking and Health Service</p> <p>As it has been observed in Mayo Clinic’s case, the Design Thinking was first used to understand the potential of the Institution in terms of internal resources, clients, market positioning and value proposal. After the development of some interventions in the Hospital, it was created an attachment to the same laboratory, whose mission is to innovate consistently in the interaction between patients and the Mayo Clinic, using the Design Thinking as a guiding methodology.</p>
<p>“Humanization of the perioperative experience of the elective patient”</p> <p>Ref -</p>	<p>20 semi-structured interviews with health professionals, 20 interviews with ex-patients, 50 hours of standardized observation, visits to 2 hospitals which provide perioperative services, besides moments of</p>	<p>Inspired mainly by the double diamond methodology, the research in question was structured according to 3 big stages: Theoretical Knowledge; Proposal Formulation;</p>	<p>Several prototypes were created, tested and refined <i>in loco</i>, enabling the understanding of the needs of patients in physical, emotional and cognitive levels, during the 16 stages of the perioperative. Based on the mapped needs, 28 guidelines were</p>

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<p>THE DESIGN THINKING AND THE HEALTH SERVICES: THE COMPETITIVE DIFFERENTIAL THROUGH THE HUMANIZATION OF PATIENT EXPERIENCE (Caulliraux 2015)</p>	<p>co-creation and prototyping.</p> <p>Context The justification of this research is found in the lack of humanization proposals for the perioperative flow as a whole, whereas, after mapping through horizontal literature review as well as field visits, one observed that the texts about humanization, approach the theme in a partial way, and usually from the perspective of the involved health professionals. The use of Design Thinking methodology justifies itself by its proposal of comprehension, focused in the human being through a holistic and collaborative approach, besides the several cases mentioned in the literature about the success of its application in the health area.</p>	<p>Implementation – which are unfolded into 6 steps – Literature Review; Current State of Practice; Synthesis; Co creation – Prototyping; Co creation – Deepening; Final Proposition. The figure below summarizes the main methods used and the objectives of each step of the research: (link to image: https://bjopm.emnuvens.com.br/bjopm/article/viewFile/V12N2A11/BJOPMV12N2A11)</p>  <p>There were 20 interviews conducted with former surgical patients, 20 interviews with health professionals involved in the perioperative, 50 hours of standardized observation in 2 surgery centres, visits to 2 hospitals which provide perioperative services, review of national and international related literature, besides prototyping and co creation moments with the involved employees. Through the first three stages, the researcher acquired knowledge about the state of art and about the status quo of the studied phenomenon</p>	<p>proposed for the humanization of the perioperative, and then performed a narrative exercise about the humanized flow. The results seek to ensure the quality and safety of the patient, the provision of all necessary information, the ambience in order to have comfort and privacy, the team training to access the minimum communication protocols, the creation of a virtual portal for teaching and co-creation, besides other proposals that seek value and meet the needs of patients in the perioperative.</p> <p>Design Thinking and Humanization of the perioperative experience of the elective patient In the case of the humanization of perioperative flow of the elective patient, firstly they were held moments of observation and field visits, interviews of health professionals and former patients, for in the end, to be performed moments of prototyping and co-creation. Through the Design Thinking, the Researcher understood the real human needs and proposed guidelines for the humanization of the perioperative flow, besides a narrative inference about humanized flow.</p>

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		<p>– perioperative flow, while during the last three stages, in addition to the empathy development with employees, the concepts have been tested and improved collaboratively.</p>	
<p>Seton Healthcare Family Ref - https://www.seton.net/medical-services-and-programs/innovation-technology-commercialization/news/baby-design-thinking/</p>	<p>Design Thinking methodology allowed us to intimately understand the barriers new parents face (from the beginning of pregnancy until the baby is one year old) as well as the motivations, perceptions and needs they have around health and wellness.</p>	<p><i>The New Parent Experience</i> project, 12-week project that consisted of three (primary) research activities:</p> <ul style="list-style-type: none"> • Immersion: Toured various Hospital Labor and Delivery units, Area Birth Center, used parenting/baby digital/online resources, visited baby retail shops. • In-context interviews • Expert interviews <p>In-context and expert interviews: We interviewed a local OB/GYN, midwife, doula and a birthing center manager. We spoke to 13 families in their homes – the goal of this being to understand REAL behavior in context, rather than asking people to predict behaviors. This led to understanding their values, mental models, motivations, and expectations through the observation of emotion, language, social roles and rituals.</p> <p>Synthesis:</p> <ul style="list-style-type: none"> • Hundreds of data points, and sticky notes <p>Created participant profiles to capture data about each family, and created insight board to sort data (observations) across participants to find high-level themes</p> <p>Concept Development (and began to generate ideas based on those themes)</p> <ul style="list-style-type: none"> • Journey Mapping insights <p>Used a Design Thinking technique called Journey Mapping to plot the data points on a map called the “Baby Journey.” We created a journey framework which highlighted insights</p>	<p>Author provided information that the project was used as a case study to demonstrate the potential for the development of innovative concepts by employing a design approach in healthcare – a process and methodology brand new to their 11-hospital organization.</p> <p>Unfortunately, at the time of this project they did not have executive buy-in and support to move forward with any of the concepts.</p>

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		and opportunities – mapping the interaction with healthcare providers before and after baby, highlighting “happy” moments of celebration across that timeline and also major sources of stress. We also characterised different time periods within that larger timeline.	
<p>SERVICE DESIGN & HEALTHCARE INNOVATION: from consumption to co-production and co-creation</p> <p>The RED team co-designed and experimented with people new service prototypes aiming at providing tools to people to take care of their own health, becoming in this way co-creator of their services.</p> <p>The authors have selected four completed design projects that applied design thinking to innovate healthcare services. (Two of which were directly linked to patient experience in hospital setting)</p> <p>Ref - SERVICE DESIGN & HEALTHCARE INNOVATION: from consumption to co-production and co-creation (Freire 2010) ServDes. 2010 Second Nordic Conference on Service Design and Service Innovation</p>	<p>Living well with diabetes cases (RED team Design Council)</p> <p>This service design project was developed with the Bolton Diabetes Network (BDN) in order to create a new service for helping people live well with diabetes. The main aim of the project was to create a service integrated with individuals’ everyday lives, not focused solely on their disease.</p>	<p>RED team applied user-centred research methods (i.e. interviews, observation and generative tools) and co-design methods (i.e. workshops and prototyping techniques). They engaged in the process BDN, Bolton residents, and Bolton Primary Care Trust (PCT) staff. They used the Design Council double diamond method articulated in two main phases: ‘shallow dive’ (discovery) and ‘deep dive’ (define, develop and deliver). Both stakeholders and users were involved mainly in the Discovery and Develop phases, sharing their knowledge and prototyping with the design team.</p>	<p>SERVICE OUTCOMES: The RED team created Agenda Cards, self-diagnosis cards to support the collaborative process of care planning between the patient and the doctor. Combined with Agenda Cards, the team also developed the concept of a new role to this service (ME2 coach): a personal trainer for people with diabetes. Of the various solutions suggested, The Bolton Diabetes Network decided to pilot just the BoND Agenda cards. They launched the BoND programme (Bolton’s New Deal for Diabetes) to health professionals in May 2006, along with a range of other patient education initiatives. They also made “Agenda Cards” available on the Internet with links to other information resources. Although the Bolton PCT were very proud of the work that they have done with RED and expected that it would be used extensively in Bolton to support diabetics patients, the project did not go beyond the pilot phase; the Programme Manager of Bolton PCT said that <i>“unfortunately the clinicians were very reluctant to use the cards and found them too time consuming in consultations”</i>. When asked why the</p>

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	<p data-bbox="651 443 1066 536">“ENable Team” (Live work) exploring how to improve care to people with Multiple Sclerosis.</p> <p data-bbox="651 568 1066 778">Recognising the difficulties that MS patients have in accessing different professionals (a diverse range of specialists as their conditions vary along the years), a design for a new service model for MS sufferers was developed.</p>	<p data-bbox="1088 443 1671 1241">NHS Institute set up a team to support Ealing PCT which comprised representatives from NHS Institute’s Service Transformation team and service design consultancy Live work, with the intention that this project might help the NHS understand how the design method could help medical professionals and managers to innovate services. The team aimed to understand the problem and the service experience from the point of view of the patient, their family or carers, as well as frontline staff and other stakeholders. They followed four main phases: discovery, define, develop and deliver. Live work led the discovery phase, conducting interviews, observation, shadowing, service mapping and timelines of events. In the Define phase, the team synthesised their understanding of people’s experiences in <i>user profiles</i>, with photos and quotes, and developed <i>ideas sketches</i>. In the Develop phase, the team designed a <i>blueprint</i> for the kind of patient experience they were seeking to create. In the Delivery phase, the Live work team detailed the <i>touch points</i> indicated in the blueprint, to deliver the service experience, such as websites, and various communication tools.</p>	<p data-bbox="1693 225 2141 443">project didn’t go ahead, a RED team member mentioned how <i>“there was a fundamental error that both groups made [...] we didn’t involve, early enough in the project, the people who might be able to carry the work on afterwards”</i>.</p> <p data-bbox="1693 443 2141 1394">SERVICE OUTCOMES: ENable is the service outcome of this process, a new community neurological rehabilitation and enablement team, which integrates the Ealing Primary Care Trust and the London Borough of Ealing Social services, with a multidisciplinary team (Physiotherapist, Occupational Therapist, Speech & Language Therapist, Counsellor, MS Nurse Specialist, Clinical Psychologist) accessed by a single point of referral and contact. The service was successfully implemented, and although it has been difficult to measure the real impact of the service in terms of reduction of A&E admissions, the ENable team manager confirmed that the project has achieved good results and the service has a good reputation in the local area. As a result, the patients recognised that the Ealing PCT services have changed and improved: <i>“I do not have to keep ringing everyone, I just phone Emily (her social worker) [...] you feel as you were protected [...] I’m much happier now than I was two years ago [...] it has improved my quality of</i></p>

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			<p><i>life because I do not have to worry about my health". They also have satisfaction research results that show 81% of patients have their needs met by the service.</i></p>
<p>The Princess Royal Spinal Injuries Unit, Sheffield (a supra-regional centre and is the second largest in the UK, catering to a population of around 9 to 10 million)</p> <p>Ref - Improving self-efficacy in spinal cord injury patients through "design thinking" rehabilitation workshops (Wolstenholme 2014)</p>	<p>This project builds on this work by aiming to explore if the sessions could allow patients with Spinal Cord Injury (SCI) to have a greater say in their own rehabilitation, and see what positive effect this could have on helping them to deal with the life-changing effects of SCI.</p>	<p>"design and rehabilitation" project</p> <p>Project Design (and methodology): Building on pilot workshops, a range of creative activities chosen to illustrate various parts of the "design process" were created. These were to take the form of group activities where two or more participants would spend an afternoon or morning with the design team to build up skills and understanding of design thinking.</p> <p>The team had previous experience of delivering such workshops to a range of stakeholders, from professionals to young people, and knew that there was added value in working in groups. There was no-one with experience of delivering these workshops to inpatients.</p> <p>There was initial success in finding like-minded people who undertook the sessions together. However, it became clear that this was unusual. Participants in subsequent group sessions had different approaches to learning, different levels of engagement, and different timetables for their traditional rehabilitation which made it difficult to find mutually acceptable time slots.</p> <p>The team met to discuss this and proposed a different approach based on their experience, moving to 1:1, 45 minute sessions integrated into their rehabilitation timetable. Again, the ability to adapt the nature and delivery of the intervention was an important consideration.</p>	<p>The qualitative interviews showed two key themes around learning and experience. These are illustrated below with quotes from participants.</p> <p>Patient learning: Design thinking is a long term shift in thought processes. At the end of the workshops we had positive interview feedback about a change in peoples thought patterns and approaches suggesting success. Participants stated that they had used the skills learned, some as a general change in mind-set, and others in more specific ways such as skills in directing care. One patient in particular managed to overcome a problem with part of a journey home overseas during the session.</p> <p>"I used it when thinking around setting a routine at home, the activities give a framework."</p> <p>Patient experience: The project had a positive effect on the quality of the service and the experience of patients; interviews show that participants felt it was a positive addition to their time on the unit viewing it as an additional rehabilitation therapy that provided mental stimulation currently not</p>

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		<p>In the project the sessions were delivered by design researchers from Sheffield Hallam University Art and Design Research Centre who worked closely with the occupational therapists and other clinical staff to ensure that the workshops were appropriate from a clinical perspective.</p> <p>The final version of the workshops comprised five topic areas, delivered over four to five, 45 minute sessions. The sessions worked through a series of activities based on the pilot project but developed by working with patients and staff over the first few months of the project. The sessions developed understanding in the patients about the design thinking approach and culminated in a practical "challenge" linked to the individuals own circumstances.</p> <p>The workshops have been transformed into a tool kit with resources and instructions that can be used by any member of staff to deliver the sessions, as well as by volunteers such as those who work with the unit from the spinal injuries charities.</p>	<p>explicitly served on the unit. Participants stated that they would have liked more of the sessions. "It was more about my mental recovery whereas everything else is about my physical recovery; it was the only really mental exercise I got to do in the hospital."</p> <p>"Very enjoyable, it gave us an opportunity to think outside the box, which we hadn't done for a long, long, time..."</p> <p>The *EQ5D, demonstrated a significant positive change over time, as did the *PAM. The PAM in particular is a key measure in that the participants were more activated, more likely to think creatively about their futures, and more likely to set goals after the intervention. This has big implications in terms of the timing of rehabilitation interventions to get the best results, or the nature of interventions to move people to the point where they are likely to succeed in their rehabilitation. There is considerable clinical interest in this measure that is a direct result of this project.</p> <p><i>* EQ-5D-3L is a five item preference-based quality of life measure that can be used in economic evaluations to estimate quality adjusted life years (QALYs). The instrument asks five questions on mobility, self-care,</i></p>

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			<p><i>usual activities, pain, anxiety, and depression</i></p> <p><i>*PAM is a Patient Activation Measure (PAM) serving as both predictor of compliance and outcome measure of the workshops</i></p>

Issue B:

Empathy is measured many ways in healthcare, including; surveys with patients, surveys with professionals, simulations/observations and interviews (de Silva 2014).

This report explored all of the research around how to measure patient-centred care. It has been identified that the Jefferson Scale of Physician Empathy (JSPE) and the Consultation and Relational Empathy score CARE are both the most popular tools in the literature used as valid and reliable tools to measure empathy. Each scale is slightly different with the JSPE designed to measure physician empathy, and the CARE tool has been designed to be used in primary care to measure a patients perceptions of empathy.

There have also been a total of 20 tools used to measure empathy identified in the nursing context (Yu 2008), and 38 tools in the medical context however, only 8 of these tools have been validated and shown to be reliable (Pederson 2009). Table 2 shows a summary of the validated and reliable tools used to measure empathy.

It is evident that there is debate regarding the assessment of empathy, and whether empathy levels can be improved or maintained (Yu 2008). In addition to this, there is also comment around what is precisely being measured when using each of the different tools. For example, it has been said that there are often absent empathy definitions in each tool, and some tools are designed in a manner that mean they measure cognitive empathy and others measure emotional empathy (Pederson 2009).

In a recent systematic review, the two most commonly used tools were identified as the JSE and the CARE. Reviews of the evidence have previously taken place in measuring the tools used to quality empathy (Yu 2008 and 2009, de Silva 2014). Research has also been conducted in reviewing the evidence of measuring empathy in medical training (Pedersen 2009, Hemmerdinger 2004).

In the review by Yu (2008) numerous tools have been used in nursing, and as a result, there is no consistency in results which is further hampered by poor study quality.

Physicians have the highest level of empathy when compared to nurses, medical students, midwifery students, and nursing students (Jefferson Scale) however, nurses and paediatricians scored higher in empathy levels than hospital-based physicians. It has also been reported that nurses were more likely than physicians to be able to view things from patients' perspectives, to stand in patients' shoes, and to believe in the therapeutic value of empathy (Jefferson scale). The quality of these studies is questionable as well as the fact that this scale was designed to measure empathy in the medical context (Yu 2008).

Mixed results exist for empathy levels and age, clinical experience, education level, gender, work place setting. No relationship between empathy and attitudes to patients can also be drawn (Yu 2008).

The effect of empathy on patient outcomes is also inconclusive (Yu 2008).

Questions are raised as to how empathy is measured. Six measures solely used self-assessment. These tools are suitable to measure the cognitive, moral and emotional aspects of empathy. However, self-reporting bias may occur and these measures cannot be applied to assess empathic behaviour. Three measures (CIDC, RES, VAS) were developed to assess empathic behaviour observed by a trained judge or a peer based on participants' empathic performance. This method of measurement is more objective than self-assessment. However, it raises a question about the accuracy of interpretation of the behaviour being measured. Inter-rater reliability established in a tool's original development cannot be assumed in other studies. In addition, non-verbal interactions and respondents' attitudes cannot be captured. (Yu 2009)

Most items do not measure patient ratings and therefore, do not provide insight into patient perspectives. Of those scales that have measured patient viewpoint, they do not cover all of the domains of empathy. For example, cognitive, emotive and moral dimensions can be measured via self-rating scales however, the behavioural domain should be measured by someone in receipt of empathy (Yu 2009). Currently, a tool that measures all domains is not available.

Table 2. Summary of the validated and reliable tools used to measure empathy (Adapted from De Silva, 2014; Hemmerdinger et al., 2004)

Tool name	Description	Domain	Main concepts measured	Administration	Setting	Country of development	Countries tested in	Number of method publications 2000-2013	Tested with individual samples of more than 300	Valid?
Caring Behaviour Measurement	Survey	Behavioural	Caring behaviours	Patient-rating	Hospital	China	China	<5	No	Yes
Caring Behaviour Inventory	Survey	Cognitive/emotional	Caring behaviours	Self-rating	Hospital	-	Greece	<5	No	Yes
Compassion Scale	Survey	Cognitive/emotional	Compassion	Self-rating	Hospital, community	US	US	<5	Yes	Yes
Emotional Intimacy Scale	Survey	Emotional	Caring behaviours/empathy	Self-rating	Community	US	US	<5	No	Yes
Empathy Quotient (EQ)	Survey	Cognitive/emotional	Empathy	Self-rating	Community	-	Italy, Korea	<5	Yes	Yes
Consultation and Relational Empathy Scale (CARE)	Survey	Behavioural	Caring behaviours/empathy	Patient-rating	Primary Care	UK	UK, Japan, China, Germany	<10	Yes	Yes
Hogan Empathy Scale	Survey	Cognitive/emotional/moral	Empathy	Self-rating	Hospital	-	US	<5	Yes	Yes
Interpersonal Reactivity Index (IRI)	Survey	Cognitive/emotional	Empathy	Self-rating	Hospital	-	Germany, US	<5	No	Yes

Jefferson Scale of (Physician) Empathy (JSPE)	Survey	Cognitive	Empathy	Self-rating	Primary care, hospital, medical education	US	US, UK, Australia, Germany, China, Iran, Brazil	10+	Yes	Yes
Toronto Empathy Questionnaire	Survey	Cognitive/emotional	Empathy	Self-rating	Hospital	Canada	Canada	<5	No	Yes

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