Unboxing a better start A starter kit for newly diagnosed diabetics

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Preface

The report that you are about to read is the result of a creative and in some ways chaotic project, where students from different disciplines and universities worked with challenges that Stockholm, as a county and a city, is facing.

The city is our lab! - is the motto for Openlab. Students worked with challenges provided by Stockholm City and Stockholm Council in a wide range of areas. Within the framework of a 15 credits mastercourse, students worked in projectgroups of 6-8 persons for one semester. То develop an understanding of the issue at hand, students engaged with the set challenges though the use of various research methods such interviews and observations, as well as literature studies. Students then developed a number of proposals for solutions, one of which has then been pursued to create a more concrete solution that is tested within real-world situations.

Whilst working together at Openlab, students from different disciplines met and interacted with each other – not always without

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complications. However, in these meetings something new and exciting can emerge. Students carry with them experiences of interdisciplinary discussions and solutions - a very important competence for meeting challenges of the future.

The result of all discussions, analysis, and synthesis's is here documented in the report. Of course the report can only cover some parts of this dynamic and creative process. We who have worked as teachers in this course have our main function as coaches. providing tools during different phases of the project. The students work according to a process model based on Design Thinking and SCRUM. Creative ideas and systematic thinking merge together to a final project. For us this is learning at its best - Freedom, Creativity. Social interaction. Engagement and FUN! But it is also based on real challenges in society - the idea is that Openlab's project should contribute to a better Stockholm for its inhabitants. The city is our lab!

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The OpenLab Master's Course Report Series

13:01 Hitta rätt i vården Ett värdigt åldrande

13:02 Vårdombud och Vårdagram Rätt bil i rätt ruta Hem & Vision

14:01 Levande stadsrum LivsLabbet Alla kan falla

14:02 Spira Södersken Zon 164

15:01 (English) Increasing Patient Involvement in the Healthcare System Stockholm in Motion Green Power of the Ecoflower

15:02 (English) Grassroots Movements & Stockholms Stad: Bridging the Gap BikeMeSTHLM The Step-Up! Planning Tool *16:01 (English)* Inside out Elderly people & warmth EduAction

16:02 (English) Jobbtorg Helping Hearts Inspiring the Youth of Husby

17:01 (English) The process wheel Childish solutions MindTrip-Making nursing homes more like homes

17:02 (English) Cykelbanan+ Finns I Sjön Culturama Stockholm Water Tap

18:01 (English) The Dinner Dome The Magic Button

18:02 (English) Revival SpiderWoman 2:0 Fireplace Smart Square DiContrast

Abstract

In collaboration with Södetälje Hospital, our OpenLab student group sought to help the hospital to improve the HbA1c of their diabetes patients to appropriate levels. The levels are partially attributed to patient's poor self-care practices which does not only affect their own well-being, but also has a negative impact on the hospital, as they receive hefty penalties by the government in form of reduced budget allocations.

In this report we demonstrate our use of the design thinking process to discover solutions that could inspire and promote self-care practices among diabetes patients. We came up with a wide selection, ranging from national implementation to patient and hospital centred tools. In the last phase we settled on the Starter Kit, which received positive feedback from patients and focuses on giving the patient a good start to their life with their new diagnosis.

Keywords: Södetälje Hospital, Diabetes, Selfcare, Kit, Unboxing

Sammanfattning

I samarbete med Södertälje Sjukhus arbetade vår OpenLab-grupp med att förbättra diabetespatienters HbA1c värden till den rekommenderade nivån. De avvikande nivåerna beror till stor del på patienternas egenvård och påverkar inte bara deras eget välmående, utan också sjukhuset resurser, eftersom de blir straffade i form av reducerade statliga bidrag.

I den här rapporten demonstrerar vi hur vi använt oss av 'design thinking' som process för att utforska olika lösningar som kan inspirera och främja egenvård bland diabetespatienter. Vi kom fram till ett brett urval som sträcker sig från nationella strategier till individuell nivå för patienter och sjukhuspersonal. I den sista fasen beslutade vi oss för Startpaketet (The Starter Kit), vilket har fått positiv feedback från patienter och fokuserar på att ge patienter en bra start i livet med den nya diagnosen.

Keywords: Södertälje sjukhus, diabetes, egenvård, box

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Original challenge and background

Södetälje Hospital (Södertälje Sjukhus) is faced with a challenge concerning their patients with diabetes. Basically, diabetes type 1 and type 2 are two different diseases that both are connected to the insulin production and utilization in one's body (Diabetesförbundet, 2017). While treatment depends on the type of the diseases, patients of both types can adhere to more or less similar self-care. Insulin is a hormone that helps glucose from food get into your cells to be used for energy (NIDDK, 2016). In type 1 diabetes, your body does not produce any insulin, thus making it vitally important to take it regularly as injections (Diabetesförbundet, 2017). In type 2 your body produces insulin, but it is unable to use it in the right way, thus leading to blood glucose levels fluctuations.

The indicator according to which hospitals and clinics in Sweden are monitored (and penalized through a cut in their fundings) is based on HbA1c. HbA1c measures the average blood glucose level over 2-3 months (Diabetesförbundet, 2016a). In other words, it reveals how much of the glucose stays in the blood cells.

Usually, diabetic patients do not really feel like they are sick. However, when they have low blood sugar, they tend to feel dizzy and have low energy, and sometimes lose consciousness (Diabetesförbundet, 2016b). When they have high blood sugar, they have headaches and feel nauseous and achy. In the long-term, diabetic patients may have serious complications such as heart disease, kidney disease, and eye problems (NIDDK, 2016).



Pictures from Södertälje Hospital

As a diabetes care centre, Södertälje Sjukhus receives funding (and thus is monitored) for the care of Type 1 patients. However, as many of the

Type 2 patients in the area consider the help, they get from primary care inadequate, they turn to Södertälje Sjukhus thus burdening their understaffed department. Almost 50% of their current patients are actually Type 2. Staff in Södertälje Sjukhus care deeply for their patients and want to provide top care for them, even though according to the patient process they should be treated elsewhere. With two nurses and four part-time doctors treating more than 650 patients, they however feel that they cannot help the patients at a satisfactory level. The waiting times get longer, and patients are not getting better.

In order to improve their performance based on the HbA1c indicator and consequently the quality of life of their patients, the hospital has tried various things to help patients to understand their illness better and make the necessary life changes. Now they need our help. Södertälje Sjukhus thus defined the challenge initially as follows:

How might we help our diabetes patients achieve better Self-Care and improve their Quality of Life?

Södertälje Kommun

Södertälje is a city southwest of Stockholm. It is home to truck manufacturing company Scania as well as some big pharmaceutical companies and other companies. It also has one of the largest ports for car imports in Sweden (Länsstyrelsen, 2007).

Södertälje has a population of approximately 97 831 as of December 2018 (Södertälje kommun, 2018). About 53% of the people are from foreign backgrounds. Which means that they were either born outside of Sweden or both parents were born outside of Sweden. Most of these people are of Aramaic descent as a result of immigrants from other countries.

The table shows the population of people with foreign background in Södertälje:

	The Nordic countries except Sweden	Other Europe incl. Turkey	Asia	Africa	South America	Central America	Other	Totally
2005	5,619	5.829	7,220	543	916	178	348	20.653
2006	5,496	6,212	8.365	620	925	185	217	22.020
2007	5.388	6.544	9.845	680	935	188	248	23.828
2008	5.216	6.882	10.847	737	944	212	268	25.106
2009	5.085	7.193	11.626	841	950	209	278	26.182
2010	4.979	7.487	12.423	952	951	226	286	27.304
2011	4.835	7.832	13.344	1.145	985	246	328	28,715
2012	4,702	8.342	14.228	1.373	1.026	244	385	30,300
2013	4.585	8.703	15.362	1.555	1.037	253	440	31.935
2014	4.451	9,064	16.424	1.789	1.046	267	475	33.516
2015	4.327	9.401	17,391	1.894	1,061	289	478	34.841
2016	4,178	9.759	18.283	2.015	1.125	297	500	36.157
2017	4.046	10.231	18.924	2.300	1.176	315	564	37.556

Source: Sweco, (n.d.).

Due to the wide range of cultural backgrounds and languages, there is a risk of communication barriers between the residents and service providers including the hospital. While most people in Sweden speak English, most reading material, resources and products in shops and institutions are in Swedish. In the Södertälje hospital's diabetes ward, they offer a weeklong education on how to live with diabetes. Unfortunately, the program is also only offered in Swedish. We learned from the nurse that when a patient cannot speak Swedish or English during an appointment, a translator is hired, which is costly.

Stakeholders

When it comes to diabetes care there are several actors involved and affected. Within the design thinking process, it is important to not only focus on one assumed end-user but look at all possible stakeholders. Stakeholders can be part of the solution or part of the problem and stakeholder mapping is a way to map out all involved actors.

Identified stakeholders:



Prioritising the stakeholders

Some stakeholders are directly involved, and some are indirectly involved. To understand the role of each stakeholder and the influence they might have, we used a power/interest grid. Each stakeholder is mapped based on how low or high interest and power they have in the challenge. This will be useful as a reference later on when ideating and coming up with solutions.

	Low Interest	High Interest
Low Power	 (Monitor) Södertälje general public Södertälje municipality 	 (Keep Informed) Close family member of patient Friend of patient Diabetic doctor Other employees at hospital (ex. Emergency Unit) Gyms Workplaces Schools
High Power	 (Keep Satisfied) Hospital administration Hospital funders Restaurants Supermarket Influencers 	 (Manage Closely) Patient - Type 1 Patient - Type 2 Diabetic nurse

Power/Interest Grid for Stakeholder Prioritisation

Adapted from Mendelow, A.L. (1981). '<u>Environmental Scanning - The</u> <u>Impact of the Stakeholder Concept</u>,' ICIS 1981 Proceedings, 20.

- **High power and high interest stakeholders** should be fully engaged and the greatest effort is required to satisfy them.
- **High power and low interest stakeholders** one should put enough work to keep them satisfied, but not so much that they become bored.
- Low power and high interest stakeholders one should adequately inform these people and talk to them to ensure that no major issues are arising. People in this category can often be very helpful with the details of the project.
- Low power and low interest stakeholders should be monitored but should not get bored with excessive communication.

Personas

A persona is a tool whereby the information from the empathizing (interviews, research, observations) is synthesized into a fictive character through which a concept can be approached from different angles. With the help of personas, we can gain a deeper understanding of the challenge and unearth uncommunicated user needs. When creating personas, we focused on the most important stakeholders; the diabetes patients and a diabetes nurse. All of these stakeholders fell in the 'high interest' and 'high power' section of the stakeholder grid above. These personas were useful when we explored the full range of solutions, before we settled on the final one. Below we are going to present personas Kim and Hanna accompanied with anonymised quotes from actual interviews.

Persona 1



I am Kim and I have diabetes type 2 which either means that my pancreas does not make enough insulin or that my body cannot process insulin properly. To keep my blood sugar levels steady I take insulin tablets and I sometimes measure my blood sugar levels to keep track of it. However, my diabetes nurse told me that the most important part is that I eat healthy and exercise. This is really a struggle for me since I have a lot to do at work, I am the manager at my office which means that I don't have too much time to think about all this stuff with my blood sugar levels and I don't always have time to sit down for a proper lunch. I try to eat healthy and I work out once in a while, but I still feel ill sometimes. However, I do not identify myself as someone who has a disease even though I know I have one. Maybe the reason I have not made many changes in my life is the fact that I do not feel as many symptoms as sick person. I try to eat well and exercise when I can because I know about the complications that can occur later on. I want to be a good father and husband and be able to live a healthy life for as long as possible for them. That is what I think about to motivate myself.

"If it hadn't been for my wife and kids, I feel like I wouldn't have any reason to struggle like this, I would probably have given up." - Male, type 2, 45

I think that it might be easier if someone reminded me to measure my blood sugar more often or if there was some other way for me to handle it effortlessly. The few times that I actually do feel sick, I am not my best at work and then I get irritated when I get home, so it is a vicious cycle. I wish I had someone to talk to. I do talk to my wife, but I do not want to bother her too often with my disease.

I would say that I do not let myself get limited because of my diabetes. I work as usual and I like to travel during holidays and so on. I also enjoy going out for drinks with friends and family, after such days I feel a bit worse, probably because I did not eat very healthy and had some beers.

I go to the hospital once a year and meet Hanna who is the diabetes nurse. She is very helpful, and I feel like I can ask her about all kinds of stuff that I am wondering about. I used to go to primary care, but they would not give me the digital blood sugar metre I asked for, I think maybe they prioritize children over adults when it comes to this gadget, which I understand. Anyway, I wanted this metre because it seemed like an easier way to keep track of my blood sugar and when I went to the hospital, they gave me one very quickly! Since then I prefer to only go to the hospital and not primary care. I am not sure if I really love this gadget though and I am not the best at using it, but I do not know what better options there are for me.

Kim's challenges: To remember to check his blood sugar, exercise and eat properly because of busy days. His attitude towards diabetes is that it is a nuisance in his life

It works well when: He thinks of his family

It would be game-changing for Kim if: He had more emotional support, if he could feel and see more positive results from his small daily efforts. If he had simple tools to personalize his self-care. To engage with the diagnosis daily without fuss and guilt.

Kim needs more emotional support and simple tools to help manage his diabetes.

Persona 2



"During some of the appointments, we mostly chat about the patient's life. This is what they need" - Diabetes Nurse at Södertälje Hospital

I am Hanna and I work as a diabetes nurse at a hospital. At my work, I really feel I am doing my best to help my patients. During the appointments we talk a lot and I try to get some personal connection with them. Together we try to find solutions that fit that individual patient and I feel this is easier when having some kind of connection. Sometimes this is hard because I only have material and information in Swedish, I can only speak Swedish and English, and many of my patients don't speak very good Swedish. I try to book translators to join us in our appointments, but it does not always work. I then recommend them to google information in their own language so they will understand better.

The tools I give to newly diagnosed patients are blood sugar metres, information and education in print and also in workshops. Beyond this I also recommend my patient to google and find apps or other solutions that would work for them since how you want to manage your illness is very individual, there is no universal solution. I also tell my patients that they can call me about anything and sometimes I actually call them to follow up and check how everything is going or to remind them about their appointments. Since I am doing everything I can to help my patients, I feel sad to see the hospitals' indicators for the HbA1c are the worst in the Stockholm region. Thus, this issue is really important to me and I want to do something about it.

"Some patients don't take care of themselves even after the talks in the appointment and I don't know what to do. I cannot follow them home" -Diabetes Nurse at Södertälje Hospital

I don't turn away anyone, I for example, want to help people with diabetes type 2 as well if they are not satisfied with the primary care, even though these patients are not included in our hospital's budget. I have a daughter who has diabetes type 1 and my mother had diabetes, so this issue is really close to my heart. I don't have much communication with the other departments in the hospitals, or with primary care, even though some of my patients are being treated for other issues in other departments.

"Sometimes when I get type 2 patients, I should refer them to primary care but they beg "No, please don't send me away" and I can't turn them away" - Diabetes Nurse at Södertälje Hospital

Hanna's Challenges: Can't follow her patients, home and tell them how to live. Don't have enough time for everyone. Only speak English and Swedish. Should have more tools and tips for each target group.

It works well when: She has time to follow up personally

It would be game-changing for Hanna if: She had customized info and tool kits for each group of patients. Or if she could clone herself!

Journey maps

A journey map can be used in the design thinking process to identify the points of contacts and critical phases in the user experience. It can depict a range from timelines from a single service process to a lifespan.

The first journey map shows the steps a diabetic might go through from diagnosis and onwards. We have identified that the initial stage after diagnosis is the most critical stage and can last for several years before the patient 'befriends' their diagnosis. Major changes in life are also disruptive in terms of good self-care.



LIFE JOURNEY MAP OF A DIABETIC

The ideal journey map shows how a day's life would be like for a diabetic person if he/she is taking all the measures needed to manage the illness. As indicated, it is quite some work and we learned that it almost equates to 25% additional employment.



Below we have marked some of the critical points of the day when good self-care is challenged and, in many cases, fail. This can lead to mood swings, dizziness, headaches, and long-term to more serious complications.



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The re-defined challenge and new POV

During the empathizing phase, we slightly shifted our focus from the hospital's needs and viewpoints to the patients' needs and viewpoints. In addition to initially looking at how the hospital could better assist its patients with their self-care, we also looked into stakeholders such as the community, family, and the patients themselves of course, and the solutions we could provide for them.

The challenge of engaging the patients with their diagnosis on a daily basis in a more positive and rewarding manner became obvious. The level of personalized care and expertise, and the number of tools needed to manage the illness surprised us. Some of our interviewees also emphasised the role of emotional and human support needed to stay motivated.

We started to ask questions such as:

- How might we make time after diagnosis easy and manageable?
- How might we create an exciting kit for a newly diagnosed patient?
- How might we make the community support the patient?
- How might we make families understand diabetes better?
- How might we make a diabetic diet adaptive to all cultures?
- How might we help the nurse to communicate with ALL the patients?
- How might we create peer-to-peer support systems?
- How might we make more people become friends with their diabetes?

We reframed the challenge from *How might we help diabetes patients achieve better Self-Care and improve their Quality of Life,* by adding a major insight and a more narrowed down direction for a possible solution. The new Point of View (POV) is:

A diabetic has to be his or her own doctor. Therefore, they need simple and exciting options to inspire good daily habits.

We hope this POV has widened the arena for where the solution could emerge and where it could be used, with a clear focus on shifting the view of diabetes as only something complicated, time-consuming and negative.

Concepts and solutions

At an early stage of ideation, we wanted to visualize the feeling we sought to inspire with our solutions. The diamond came up as a strong symbol to convey strength, importance, confidence, empowerment and to contrast the stigma many diabetics feel. The diamond became a guiding visual for us through most of the solutions we came up with.

1. Digital nurse

This solution provides a digital diabetes nurse who can be contacted on any device. She will be a familiar face (or an AI of the patient's choice) and have a supportive and encouraging role. The platform is meant to be a guide for a patient in their daily lives.



• Easily accessible platform (mobile app, web application)

Language selection

• Different modes of communication (typing, like a chat, voice conversation).

• Fills the gap between Google, where patients search for answers and can get overwhelmed by the results', and the annual hospital visits.

2. Diabetes center in Södertälje centrum

A permanent, or pop-up, space designated for diabetes advice and community. It would not only increase the human and emotional support often needed when dealing with diabetes, but also give medical support in between the annual doctor visits. The center could also work as a tool for educating the general public about diabetes, if the center has the right look, location and visibility.

The place would have:



• A diabetic nurse to give advice,

• Checkpoints for blood sugar measuring,

• The possibility to test out new apps, metres and other tools

• Tips on food, seminars and demos.

• A cafe where people can have a healthy snack, meet and talk about their diagnosis, or just hang out.

3. Starter Kit

To receive the diagnosis is a shock, and the patient will receive a lot of information which can be overwhelming to digest. To add something playful, but useful, in the form of tools and information wrapped as a gift, might shift the tone slightly during this critical time.



Would include:

- Practical information, in different languages
- Recipes from different cultures

• Diabetic jokes printed on merchandise, and other helpful items that will make your life with diabetes easier to adapt to.

4. The diamond sticker

The diamond symbol became our symbol of strength and empowerment.



The idea is to use this symbol on food that is healthy, good and safe to eat when having diabetes.

• Easier to pick the right food at the supermarket

• Help with language barriers since you would not have to understand all the ingredients

• People not diagnosed with diabetes could also take advantage of the labelling as we have found an interest in the option for clear information on foods

low in sugar and without artificial sweeteners.

Concept selection

After receiving equally positive feedback for each of the four concepts presented in the first external delivery, we started an elimination process with a goal of choosing one concept to be developed further. A possibility of combining two or more concepts together was also contemplated, however choosing the strongest concept with the greatest game-changing potential was viewed as important. It was agreed that other concepts or elements thereof could be incorporated into the chosen solution, if need be.

To make the process of elimination as sophisticated as possible, we decided to use a myriad of different methods to evaluate and compare the concepts. The methods utilized included the following:

- Decision matrices
- Interviews and research
- Research
- Sketching

Decision matrix

For the first round of elimination a decision matrix was utilized. At this stage, we compared all concepts together and reflected them against the following criteria: The need for additional research, cost of development, game-changing potential, ease of implementation, room for development, the level of the team's excitement and outreach. Weight for each criterion was given from 1-10, game-changing potential being the most important and outreach and ease of implementation the least important criteria. The points for each concept were decided together.

The AI nurse received the least points. It was concluded that due to the legal and ethical hazards as well for the technical orientation, going forward with the concept did not fit the scope of the project that well, hence it was eliminated at this stage.

	Al Nurse	Diamond sticker	A Diamond center	Starter kit	1-10 weight
Research heavy	6	12	24	24	6
Cost (development)	6	24	12	30	6
Game changing	27	36	36	36	9
Ease to implement	4	4	12	20	4
Room to development	28	14	35	21	7
Our 🤎	21	21	28	21	7
# of people reach	16	20	12	16	4
Total	108	131	159	168	

Interviews and research

On the second round, we conducted interviews and research to gain a better understanding of the potential of the three remaining concepts. Two persons with diabetes were interviewed, allowing them to comment freely on the concepts and some additional questions were posed. Both persons expressed interest on the kit and diamond centre saying that the latter was good for the human contact that is much needed for support.

For the research part, we particularly focused on the unanswered question regarding the product labelling. Research consisted of online research and contacting organizations such as National Diabetes Association (Diabetes-friendly food and labelling food products) and World Fair Trade Organization (building a labelling system in general). Through the research we found out that there are several existing food labels and there would be a need for clarifying the existing labelling than creating a new one for diabetes. It turned out that labels are not necessarily popular amongst producers and consumers might find them confusing.

Through the interviews, we learned that the diabetics are concerned with the stigma of buying food that is "for a diabetic diet." According to the National Diabetes Foundation in Sweden, it is not simple to determine what food is generally recommended for diabetics, as the right diet is very individual, and as an organization they are not pushing for this solution on a national level.

Based on the research and the interviews we thus eliminated the diamond sticker from our concepts.

Sketching

We approached the two remaining concepts with a sketching exercise. The idea of this exercise was to explore different variations of concepts by alteration and detailing.

We began by conducting a SWOT analysis for each concept and then focused on the strengths and unique aspects of the concepts in our sketching. After determining these each team member sketched multiple variations of the concept in question. We especially used the variation of the volume/magnitude of the concept, target groups and the type of technology. Among the variations that were created this way were different digital and face-to-face options of customizing the starter-kit and different spatial options for the community centre. The next step of the exercise was to build on team members' ideas by creating more variations.

By exploring concepts this way, we first and foremost learned a lot about the development potential of each concept. Moreover, the exercise revealed similarities in the remaining options, thus showing us opportunities of combining elements from different concepts. While the exercise did not bring us to the decision it nonetheless helped us to see our concepts in different light and provided important input for the development.

Final decision through negotiation

Having two equally strong and popular concepts left, we tried to reach the decision first by using an application of Y matrix, where the strengths of each concept were reflected against similar criteria as in the beginning of the process. Since the concepts received equal points, we proceeded on negotiation where we through discussion weighed the pros and cons of the two concepts, especially utilizing findings from the previous sketching exercise as well as information gained through empathizing. The result of the negotiation was that the Starter Kit was chosen as the final concept to be developed further.

It was concluded that the main benefit of the community centre, namely the social aspect, could be introduced also to the starter-kit.

Development of The Starter Kit

As mentioned before, the Starter Kit is intended to introduce a positive element around the difficult time of diagnosis. It will not only feel like a nice gift, but also get the patient off to a good start with clear information in their own language as well as other tips and tools customized to suit their lifestyles and preferences. It is important that the Kit is designed well overall to communicate more about lifestyle than hospital product or illness.

When we started to look at the financial aspects of the Starter Kit, we had to get more specific about how we would implement it and how it will be used in the hospital. We considered aspects such as *what had to be customized* in order to maintain quality and stay in line with the core idea and purpose of the Kit and *what is feasible for the staff (nurses) to invest in terms of their time*, and *what could be standardized*.

Customization

As we assume the staff do not have a lot of time to put together customized kits from scratch and for each patient, we decided on working with the concept of five different standardized kits. Each kit could have a theme, such as the traveller/the Outdoors, The Foodie, The Fitness Fan, The Kid and the general Basic Kit which is suitable for most people if you do not feel like choosing a theme. There could also be other Kits added over time such as The Couch Potato and The Party Animal.

The following items will be availed in every Kit:

- A personal note
- Beautiful packaging
- Printed basic information (booklet/card) in the patient's own language
- International food guide in the patient's own language
- Suitable snack and/or drink
- Examples of customized kit content:
- The Traveller: cold sleeve (Frio), thermos
- The Foodie: scales
- The Kid: stickers and tattoos
- The Fitness Fan: elastic tool belt
- General: printed meter sleeve (possibly with fun slogans)

Translation of existing basic information material is key for the patient to make them receive information they understand. Food is very personal and should be addressed in terms of cultural background, so we recommend that we include a food guide with food options from a variety of cultures (and again printed in different languages). Each kit would also include a recommended snack and/or drink, such as a bar or sugar-free candy.

Other development and variations of the Kit solution

Personalization

- 1. The personalization process can also be aided with a survey or form beforehand to identify the patient's personal preferences, lifestyle and motivation for good self-care.
- 2. In order to personalize the content of the kit in a more optimized way we considered an online pick-and-choose option where the patient could select items from a digital platform.
- 3. Another option would be to bypass the hospital and the physical kit and create a starter kit in the shape of a discount card, which the Södertälje community, municipality and private sector contributes to with discounts and free services for those with the card.

Follow-up

In order to extend the life of the Starter Kit solution we considered a number of options.

- 1. To extend the conversation started between the nurse and the patient when handing over the gift, the hospital could offer a refill service or top-up, so the Kit remains the focus for the continuous conversation about the patient's lifestyle.
- 2. A subscription service could offer a new kit to be sent home four times a year with seasonal items, such as hand warmers in the winter. This would most likely be a service the patient would pay for and tag on to the trend of other subscription gift boxes. The private sector might be interested in contributing with samples and discounts to such a service.

Cost Benefit Analysis

There is a fixed cost for the production of the Starter Kit (mainly including research, translation and design) and then a cost per kit (including printing, packaging and the content in addition to the information material).

Fixed cost estimate					
Project manager	40 000 kr/month x 6 months	240 000 kr			
Food guide	10 000 kr/guide x10 languages	100 000 kr			
General guide	3 000 kr/guide x 10 languages	30 000 kr			
Total	370 000kr				
Cost per Kit estimate,	100 kits				
Print food guide	50 kr x100 copies	5 000 kr			
Print general guide	50 kr x100 copies	5 000 kr			
Content of kit	500 kr / kit x100	50 000 kr			
Packaging	100kr / kit x100	10 000 kr			
Total	70 000 kr				
Cost per kit after fixed	700 kr				
Cost per kit <i>including</i> t kits)	440 000 kr				
Cost per kit <i>including</i> tits)	510000 kr				
NB: The fixed cost is paid once, therefore producing more kits only costs the cost per kit after fixed cost – 7000 kr per kit					

Current cost of existing problem

Lacking solid information on the financial aspects of the problem Södertälje Sjukhus presented to us, we did some research. We found that Skaraborg municipality had a program pushing to lower the Hb1Ac of their patients, and they saved 93 000 kr/patient when 70 patients succeeded with their goals in one year. However, the representative at Södertälje Sjukhus mentioned that the funding they miss out on when failing to meet their targets is 500 000 kr/year. There are also additional costs involved, such as increased number of appointments for patients with complications and high blood sugar levels, as well as emergency visits. We made a cost benefit analysis based on the Skaraborg example and in short we estimated that the financial benefit would be around 88 600 kr/patient.

The Starter Kit initially costs about 4 400 kr / patient

Remaining at a high Hb1Ac average costs about **93 000 kr / patient per year**

Benefit Analysis

Financial benefit

If 100 patients get to start their life with diabetes with the Starter Kit, one can estimate and hope that 50% of them, i.e. 50 patients will manage to keep their blood sugar at the recommended averages.

In this case, we estimate a saving of 88 600 kr / patient.

Other benefits

Quality of life: Patients will also feel better, be healthier, and be better equipped to deal with daily challenges. In the long run this would obviously also mean less complications and longer lives lived.

PR: If the kit works well it is quite likely that the investment in the project also would generate good PR for the hospital.

Patient community: The kit could also be a springboard for important community building and conversations about dealing with life as a diabetic, in online forums, such as a Facebook group around the kit. These forums could also help the hospital to gain further insight in the kit and how it can be improved, updated and used.

Domino effect: If the kit works well for the diabetes department it could be used as a template for other departments in the hospital and the care for other types of diagnoses. To be able to initiate a good start when treating any long-term illness can both have an effect on the patient's attitude towards the illness, as well as become a reference point along the way.

Communication tool: We believe the kit will be a great communication tool between the patient and the hospital staff (nurses and doctors). Conversations relating to choosing a kit, personalizing it and potentially updating it, will give a clear focus of the patient's needs, lifestyle and concerns.

Community at large: The kit can include free samples of products and donations from the Södertälje community at large, as well as collaborations with innovation hubs, designers and medical companies, which will improve relationships between the community and the hospital, as well as increasing the awareness around the needs of diabetic citizens.

Cost efficient: Compared to other solution we have come up with this is one of the most cost-efficient ones. It also is a solution closely linked to the hospital and its staff, instead of focusing on other aspects of the patient's life, such as grocery stores, community centres or digital platforms.

Testing the kit

In order to test and prototype our chosen solution, we revisited the Södetälje Hospital and conducted interviews with three diabetes patients and two nurses. We also had a phone interview with the challenge giver, who is an innovation director at the hospital. The questions of the interview were open ended, but they were structured around the following themes.

- 1. About when would be <u>the preferred time</u> to give the kit to the patients: Either when they were first diagnosed or some amount of time after the diagnosis.
- 2. About <u>the content</u> of the kit: Examples and ideas of the items that the kit can or should contain.
- 3. About the possibility of having **<u>different themes</u>**: More specifically, what kit the patients personally prefer.

The following table summarizes the background information on the patients interviewed:

Patient 1	Patient 2	Patient 3
Diabetes: Type 2	Diabetes: Type 1	Diabetes: Type 2
Age: 43	Age: 56	Age: 34
First diagnoses: 7 years ago	First diagnoses: 5 months ago	First diagnoses: 2 months ago
Travels a lot for work / Likes to cook	Satisfied with the care of hospital	Works at warehouse /active work. Other neural problems

The interviews were conducted during a training event organised by the hospital for the diabetic patients. The event is directed to educate and help

diabetic patients with the general information about diabetes and food diet changes related to diabetes. You will find the general summary points and common ideas from patients' interviews in the following part.

Preferred time to receive the kit

When it has been asked about when would be the perfect or preferred time to receive the kit, all the patients answered both at the event of newly diagnoses and later stage of living with diabetes for some time. Mostly because having information and access to the things that will ease living with diabetes is very important in all the stages of diabetes. However, when it comes to the way of delivering the kit to patients, most of the patients who were interviewed stressed the importance of human contact. In a way going through the content of kit with a nurse, getting some advice on the items in the kit was preferred and even insisted on by all the patients.

"Human contact is really important for me. If the kit is sent to my home, then I might not take it very seriously or, initially, I might even be in denial." Interviewee 1

Content of the kit

When we mentioned and listed the items that could be included in the kit (cookbook in different languages and cultures, snacks, drinks, a list of recommended apps/websites, tools to measure blood sugar, reminder to next appointment etc...) the ideas related to food /snack /drink seemed to be the most appealing to the patients. Everyone hinted to the idea that the hardest part about living with diabetes is knowing what to eat and what not to eat. Generally speaking, the food we eat is a really important part of our daily life and something that we take for granted. However, when a person has diabetes, then the options and amounts of food they can consume is pretty limited. Therefore, getting a sample of snack bar, diabetic food options, or drink options would be much preferred by the patients. Also considering the fact that Södetälje is a diverse community comprised of people from different cultural backgrounds and languages, a cookbook containing recipes from different cultures and translated in different languages seemed to be an easy and most appreciated choice by the patients.

"What can I eat? That's the big thing! And there is a lot to google and research when it comes to foods"

Interviewee 2

Possibility of having different themed kits

When we explained the idea of having different themes for the kit and listed some potential ideas for the theme (general, travel, fitness, food etc), it became clear that even though the idea of having special-themed kit sounds fascinating and interesting, it is hard to pinpoint one kit. Especially when we asked the patients to talk about their preferred or interested themes, they struggled to narrow down to one because in reality a person can have many different interests at the same time or no interest in any particular area over other areas. However, all the patients were going for the idea that one general kit for everyone should exist and all the other themed-kits can be distributed when it is requested or additionally to the one general kit. Also using checkboxes was suggested over using themes.

"Kit one is what everyone should have by default. If necessary, additional ones can be purchased at a discounted price"

Interviewee 3

Feedback from the Nurses

When we asked the nurses at what point they thought the kit would be useful for them and their patients. At diagnosis or later on, both nurses felt that it was a very individual thing and not an either or situation. The nurses felt that it depended on what phase the patients were in. Some patients are too overwhelmed when they are first diagnosed, and they would not be able to absorb the information. The nurses said that they would need to meet the patients to know when they would need the kit. The nurses also said that it would be great to have a general kit that would be customised depending on the needs of a patient. The contents could also include emergency numbers, information for both men and women regarding the effects of diabetes on their bodies such as sex drive. We could also include picture instructions for patients who either can't read or have trouble absorbing written information.

On the themes they added the following ideas:

- A pregnant kit: for women with diabetes who wants to get pregnant.
- A young adult kit: for teens transitioning from children care to adult care because it usually feels like starting over.
- A kit for young kids.

Feedback from the challenge giver

The representative from the hospital was very excited with the solutions. He liked the fact that they all targeted different audiences. The diamond sticker was nationwide, the digital nurse was worldwide, the diamond centre was for the whole Södertalje region while the kit was for each diabetic patient. He liked the kit because it was doable and that it could be eligible for a region Stockholm Innovation grant given to hospitals. He also suggested that we could add cards or guides that would help relatives of diabetic patients to understand what it meant to live with a diabetic patient, and how they could help. He also mentioned that it is important to personalise the kit without making it feel too constrained.

Supportive evidence

Although the kit presented in this report is based on original development work focused on the needs of the diabetic, there are several existing concepts that share similar functionalities. Moreover, despite the fact that we have employed design thinking methodology in our development, there is research evidence that supports the choices we have made during the course of the project.

The kit bears similarities with the concept of the Finnish Baby Box. The baby box is a collection of products needed by a new-born (e.g. diapers, different sizes of clothes, baby food, toys and information about childcare) that the upcoming parents receive prior to the birth (Kela, 2020a). The box itself can be used as the first bed of the baby. The prerequisite for receiving the box is that the expecting mother attends all the prenatal health checks (Kela, 2020b). The content of the baby box is updated regularly based on the needs of new parents and the design of both the box and the products is carefully thought so that it is appealing to the target group (Aalto, 2019). Although receiving crucial equipment and information plays a big role in the baby box, it has been said that "the main benefit of baby boxes, wherever they are, has been in the link that they create between medical professionals and expectant mothers." (Smirnova, 2018). According to the research unit of Kela "the direct link between medical care and the baby box has saved lives by detecting problems early in both mothers and babies." (Smirnova, 2018). Finland indeed has the lowest infant mortality rate in the world (World bank, 2019).

Considering that receiving and opening the kit as well as attractive design is an integral part of the concept, we wanted to explore the popularity of the so-called "unboxing" phenomenon, i.e. recording a video of yourself while opening a product package, including your initial reactions to the product (Mowlabocus, 2018, p.1). Although as an emerging phenomenon research evidence on unboxing is scarce, research suggests that should the trend survive, packaging design can produce positive experiences similar to birthday or Christmas presents (Kim et al., 2018). In fact, commercial actors have already shifted their focus from technical packaging towards the "[...] momentary process of removing the product from its packaging" (Kim et al., 2018, p. 1).

The Starter Kit - updated prototype

This section describes the version of the kit that we are currently working on. Based on interviews and research we decided what to include in the kit, which will be described below. The kit is aimed at improving the acceptance of the disease by the patients and its content helps them in the journey of taking care of themselves, by proper managing their blood sugar levels and making good lifestyle choices in general. In short, there will be a general kit which will contain basic items that are necessary for any diabetic patient. Nonetheless, we foresee the kit to metamorphosize with time and will have more components added or removed with time due to the personalization process it will undergo as it is implemented. All information in the kit will be available in different languages so that patients can read and comprehend necessary information.

The content of the Starter Kit

Our proposed prototype of the kit will have items categorized into four major sections including: Personal note, Food recipes, Snacks & Beverages and Information. The fifth section is the personalized additional items that is still under development. The gift-wrapped box is an additional constant.

• Personal note

In order for the patients to feel that they are in good hands in the hospital and to get to know their new caregivers, a personal note from the nurse and/or doctor they will be in contact with the most, will be included in the kit. The note will preferably be handwritten, the patient will be mentioned by name and other personal things can be added into the letter to avoid the feeling of it being standardised for all patients.

Information

The kit will include basic information that are vital to any diabetic patient concerning their disease, but at a level that is not overwhelming to comprehend. The information put in here will help patients learn about the disease and manage it properly. Important phone numbers will be included as well, such as emergency numbers, numbers for health consulting (such as 1177), and numbers to their closest contact at the hospital, such as the diabetes nurse. Recommendations on apps, websites or other tools that can be useful, will also be included. It's important to minimize the need for patients to go through all available apps and websites themselves, which can be an overwhelming process, and instead get recommendations you know you can trust.

The most important feature of this part of the kit is that it's translated into a wide range of languages, in order for each patient to feel included and met on a personal level.

• Food Recipes/Guide

The kit will have food guides/recipes from different countries and cultures as our research shows Södertälje region is made up of a diverse population from many countries and regions and different cultures. This is also important since the Swedish "plate model" currently used as a food guide is perceived as old fashioned by patients and hard to relate to. This feature was consequently appreciated in our interviews. It will help patients find the best foods suitable for a diabetic lifestyle without completely changing their diet.

• Snack and beverage

From our interviews, we learned that the patients struggle with choosing what snack to eat or drink to grab. Therefore, the kit will have different kinds of snacks and drinks samples. There will possibly also be short information guiding the patients on snacking. This was requested by interviewees when testing the kit prototype.

Customized Items

In order to attend to each patient's needs, the kit will contain customized items to suit them. For example, travellers can have the cold sleeves in order to keep their insulin cold, the kids' kit can have information in graphical representation of information so that they can easily interpret it and also some fun stuff like stickers and tattoos. Scales for The Foodie and elastic tool belt for the Fitness Fan are earlier mentioned examples of personalized items that can be put into the kit.

Conclusions

Why the Starter Kit?

There are many sources of inspiration and reasons we settled for a solution targeting the patients at an early stage of their diagnosis. The most obvious one being that it seems to be common sense to try to influence and introduce a good strategy from the start and not let bad habits linger. In conversations with hospital staff it also transpired that they already put a lot of effort in communicating with, and helping the patients, at the beginning of the illness, and they themselves see the initial stage as an important one to offer help and influence. Looking at the tools the hospital have in place already, we wanted to build on this important opportunity and saw room for improvements. We have focused on giving the impersonal plastic bag of printed information provided today a huge upgrade. The 'make-over' is both in personalization and presentation and is in many ways a communication upgrade. The Starter Kit will be more positive and exciting visually then the current package on offer, which will break away from the hospital ambiance. It will also be more personal and speak directly to the patient through the translated material in the mother tongue of the receiver. The Starter Kit is gift wrapped, and its content is easy to comprehend. It aims to set a different tone and be something positive when life feels very difficult. It's not trying to solve every challenge a diabetes patient faces, but it hints to the possibility of a good life with diabetes and that it could be bright. It gives a better start and hopes to introduce a smile to the process.

A tool for hospital staff

An important part of the starter kit is that it will be used as a tool for the nurses at the patients' appointment. This both based on earlier mentioned research about the Finnish Baby Box that works as a link between caregivers and patients, and on interviews with patients who all emphasize the importance of personal contact and not just relying on information to manage on your own. In the case of Södertälje hospital, we know that the nurses working there focus a lot on the personal connection with their patients and that a lot of time during the appointments is dedicated to talking, patients getting to ask all the guestions they have in mind and getting personal support. We want to build on this communication and add another dimension of it which is the Starter Kit. With the kit integrated as a tool for nurses, the conversation of the appointments can be based on the kit, the items in it, what works and what does not work. By doing this, patients and nurses can come up with other solutions and tools together, that works for that patient and will improve the patient's everyday life. It can also be used to evaluate the content of the Kit and learn what might work in future versions.

Conclusion

The Starter Kit will not magically work for each and every diabetes patient in Södertälje hospital. We are aware that the challenges are very personal and motivation is different for each individual. We have chosen to focus on a few critical points in the life of self-care for a diabetes patient. We have aimed to find a solution that shifts the tone at an early stage of life with the illness. A lot of feedback has confirmed the importance of keeping a positive tone and a playful and inviting aesthetic to communicate lifestyle rather than hospital life. The Start Kit is a reminder to stay motivated and provides useful tools in an encouraging package. It contributes to a more positive experience at a time when things are difficult, and we hope it will encourage a healthy lifestyle.

We are pleased that the solution we finally settled for is closely linked to our challenge giver; Södertälje Hospital, and have the potential to be a new, improved tool for the diabetes nurses to utilize in their everyday work.

Future work

Södertälje sjukhus to-do list to implement the Starter Kit:

- Translate all printed information to the most commonly spoken languages in Södertälje
- Compile a list of recommended apps, websites or other tools to avoid googling
- Talk to patients about personalising the kit and what they want in the Starter Kit
- Update the food recommendations and make them more culturally diverse.
- Find ways to integrate it in the appointment routine
- Investigate the community's ability to contribute with content for the box
- Commission the box design, perhaps through a competition
- Test the prototype!

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Unboxing a better start



n collaboration with Södetälje Hospital, our OpenLab student group sought to help the hospital to improve the HbA1c of their diabetes patients to appropriate levels. The hospital receives hefty penalties due to this in the form of reduced budget allocations.

In this report we demonstrate our use of the design-thinking process to discover solutions that could inspire and promote self-care practices among these patients. We came up with a wide selection, ranging from national implementation to patient and hospital centered tools. We finally settled on the Starter Kit, which received positive feedback from patients and focuses on giving the patient a good start to their life with their new diagnosis.