**Supplemental Material C** Factors that could have a positive or negative effect on prehabilitation with illustrative quotations

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| **FACTOR** | **ILLUSTRATIVE QUOTATIONS** |
| **POSITIVE** |  |
| **MOTIVATION** |  |
| **MOTIVATIONAL REASONS** |  |
| **Patient sees the benefit** | **Patient (#3):** ‘If I know that it helps me, then I would do it.’  **Gynecologist (#17):** ‘And mainly, I think the most important is, that people see the need for it. Because if they don’t see that, then they will not do it. Then they will listen obedient to all that information, but at home, nobody watches them.’  **Physical therapist (#22):** ‘But if you explain clearly, and why, it is so important, then people will be more motivated. If you explain why, and that people recover better, then it could maybe mean something.’ |
| **Patient can contribute to own recovery** | **Patient (#4):** ‘It is for your own health. So I think that, that should anyways always be mentioned. It is for your own health. It is your own responsibility to do so. That is very important.’  **Gynecologist (#20):** ‘I do believe in the health benefits by giving people their own responsibility. And not taking everything off their hands. And by doing so, also giving them the feeling that they themselves can have an influence on their disease and their life. So I find that important that if you have something, that you can do something, yourself. That is why I think people want to do it, because it feels good. That you are not at the mercy of the discretion of another person, but that you can actually do something yourself. So I do think, that could motivate me, to give people the chance to do something, to give them the feeling they can have an influence.’ |
| **Distraction for negative thoughts** | **Patient (#6):** ‘I think it helps. You have a little distraction and are not continuously thinking about the operation.’  **Gynecologist (#20):** ‘And movement is very important I think. Especially walking, I think that is just very therapeutic. Just to clear your mind.’ |
| **MOTIVATIONAL SUPPORT** |  |
| ***INDIVIDUAL*** |  |
| **Individual approach\*** | **Patient (#5):** ‘That is the individual approach. I don’t need to be forced in a group program.’  **Patient (#27):**‘Yes, you know, you have to like it. I can tell someone to go for a walk, but if you don’t like that, than you will not keep it up. You have to do something you like. You cannot do something you don’t like, you will not keep it up. Then you will quit easily. That is very personal for everyone. Look, someone else can say “I am going to play volleyball, I like that”, well I don’t like that at all. Everyone has their own thing.’ |
| **Seeing good results** | **Dietician (#13):** ‘I think I would be quite motivated, but then I have to have a feeling of success. The feeling that we go for it all together. Because it is a very big organization, you will walk into all kinds of barriers.’  **Dietician (#17):** ‘I think nutritional advises are easier. Because certainly people who are undergoing mayor surgery, often have all kinds of problems with food. So they are also very motivated to improve that, because they themselves feel the effect. So that is where you see that it does go very well. That is what we do here as well. And then you really do see they themselves feel the need. So that is, well, seeing the value of it themselves, that helps a lot. I think that is the most important.’ |
| **Setting goals** | **Physical therapist (#10):** ‘We can say to someone “you have to move this much, because moving is good.” But if someone does not have the intrinsic motivation to move, then it gets really difficult. I think it is good to look together with the patient at “what do you want? “Are you on the level you want right now?” or “Do you actually need more?” “Well, you are going into surgery, how will you manage to brace for the slump after the operation and how will you pick it back up again?”’  **Patient (#34):** ‘I try to stay self-sufficient, but I think it is very important to be able to work on that, as long as it is possible. Yes, very important.’ |
| **Activity tracker / pedometer** | **Patient (#5):** ‘Yes, I had that activity tracker (from a study), and I told them how much I moved, so I thought, well then I actually need to do it. So that was quit a good stimulant to hold on to that. And I also like to do it. So that was something I liked to do, and now I actually had to. So I did not experience the preoperative period as bothersome, but just like “we’re gonna go for it”.  **Physical therapist (#10):** ‘I think it varies a lot between the elderly. Some can work really well with a mobile phone with an application, and others can’t do anything with it. Personally I think that a system that sends a reminder, and when you receive new messages all the time, that that works more positive than receiving an information sheet An information sheet will end up on the table, people don’t read it, they forget it. If you send a message or e-mail, or if you receive a letter, then there is a new action, people think of it.’ |
| ***SUPPORT OF OTHERS*** |  |
| **Supervision and motivation by a professional** | **Gynecologist (#2):** ‘I think people, the average person, of course there are exceptions, but needs a motivator. And that is not, we turn on a tape and start. If you say, a kind of physical therapist or a personal coach is doing exercises with you, that will work off course. I think it can help if someone calls. If you say for example, we go by one or two times, and after that some calls daily to see how it goes and if someone has some difficulties. “Did you train? What did you do?” And write down what you did.’  **Patient (#28):** ‘Before this al started, I was doing gymnastics for elderly. And that man, who was leading it, always said: “watch out, you can do more than you think.” So hold on. That is what I think, so don’t think “Oh I am so tired, so I quit”, but hold on. Just one step further than you think you can go.’ |
| **Support of family and friends** | **Patient (#4):** ‘If you are with someone else, it is easier than when you have to take care of it alone. You can be motivated by your partner. Or like ‘Did you think of taking that?’ But if you are alone, then you have to take care of yourself and that is different than when you are together.’  **Dietician (#18):** ‘Maybe you can ask if someone can join the exercises. That could help. A family member for example. That he does not have to sit and wait in the corridor, but can join the exercises. That is not bad for anyone. Maybe the group will become a bit bigger. And certainly for the elderly target group, that they can then do it together. Maybe that gives a positive spin on the whole.’  **Oncology nurse (#24):** ‘It would be very nice if there is a partner, who can stimulate them a bit. That would play a role.’ |
| **Specialist is involved in prehabilitation** | **Gynecologist (#11):** ‘I think, what I do now with smoking, is just getting back to that, not with prejudice but with sincere interest. Also when people lose weight, saying something positive about it, ratify it so to speak. So I think it is good if I receive feedback about it, so I can take a moment to dwell on it. I don’t need to be in charge, but I need to be informed on what’s going on, because it gives me a lot of information as well. And if they know you really put in an effort, then you score a lot of points in the consult.’  **Gynecologist (#17):** ‘Because I think, if a patient hears it several times, first from me and later from a nurse, I think they might think “Well, okay, this seems to be important.”.’  **Patient (#28):** ‘But if it is said by someone from the hospital, then it has a lot more impact than when a regular person says it of course.’ |
| **Doing it together with others** | **Patient (#32):** ‘And in pairs or with three, it is more fun than alone.’  **Patient (#36):** ‘Like in Drachten, there they have a room. I have been there myself, I was suffering from… well, that. I underwent an angioplasty, years and years ago. But I could barely walk, I could only walk 60 meters. And then I had a kind of walking test, and I had to walk through the pain. And if I hadn’t been , then…. I could go to the hospital by taxi, and then there was a group in a room and you hád to walk, pain or no pain. You had to walk through the pain, that wasn’t easy. And if you have to do that alone, well, then you’ll quit. But in a group, you do not want to be out done by the others. At least I have that.’ |
| **‘Big stick’** | **Patient (#3):** ‘I like to have a “big stick”. And to work towards it, then you have to practice. Just like with the physical therapist. There you also get exercises to do at home, and those you also have to do.’  **Patient (#36):** ‘Because I am so tired, and if you do not have a “big stick” then, then you don’t do it. Because you feel like, just let it go, I feel fine here in bed as well. But the bed does take.’ |
| **PRACTICAL FACILITATORS** |  |
| **Prehabilitation part of routine** | **Patient (#4):** ‘I don’t think you should put it that way, I think you should offer it anyhow. Not like, do you want to participate, but like this is what we got for you. Everybody gets the opportunity to participate, and then you can say, I think the patient should be responsible. But it should be offered.’  **Resident (#16):** ‘I think it is mainly useful if there are clear agreements about it, if there is a clear kind of care pathway. That someone, that it is just implemented, that is becomes the standard. I think that, that is the value. That you don’t do it sparsely, haphazardly, in one patient and not in the other one, but that it is just something structural.’  **Gynecologist (#26):** ‘Well, that you don’t have to refer, that it goes automatically. So, when a letter that says a patient is scheduled for surgery goes to the general practitioner, that you know the GP will contact the patient within a few days probably.’ |
| **Motivated team\*\*** | **Medical secretary/assistant (#14):** ‘I don’t think there are boundaries, but it is very important that everyone is on the same level.’  **Gynecologist (#20):** ‘Úhm, yes, and I think that, if you want to make it succeed, that it really depends on the support of the supporters, so the paramedics, I think. I also see an important role there. And I see a lot of enthusiasm, very dedicated types.’ |
| **NEGATIVE** |  |
| **PRACTICAL BARRIERS** |  |
| **FOR PATIENTS** |  |
| **Short time period between diagnosis and operation** | **Physical therapist (#10):** ‘If you really want to have a good program, to build up a good condition, to build up good strength, well you need several weeks to train two or three times a week at the right intensity, to be able to really train muscle power and gain more muscle mass. So, there are some training strategies behind that. And I know the time between diagnoses and surgery is short. Yes, so how large is the margin that you have to train someone. But that doesn’t mean that having a close look preoperatively, in the time you have, at the movement level or eating habits, and you can optimize that, you can’t have an effect. Anything you can do will be a nice bonus.’  **Gynecologist (#12):** ‘What always is difficult when we operate someone, is that they want to be operated on as soon as possible. So, look, if someone comes with a prolaps, then it can happen that you send someone to a physical therapist or treat someone with “synapause” beforehand. But if someone comes to you with something oncological, with endometrial cancer that we operate, than they want to be operated on as soon as possible after the diagnoses, within three weeks. So how can you improve the condition within that short period of time. That is not so easy.’  **Dietician (#13):** ‘Three weeks is very short, isn’t it. People have to change their lifestyle. People have to eat well, move more, enough proteins. And then, I think, three weeks is very short. Because when you measure muscle mass for example, nowadays we do that by measuring hand grip strength, then we leave four or five, sometimes even six weeks in between. Only then you can see something. Within three weeks you cannot find any measurable difference.’  **Patient: (#31):** ‘If you do it just before surgery, then I think you are too late. Because I think you should always move, not only just before surgery. You have to be working on that for longer, moving is always good.’ |
| **Going to hospital for prehabilitation** | **Gynecologist (#2):** ‘Well, ideally it would be in the patient’s own area. Because certainly, people come here from far and wide. See, in a big non-academic hospital it’s different, but we see people from Amsterdam for example, who come here for a uterus saving operation. Look, that’s not a sustainable situation. Look, the same applies to patients with ovarian cancer who are already in a bad condition. Then it is not feasible, during the trajectory in which they already don’t feel well, that they travel for an hour to follow physical therapy or whatever you are imagining… So, above all, it should be organized in the patient’s neighborhood.’  **Patient (#34):** ‘Well, we live in countryside rural area, so for us it is always complicated. I think it should really take place in the neighborhood. I think that works best.’  **Patient (#36):** ‘If you live close to the hospital and you have help at home, then it will all be possible. But it will still cost you a morning, won’t it. You have to go there, and you have to go home, and it will tire you out. Because, remember, you are not healthy, when you go there.’ |
| **Too intensive program** | **Patient (#29):** ‘Not a program that’s too big, because there is really a lot coming at you is my experience now. You know, when you have to do 30 things, that is not going to work.’ |
| **Referral to another hospital\*\*** | **Gynecologist (#20):** ‘We work in a network, so we refer to each other a lot. And a lot of patients are not operated on here anymore, but go to an academic hospital, unfortunately. So how are you going to do that? I think you should organize it regionally then.’ |
| **ORGANIZATION** |  |
| **Financial objections** | **Patient (#3):** ‘We don’t have a lot of money, so I cannot go to the gym. I have to do things I can afford. And when you don’t have a lot of money, and more people will have this problem, then that is not possible. It should not be too expensive. You have to be able to handle it financially. Swimming is too expensive for me, for example. We did that for a long time, therapeutic swimming, my husband and I, but later we could not afford it anymore. Well, then it stops.’  **Physical therapist (#10):** ‘Yes financially. Is it included in the “DBC” (Diagnosis Treatment Combination, one price per treatment path)? Does someone need to pay for it themselves? And for some things that can be a real barrier. Not everyone has an insurance for physical therapy, some only have limited compensations. Oncology might be in the chronic package at some point, but I am not sure about that. But you will anyways only get there after 20 consultations.’ |
| **Capacity of space / personnel** | **Dietician (#15):** ‘We continuously have to do more in less time. The formation is becoming smaller rather than bigger, so in that sense, every extra thing we add to the standard procedure, I don’t know if we have space for that. I don’t know how big that group is either…’  **Gynecologist (#26):** ‘I think that if you want to seriously work on it, then you will need quite a lot of time and money. By the way, I think that if you do it well, it can reduce the costs for hospitals and health insurances, for example in the number of postoperative complications. Uh, then I can imagine it can be cost-effective. But the question is, who dares to take that step?’ |
| **Much asked of gynecologist** | **Gynecologist (#1):** ‘But the thing is, look at the length of my consultation hour, it is just that you don’t think about it. It is the time, the time, isn’t it… And not the time pressure per se, cause I think I don’t have to do very much for it, but it’s more, do I have enough time to keep it in mind. And if we have to actively do things, than it won’t happen, we don’t have time for that.’  **Gynecologist (#11):** ‘The hard thing is, we all think about that in a small sense, but let’s be honest, I am not going to give people all kinds of advice on movement and nutrition, also because it doesn’t fit in my consultation hour. I think I am a too expensive, and too educated employee to do this kind of part logistics, part secretarial, part mentoring, what I like to do, but I don’t actually have the time for it.’  **Gynecologist (#20):** ‘How do you plan it in a conversation in which you bring bad news. Choosing the moment. I think that would hold me back. I think like, yes, I already have a lot to explain and to do, am I also going to talk about something else? So well, that’s what I think.’ |
| **Bad communication between healthcare professionals\*\*** | **Medical secretary/assistant (#14):** ‘Communication has to be good and everything has to be on the same page. And that can always be challenging in sequenced healthcare.’  **Physical therapist (#23):** ‘Often there is a difference in contact when you work here or in primary care. There can be a barrier in primary care to keep in contact with the hospital, so that is… I think it should be very accessible.’ |
| **Lack of knowledge / motivation by gynecologists\*\*** | **Resident (#19):** ‘Yes, but then I would like to know what exactly it is I have to say. Because living healthy is such a broad concept. Yes, smoking cessation, does it even make sense to make people stop smoking four weeks before surgery? I don’t know to be honest.’ |
| **Implementing something new is difficult\*\*** | **Dietician (#13):** ‘Organization, that is often a big problem. The willingness, the cooperation of patients. So what it costs physically, but also what it costs financially. Time. I think you have to offer a clear added value. They have to clearly see what kind of profit there is for them. Mainly the organization. Who is organizing it, who will start the whole thing. Is it clear?’  **Resident (#21):** ‘Yes, logistically it is always a drama to implement something new. It doesn’t matter what you are implementing. Implementing something always causes misery. You have to get everyone on the same page. You have to compose a motivated team. So I think a lot, a lot, a lot of meetings will precede the start of this.’ |
| **Lack of an evidence-based program\*\*** | **Gynecologist (#11):** ‘You need evidence, because physicians are by nature suspicious.’ |
| **PATIENT RELATED FACTORS** |  |
| **Stressful period for patients** | **Gynecologist (#2):** ‘It is a period in which people have a lot to deal with. They have a lot to sign, examinations, biobank, CT-scans, consultation with the anesthesiologist. They get a lot in a short time. And if these people have time for it mentally, that they are mentally open to work on their condition, hoping to be able to withstand the operation better, that is quite difficult. And it is not me who has to make that decision. I am genuinely interested in what patients think about that. If they can fit it in to their busy schedule.’  **Patient (#29):** ‘There is a lot coming your way already. And if you, besides that, have to fit in all those other things that you aren’t familiar with. Because in my experience, when I sit down, then I really have to push myself to start doing something, because somehow you are a little paralyzed so to say…’ |
| **Physical condition of patient** | **Patient (#6):** ‘I think one can work on it a lot by oneself. But maybe a lot of people don’t have the energy or the strength to do that, if they are not used to walking or running or biking. If they suddenly have to do it, that will not be in their system. So I think that can be very difficult for them.’  **Resident (#21):** ‘Mobility. If they cannot do it at home, but have to go outdoors. If people are not mobile, have to use a walker, partly by taxi, wheelchair bound. That can be a barrier. Then you have to start thinking if you can offer things at home.’  **Patient (#31):** ‘Well, see, if you are in the mood for food, than you will keep up your strength. Then you’ll make, or let someone make all kinds of nice things. But if you don’t feel like eating, and you actually have an aversion towards it… I know when I was in the hospital, they had very nice food, but I could not eat it...’ |
| **Lack of knowledge by patients** | **Patient (#36):** ‘And that is why it was good that I walked more. But I don’t know how I should do all that on my own.’ |
| **Lack of motivation by patients** | **Gynecologist (#11):** ‘It wouldn’t stop me personally, but what I experience, also with abnormal cervical smears, women with abnormal cervical smears, I did consultations at the treatment room this morning with them, the motivation for people for example to quit smoking is so low, they almost get cranky if you even just start talking about it. If you have number five of that morning to start about it, than I think, well I do it, because I think I should, but… Motivation can be hard because it is an addiction.’  **Physical therapist (#22):** ‘People who are not very active themselves, are hard to stimulate. You are often not your own maker, are you. And when you are sick and you don’t like moving and have to start doing it… That is a difficult combination.’  **Patient (#31):** ‘Well, I am lazy, I don’t do anything. I, I start with everything, but I finish nothing. It bores me, I get bored again, and, no, I am useless to you in that regard…’ |
| **Nature / fixed patterns of patients** | **Resident (#19):** ‘For elderly people it is really difficult, a lifestyle change. They hold on to fixed patterns, rituals, and how they do things on a day to day bases.’  **Patient (#29):** ‘You know, some people are very fit, I am not like that. People who are very fit will have less problems with it than me for example. I try to force myself to do some exercises, but which ones…’  **Patient (#32):** ‘It would not be a problem for me, but for others it might be. Because it might be a big change compared to how they always lived. See, If you have to make a change and they say for example you cannot eat meat anymore, or whatever, or only fish and you are not a fish person, then I think well, people will not follow through. If you are fixed on something. If it is something you agree with, and that you like as well, but if it isn’t, then I think people will have a hard time with it.’ |
| **Patient dependent of care** | **Gynecologist (#20):** ‘Elderly are often, when they don’t live in their own living space anymore, dependent on meals they receive, so that can make nutrition difficult.’  **Patient (#36):** ‘A day goes by fast. Because when they come here to wash me, and then it is ten o’clock, half past ten. Yesterday it was eleven o’clock, well then the morning is over.’ |
| **Limited access to digital resources\*\*** | **Gynecologist (#20):** ‘For young people I think, you can use apps to motivate them, but I think that is less suitable for the elderly. Not everyone has a cell phone with apps on it, that can be a problem.’ |
| **Language barrier\*\*** | **Gynecologist (20):** ‘When I look here, in Rotterdam South, that is quite a difficult population. There are a lot of immigrants, so language could be problematic.’ |
| **Confronting for patients\*\*** | **Dietician (#15):** ‘And what I find difficult sometimes, is that we cannot always prevent decline, and I don’t think it is very motivating to stress that. Right now we are doing a sort of nutritional assessment instead of only evaluating weight, which means we are measuring hand grip strength, it is not really running yet, but that is also because I find it difficult in oncology. Because I think that for some people, it can be stressed that they are declining, I find that hard. You cannot totally prevent it.’ |

*\* Only mentioned by patients; \*\* Only mentioned by healthcare professionals.*