

Supplement 1: Topic guide

Patient/Caregiver Interviews

1. Can you tell me about your past experience(s) of hospital discharge?

VIRTUAL CONCEPTS INTRODUCED

For each concept ask:

2. What are your first thoughts on concept X?
3. How do you feel about interacting with X technology?
4. In what ways do you think this concept would help?
5. What are the potential problems of introducing concept X?
6. Based on the problems you've shared, what are the possible solutions?

END OF CONCEPT INTRODUCTION

7. What would make you comfortable with the concepts you've been shown?
8. Is there anything else you would like to add?

Staff Interviews

1. What are the main problems you face with the current discharge process?

VIRTUAL CONCEPTS INTRODUCED

For each concept ask:

2. What are your initial thoughts on concept X?
3. In what ways do you think this concept would help?
4. What are the potential challenges or risks of introducing concept X?
5. Based on the challenges and risks you've mentioned, what potential solutions or strategies could help overcome these barriers?
6. What do you think patients/other staff would think of X?

END OF CONCEPT INTRODUCTION

7. What do you think would help when implementing these concepts?
8. Is there anything else you would like to add?

Supplement 2: Supplemental quotes

CFIR domain	Participant quote
Innovation	ID34 (staff) “In the medical setting we use a lot of short forms, so that could be a challenge. You need to train the computer to understand these, the abbreviations.” [Discharge summary automation] ID02 (staff) “I mean Singaporeans speak with a funny accent yeah so if your AI is trained in US or UK the accent is different it may not pick it up, your patients are going to be so frustrated” [AI bots] ID08 (staff) “So if you use pillbox right, you have to be able to accept that there's some additional risk. Then some people will take medicine without paying. You have to accept the risk. [self-collection medication locker] ID25 (patient) “Then definitely it needs to come from a reputable link, some way to authenticate, whether it's nowadays the SingPass or whatever, right? So I think that's necessary to kind of make sure that it's confirmed that it's real, right?” [AI bots] ID01 (staff) “But if the younger generation, once they graduated, step into the workplace, then they're like, oh there's AI to do this for me, so maybe I'm not necessary anymore, that kind of thing. So still need to make sure that you know what is their role and responsibility, for the patients.” ID04 (staff) “I'm not sure how many stimulus you can go on because the ward is a place with a lot of like sensory things going on... the usage of it must be quite challenging I feel.” [smart glasses] ID01 (staff) “AI it's not as flexible as human beings...They [patients] cannot get the question then AI is repeatedly asking. And then even asking the wrong questions, then patients feel frustrated.” [AI bots] ID16 (staff) “Definitely, I think after the ChatGPT did it, I think there's still somebody need to vet it to see how accurate the information was being given. Definitely, I know that there might be errors sometimes.” ID22 (patient) “Because it [technology] will only come in just for a short part of the discharge process, yeah, and then you're spending a lot of money developing this and just only to fulfil this small part of the process.” ID04 (staff) “Actually I’m not very sure though like the how much time will equate to cost savings actually because we probably only save maybe five to ten minutes.” ID25 (patient) “I guess it's inevitable that there will be AI put in place in terms of services because, you know, manpower cost and some things are repetitive and do not require a medical professional.” ID04 (staff) “I'm not sure, will they be okay to pay for a virtual therapist.” ID33 (staff) “Everything is about cost, isn't it? So yeah, so technology, I mean, healthcare is getting more expensive and all these new innovations cost money.”
Outer setting	ID17 (staff) “It will affect our role, maybe it will be become smaller, smaller team, because AI is actually doing most of it” ID16 (staff) “Now we really have manpower constraints. We know that our healthcare staff always have manpower issues because we already have a lot of patients to care for.”

	ID33 (staff) “I think with healthcare nurses and doctors it’s very hard to recruit” ID26 (patient) “I think Singapore is already moving in the right direction by building a smart nation....So the elderly, they are forced to learn technology.” ID06 (patient) “Not in particular. I mean, most of the things that you guys are looking at, I don't think uptake is going to be very good. I mean, I've tried some of those things but Singapore is very change resistance. “ ID41 (staff) “I think our government is really telling, saying that AI is slowly becoming part of your lives.” ID04 (staff) “I think in healthcare if we don't progress as fast as technology i think we'll be lagging” ID04 (staff) “I feel that maybe like our educational background is not catching up as fast” [as technology]
Inner setting	ID02 (staff) “You need to block time out. It can't happen out of work hours like they become resistant to that” ID33 (staff) “You have to make sure that it's working and your maintenance is on standby 24-7 as well.” ID15 (patient) “There's going to be some degree of wear and tear and some patients...they may abuse the items around them.” ID39 (patient) “So if all these documents can be consolidated in one app like health hub then it would be good, more convenient.” ID02 (staff) “There's just too many [institutional healthcare apps] and sometimes you know the patients get sent to different hospitals right and then you need to have different apps. Can't we just have one place for everything?” ID13 (staff) “Also, I don't know if like, does it spoil easily? I think I'll be worried if it spoils, Or maybe infection control.” ID09 (staff) “For an AI bot, they don't have access to the net, right? They are not able to retrieve all the data and all that that you actually want them to do. Yeah, so they do have their limitations.” ID21 (caregiver) “It hinges a lot on the connection, if I can't really hear you, you know, if it's fuzzy it's just not going to work.” ID25 (patient) “In the end, the doctor has to be responsible, right?” ID33 (staff) “However, I think the only thing that they would need is probably a leaflet inside there for them to know what drugs they are taking and what is this drug for. Something to safeguard the patient and the institution as well, so the patient will not I don't know what I am taking.” ID09 (staff) “I know like in hospital, usually hospital policy, we don't allow filming or recording even during like conversation with the doctors and all the allied health. Yeah. So I think this might be a potential issue as well.” [smart glasses, teleconsultation] ID13 (staff) “If they [AI] write something that incriminates them, and it is not vetted properly, and the patient reads it, then you “kena” (in trouble)” ID14 (staff) “I think I'll be concerned if the next of kin has concerns, then this AI bot couldn't pick up and then they will blame it on the hospital for not listening to their

	concerns.” ID25 (patient) “It could be as simple as having a policy where they ensure that all recordings are deleted within 12 hours or 24 hours, unless for other reasons. I think such policies need to be put in place and then it should be alright, I think.” [Teleconsultations] ID39 (patient) “I am not sure would it cause any legal implication if a wrong instruction is given, wrong information is given.” [AI chatbot] ID06 (staff) “A lot of the seniors here [management] are very wary of technology.”
Individuals	ID01 (staff) “I think the trust is really the main factor when you want to bring in the AI because even when it's a human being the patient may want to choose a senior doctor or senior pharmacist than the junior doctor or junior pharmacist.” ID40 (staff) “If a bot would call the family member to come bring the patient home. I'm scared that they would think that it's a scam.” ID29 (patient) “I'll feel that if the doctor is able to visit me, it shows that the doctors really cares.” ID03 (patient) “Haha my first reaction is, oh, oh no, is it a scam? hahaha If I want to pick up that phone, right, and then the AI speaks to me like.” [AI bot] ID10 (staff) “Provided, you know, it can gather the necessary information...I don't know how good the technology is because there can be a lot of variation in terms of the answers that are provided, right? So how well can it gather the information that we need?” [AI bot] ID14 (staff) “But then I feel like discharge is when most family members are quite anxious, not sure if it's safe. So a bot, I think I would not be comfortable... I think there's a lot of nursing assessment also, whether they understand. So I wouldn't trust a bot for that.” ID39 (patient) “If this is very human-like, I'm not sure would it be giving the wrong impression to the patient that is actually is an actual human talking to you.” ID35: “You have to really go and read through sentence by sentence, right? Does it make sense? Is it summarizing the same? It's very tiring. I'd rather do it myself. Because I don't have to go in and check.” [automated discharge notes] ID01 (staff) “It's a safety concern. Because there is no second person sitting next to the AI to hear what information is being played.” ID23 (staff) “They see virtual consults as something inferior to physical consults.” ID30 (patient) “Is that a webcam thing? I think there'll be the morbid suspicion that there might be a recording.” [smart glasses] ID26 (patient) “And now even with Health Hub, every time my mum goes for an appointment, she can easily go into her app to look at the lab results.” ID05(staff) “I think for the younger generation, they'll appreciate this because this is something that's familiar to them, online communication.” ID16 (staff) “I'm not really old, but I still find that the human touch is important for me.” ID25 (patient): “I think if the trust has already been established, for example, if the doctor has already, you've seen the doctor in person before, but then subsequently, you

	know, the doctor won't be able to make it, I think that's okay. Because you already established that kind of connection but if it's purely video and all the while and you just don't feel that level of concern or care may be less.” ID03 (patient) “So if you do not give me a real human talking to me, you give me an AI talking to me at current stage, I'm not comfortable with that.” ID08 (staff) “I think the beauty of healthcare is that human touch is always very important. That one AI wouldn't be able to replace.” ID10 (staff) “At least for the younger population, but I think for the older people of course they still prefer the human touch.” ID20 (staff) “I don't really have to examine them. I mean, we could do video consult but they don't want to, they prefer to come and see a doctor. They [patients] value that” ID25 (patient) “I still feel that for a more serious kind of discussion in person is ideal. At least you establish trust first” ID13 (staff) “Helps her to feel more empowered and less like you know my teacher is watching...which I think would be good for training” [virtual supervision]. ID13 (staff) “For young people, in future, I think definitely there should be no issue because everybody is born with a handphone already once they come out from the womb.” ID06 (staff) “Yeah, but from the patient perspective it's also a bit intimidating to them because my device obscures the entirety of my face.” [smart glasses] ID10 (staff) “I personally don't like talking to the bots because sometimes they don't get what you're trying to say, that's the annoying part.” ID34 (staff) “If the doctors are doing the rounds and if we could sometimes, you know, call in to listen as well so we understand what's going on with the patients medically. Yeah. That would be helpful.” ID28 (patient) “The AI can like instantly inform him [caregiver] when is my discharge time, not wait until the nurse calls or wait for me to call, then will be much easier yeah.” ID05 (staff) “If it's me wearing [smart glass] and a consultant in my ear...but the patient's impression is that, oh, it's all coming from me...I don't know if it carries the same gravity if it's something important that I'm trying to convey.”[smart glass] ID04 (staff) “I find myself always explaining to the patient that you're not my only patient, but the AI can be patient-centered, say I am for you... the AI can do that, to make the patient feel like they are being very valued.” ID17 (staff) “If I'm a patient I will get very nervous with a lot of doctors around you so by this device if he's the only one actually [in-person] and you are only interested to speak to him then yes I'll be interested by only having this device and speak to him only.” ID27 (staff) “I think if there's an avatar or a video, if there can be visual prompts, I feel that that's helpful as well. I think your attention span when you're listening to a phone call is not that long.” ID43 (patient) “The first time with the consultant is face-to-face” before virtual follow-up may be preferable”
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	ID08 (staff) “Because nowadays, even elderly, most of them have WhatsApp already.” ID01 (staff) “But I think our population quite known for elderly people stay alone. Yeah, lack of family support.” ID05 (staff) “The older generation, something being so foreign, something new, I don't know if there's greater resistance”
Implementation process	ID33 (staff) “AI bots, it's not going to happen anytime soon.” ID04 (staff) “I don't think the general population of like patients that we're seeing now can engage in such like high level like use of technology but maybe in the future it might be possible” ID16 (staff) “I'm not so sure in like 5-10 years time, how's the AI being matured? Maybe they're really talk like a normal human, they got pitch, they got tone, all those things and the patient will feel more human touch and the relationship is there.” ID21 (caregiver) “I'm not sure we are there today. I might change my mind a few months, few months, few years down the road, when the technology gets sophisticated enough that it's really pretty smooth.” ID29 (patient) “I think there's no soon or later, you need to implement what you need to implement” ID39 (patient) I wouldn't say too soon, just I have to provide options for digital or non-digital. I have to provide options for non-digital as well. ID05 (staff) “Someone needs to go through with them [patients]. I think that's what's important.” ID07 (patient) “A lot of the old people, I think they can't remember. They need someone to help them with that.” [technology use] ID37 (staff) “I think maybe for the initial phase, a physical person may be needed. Because for the initial phase, there will be a lot of questions.” ID33 (staff) “So we do have someone going around at our centre to educate the old folks and to educate the NOKs to download this app for them and teach them how to use it to digitalise, to be more tech savvy. So again, it goes both ways. Good to have, but then you need to know how to use.” ID05 (staff) “I think there would be an adjustment period. If this is something that we're really going to put into our own healthcare practice, it would take time. We would need verification with a real human person if we are to give people confidence in our bot.” ID22 (patient) “And of course I'm receptive to using technology, so for me it's okay if upfront you tell me, explain to me what's happening, I'm okay.” ID26 (patient) “AI is here to stay, right? We all know that such things already exist. So why not embrace it?” ID38: “But I think with the current scenario and the news and everything, I think somehow, it's inevitable. In the long run, we will be interacting with the AI bot and robots themselves.” ID26 (patient) “I think it's never too early. It's whether the thing you roll out, is it ethical? Do people have choice to not use it?”

	ID01 (staff) “When we want to roll out this thing, we don't target elderly people first...but younger generation, maybe yes.” ID03 (patient) “If you have everything all at once then it's like too many changes, yeah, so maybe start with something that is little.” ID15 (staff) “I think you will definitely face some problems because even for simple things like registering at a polyclinic or hospital, right, I have run into older folks who cannot navigate the system.” ID22 (patient) “Every patient has somebody who is savvy to use those apps and retrieve the documents.” ID26 (patient) “Especially the elderly, or if they don't know how to use the AI bot, then they would feel very lost if there's no one there to help them to navigate this robot.” ID33 (staff) “Patient education. Something new. So yeah, patient education is very important.” ID21 (caregiver) “Having a person there will help. Then I think that, uh, those, those of us who are not comfortable with, uh, a hundred percent technology, at least we have, I keep coming back to, if I need to ask a question, I'd rather a person be there.” ID25 (patient) “So I think having human-like one is okay just put that in AI so that they manage their expectations as well”
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Supplement 3: COREQ checklist

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	8
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	8
Occupation	3	What was their occupation at the time of the study?	1
Gender	4	Was the researcher male or female?	8
Experience and training	5	What experience or training did the researcher have?	8
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	7
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	7
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	7-8
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	9
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	7-8
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	7-8
Sample size	12	How many participants were in the study?	11
Non-participation	13	How many people refused to participate or dropped out? Reasons?	11
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	7-8
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	8
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	11
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7-8
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	8
Field notes	20	Were field notes made during and/or after the interview or focus group?	8
Duration	21	What was the duration of the interviews or focus group?	8
Data saturation	22	Was data saturation discussed?	7-8
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	7-8
Description of the coding tree	25	Did authors provide a description of the coding tree?	9-10
Derivation of themes	26	Were themes identified in advance or derived from the data?	9-10
Software	27	What software, if applicable, was used to manage the data?	10
Participant checking	28	Did participants provide feedback on the findings?	10
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	12-16
Data and findings consistent	30	Was there consistency between the data presented and the findings?	12-16
Clarity of major themes	31	Were major themes clearly presented in the findings?	12-16
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	12-16

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357