

Supplementary Material

Title: *AI after the bedside: a qualitative study to co-produce semi-automated clinical informatics workflows to routinely analyse patient-reported experience measures in hospitals and health services*

Supplementary Material 1: Consolidated criteria for Reporting Qualitative Research (COREQ) checklist

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?	Page 9
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	Page 9
Occupation	3	What was their occupation at the time of the study?	Page 9
Gender	4	Was the researcher male or female?	N/A
Experience and training	5	What experience or training did the researcher have?	Page 9
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	Page 8
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Page 8
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Page 9
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	Page 6
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Page 7-8
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	Page 7-8
Sample size	12	How many participants were in the study?	Page 10
Non-participation	13	How many people refused to participate or dropped out? Reasons?	Page 10
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	Page 8
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	Page 8
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	Page 8
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Page 8-9
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	Page 8
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	Page 8
Field notes	20	Were field notes made during and/or after the interview or focus group?	Page 8
Duration	21	What was the duration of the interviews or focus group?	Page 8
Data saturation	22	Was data saturation discussed?	N/A
Transcripts returned	23	Were transcripts returned to participants for comment and/or	Page 8

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?	Page 9-10
Description of the coding tree	25	Did authors provide a description of the coding tree?	Page 10-12
Derivation of themes	26	Were themes identified in advance or derived from the data?	Page 9-10
Software	27	What software, if applicable, was used to manage the data?	Page 9-10
Participant checking	28	Did participants provide feedback on the findings?	Page 8
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Page 13-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	Page 11, 15
Clarity of major themes	31	Were major themes clearly presented in the findings?	Page 12
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	Page 11, 15

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 – 35

Supplementary material 2: Summary statistic of PREMs inpatient surveys administered in a statewide public health system in XX (n = 16 health services) (2020-2022)

Survey	Health Service	Surveys Sent	Responses to survey	Responses to 'satisfaction with overall care'	% Responses to survey	% Responses to overall care
PREMs Inpatient	HS-Blue	13,467	1,543	1,440	11%	93%
	HS-Red*	7,565	993	918	13%	92%
	HS-Green	497	63	61	13%	97%
	HS-Orange*	11,152	1,415	1,316	13%	93%
	HS-Yellow	15,444	2,416	2,259	16%	94%
	HS-Pink	5,529	723	667	13%	92%
	HS-Purple*	36,492	5,739	5,404	16%	94%
	HS-Navy*	29,156	4,122	3,861	14%	94%
	HS-Teal	1,368	131	124	10%	95%
	HS-Violet	946	117	111	12%	95%
	HS-Gold	15,581	2,151	2,016	14%	94%
	HS-Silver	651	35	31	5%	89%
	HS-Turquoise	8,354	986	926	12%	94%
	HS-Maroon*	8,560	1,035	957	12%	92%
	HS-Aqua	7,826	969	914	12%	94%
PREMS Paediatric Inpatient	HS-Rainbow	12,694	1,544	1,448	12%	94%
Total (Phase 2)*		92,925	13,304	12,456	14%	93%
Total (all)		175,282	23,982	22,453	12%	93%

*Health services included in phase 2 (current state vs. ideal future state)

Supplementary material 3: Participant quotes supporting each theme related to current and future (ideal) state of PREMs free-text analysis workflows from key informant interviews

Theme	Quote reference	Participant quote
Theme 1 <i>Analysing and processing of PREMs data</i>	Quote 1A	<i>"It's a manual process...it's me in a spreadsheet reading because I don't have a system" (HS-Red)</i>
	Quote 1B	<i>"It honestly is very time consuming...one of the things I did not - that is taking up a lot of time is that reading." (HS-Maroon)</i>
	Quote 1C	<i>"It takes a long time and it's not always necessarily as timely as I'd like it to be. You know, I don't always get to it." (HS-Orange)</i>
Theme 2 <i>Translating PREMs into quality improvement</i>	Quote 2A	<i>"We don't action anything we've got unless it's a bad thing. Then it's delivered to the local managers to act upon. And then I don't think there's really an evaluation as to whether that was effective or not. It's more of a complaint to management." (HS-Orange)</i>
	Quote 2B	<i>"Have different people using and interpreting and understanding the data because the other important part was each service area has their own data and context in which that data is coming from... yep, I know where this problem sits and this is what we're going to do about it. I think it actually leads to quicker practice improvement and innovation than something that like a centralized system would have." (HS-Purple)</i>
	Quote 2C	<i>"If something has changed in this month, we're able to go back and analyse and say what has changed, if it's staffing levels. Have we had high absenteeism? What has happened? Are we recruiting? And we look for what has been happening in that ward or particular division, and we determine why we've received that feedback and how we can improve." (HS-Maroon)</i>
Theme 3 <i>Desired characteristics of ideal PREMs analysis workflows</i>	Quote 3A	<i>"If there was a program that could possible pick up the keywords and do the themes itself, it's very time consuming to read a lot of feedback and then put it under themes...It'd be great if there's a program that could pick up those keywords and allocate it against something like that so we wouldn't have to do that ourselves." (HS-Orange)</i>
	Quote 3B	<i>"But I think we would need to know and be able to trust that it's picking up the right words. I don't understand it very well." (HS-Navy)</i>
	Quote 3C	<i>"So much in the health system has been dehumanised, automated and disconnected. And especially when we're talking about the patient experience, it's when we need to put that human element back into it." (HS-Purple)</i>

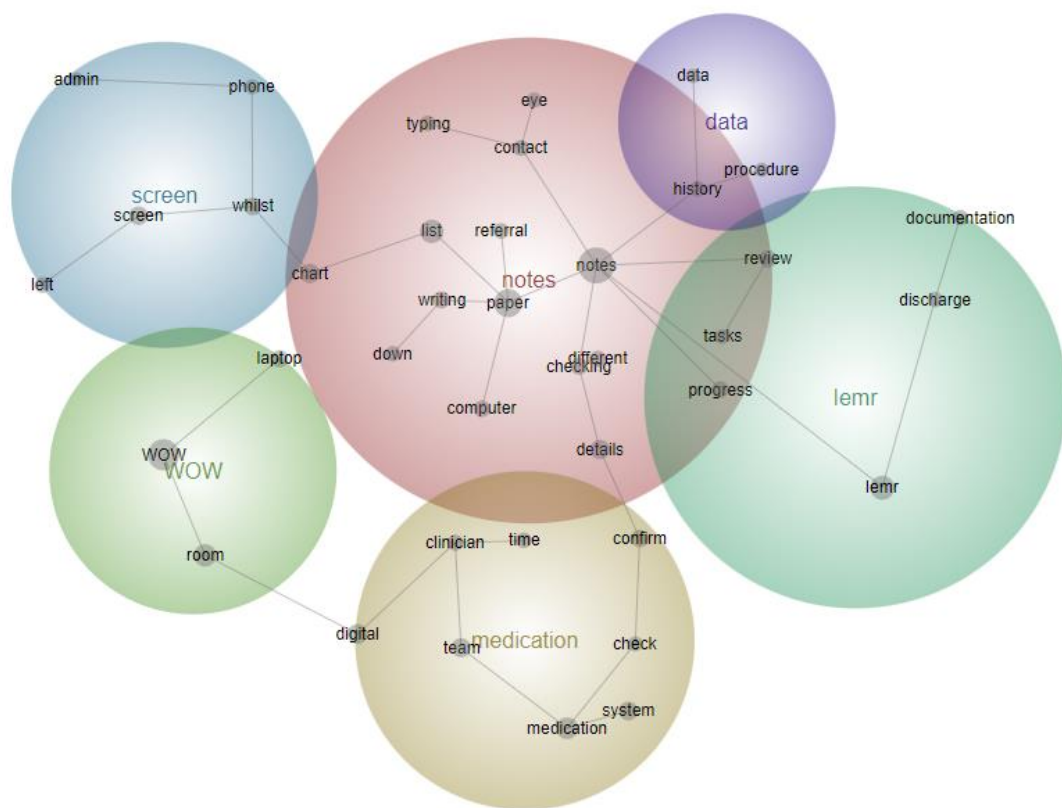
Quote 3D	<i>"You know we're not at the big house, we're [not a metropolitan facility] and yeah, the more of an even playing field we can all be to be able to benchmark [the better]." (HS-Red)</i>
Quote 3E	<i>"It would be able to pull out these trends and these things that are happening so we could compare that to our other data sources...to get that bigger picture and drive meaningful change to say this is a problem in our health service." (HS-Orange)</i>
Quote 3F	<i>"[It] would be a challenge, but that's with any clinical change." (HS-Orange)</i>
Quote 3G	<i>"So, I don't see [this change] as big at all because that's what we deal with on a daily basis, this change." (HS-Maroon)</i>

Supplementary material 4: Example inter-topic concept map generated by Leximancer

This concept map was generated from data exploring real-time clinical behaviour in a digital hospital published by our research team¹.

From Leximancer's machine learning analysis, this map illustrates themes as coloured bubbles that are heat-mapped according to their frequency ('importance'), with warmer colours (red, yellow) indicating higher frequency and cooler colours (blue, purple) lower frequency. Concepts are displayed as dots within each coloured theme bubble and inter-linked across themes. Closer proximity of the coloured bubbles or concept dots indicates higher co-occurrence.

1. Canfell OJ, Meshkat Y, Kodyattu Z, et al. Understanding the Digital Disruption of Health Care: An Ethnographic Study of Real-Time Multidisciplinary Clinical Behavior in a New Digital Hospital. *Appl Clin Inform.* 2022/11/09 2022;13(05):1079-1091. doi:10.1055/s-0042-1758482



Theme	Hits
notes	186
medication	138
WOW	133
lemr	66
screen	51
data	11