

APPENDIX

I. Observation checklist used by research assistants

Date:

Observers:

Patient Number:

StartTime:

EndTime:

Key:

- P=Page(Received)
- I=Interruption(E.g. Question from staff member or colleague, code or RRT)
- C=Cell Phone(Checking e.g. received call, text or checking time)
- S=Social Interactions
- T=Toggle

	Use Filter?	Number of Distractions	Scrolling Burden	Toggling	External
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1. **Scrolling burden** indicates the degree to which the user was deemed by the observer to be scrolling up or down on a given EHR screen. Observers made this indication with upward or downward arrows to indicate the direction of the scroll and rated the scrolling burden on a scale from 1 to 3, with 1 arrow representing mild scrolling and 3 arrows indicating severe scrolling burden.
2. **Toggling** indicates whether the user was deemed to be flipping back and forth between the EHR screen and another window, such as a pop-up window containing a chest x-ray image or a pop-up window involving the web-based institutional paging system. This was assessed on a binary (yes/no) scale and indicated with a "+".
3. **External** indicates whether the user was deemed to be using any external resources, such as web-based calculators or clinical resource guides.

II. Example annotated observation checklist from live observation.

Date: 1/30
 Observers: ST (CE)
 Patient Number: 4
 Start Time: 25:00
 End Time: 30:30

Key:

- P = Page (Received)
- I = Interruption (E.g. question from staff member or colleague, code or RRT)
- C = Cell Phone (Checking e.g. received call, text or checking time)
- S = Social Interactions
- T = Toggle

	Use of Filter?	Number of Distractions	Scrolling Burden	Scrolling	Scrolling	Scrolling	External
FS	YES/NO YES/NO YES/NO						
Micro	YES/NO YES/NO YES/NO	top button					
Results Review	YES/NO YES/NO YES/NO	stop - take notes					
Chart Review	YES/NO YES/NO YES/NO						
Summary	YES/NO YES/NO YES/NO						
Chart Review	YES/NO YES/NO YES/NO						
Orders	YES/NO YES/NO YES/NO						
	YES/NO YES/NO YES/NO						

1. **Scrolling burden** indicates the degree to which the user was deemed by the observer to be scrolling up or down on a given EHR screen. Observers made this indication with upward or downward arrows to indicate the direction of the scroll and rated the scrolling burden on a scale from 1 to 3, with 1 arrow representing mild scrolling and 3 arrows indicating severe scrolling burden.

2. **Scrolling** indicates whether the user was deemed to be flipping back and forth between the EHR screen and another window, such as a pop-up window containing a chest x-ray image or a pop-up window involving the web-based institutional paging system. This was assessed on a binary (yes/no) scale and indicated with a "+".

3. **External** indicates whether the user was deemed to be using any external resources, such as web-based calculators or clinical resource guides.

III. Interrater Reliability

Participant	Total EHR Screens	# of Screens w/ agreement by 2 observers	IRR* (% Agreement)
1	42	33	78.6%
2	63	51	81.0%
3	71	61	85.9%
4	62	47	75.8%
5	56	42	75.0%
6	36	30	83.3%
TOTAL	330	264	80.0%

***IRR** = interrater reliability, calculated as percent agreement for the observed EHR screens. Agreement was defined as both observers recording the same EHR screen in the same sequential workflow position for a given participant. IRR was calculated once for each participant and once in aggregate. Given that this work was performed as a pilot test as part of a larger mixed-methods investigation, no acceptability threshold was set in advance. No data were deemed unacceptable for inclusion. The paired observation sessions took place over three days between December 2017 – February 2018; given this limited timeframe and the range (75.0% - 85.9%), analysis for chronological trend in IRR was deferred.

IV. Results: Distractions Observed During Pre-Rounding Chart Review

KEY		Participant						TOTAL	%
		1	2	3	4	5	6		
I	Interruption	2	2	6	3	5	3	21	38.2%
S	Social interaction	4	2	3	10	8	2	29	52.7%
P	Pager	0	1	0	2	0	1	4	7.3%
C	Cell phone	0	0	0	1	0	0	1	1.8%
		6	5	9	16	13	6	55	

Interruption = clinical question involving face-to-face dialogue with colleague; rapid response or “code blue” (i.e., a medical emergency during which the participant was called to bedside to assess the patient), etc.

Social interaction = making small talk with colleague or co-worker, non-clinical conversation, etc.

Pager = page received

Cell phone = phone call received, text message sent or received, checking time, using calculator, etc.