

Supplemental Documents

Supplemental Table S1: After Action Review (AAR) Questions

AAR Questions	
1	Did you encounter any issues or problems during the study? If so, describe?
2	What did you think of the simulation instructions? To the best of your knowledge, did they accurately reflect how the procedures would be performed? Are there any changes you would recommend?
3	What changes, if any, do you recommend to the software? This may include layout, instructions, or navigation aspects.
4	What concerns, if any, do you have with using the software applications to care for patients in remote locations?
5	What did you enjoy most about this experience? Why?
6	Was there anything you found to be frustrating? Why?
7	Do you see use of the software applications being of value in your future work? How do you see it being used?
8	Did you feel stressed during any part of the procedures, if so, when, and why?
9	Did you experience any discomfort or side effects (ie nausea, dizziness) while using the HoloLens?

Supplemental Table S2: Qualitative Analysis of Theoretical Framework Codes

Escharotomy	Fluid Resus	Med Calc	TBSA
HL confidence with incision location	Burn flow sheet confusing	Easier to do calculations in HL	HL "much more accurate"
CPG was more appropriate for use	graphs helpful to track over resus	No detail on how/why for calculations	Coloring easier on paper
Escharotomy instructions too simple	Fluid calcs were frustrating on paper, hadn't done in a while	Frustration: Not done dosage calculation since college	Mapping is better on paper
Enjoyed real life example of when this is done		Faster to calculate in HL	AR for coloring is frustrating
Not enough detail on how deep the cut is		Would be great if calculations talked to charting system	Paper/CPG was easier
Using HL before CPG was "very helpful"		Easy to mistake input	coloring took a while with AR
Not much instruction on how to do in CPG		Too many clicks	coloring was challenging
HL helped only for this escharotomy task		"it has been a while, I need to refresh"	awkward drawing in air vs on a tablet
have something telling you where to stand so can see during procedure		HL calculations were easy and less time consuming	
AR was easier			
Didn't see the red line			

training on escharotomy is invaluable			
Overlay can be distracting			
Couldn't see through overlay			
Video in HL was somewhat helpful			
<p><i>Color Key:</i> <i>Blue</i> – External Variables: User training or educational experience, familiarity, age, hardware, environmental elements. <i>Green</i> – Perceived Usefulness: User's perception of using a particular system enhancing their job or performance. <i>Purple</i> – Perceived Ease of Use: User's perception of using a particular system would be free of effort.</p>			

Supplemental Table 1 (Continued): Qualitative Analysis of Theoretical Framework Codes

Usability	Education/training	Deployment	CPG	Overall Impression
HL more organized	HL training before sim helpful	size (listed as pro and con)	Info hidden	AR Reduced the stress
Provide safe care	Practice skills in a more realistic environment	portability (listed as pro and con)	Wordy paragraphs	Reliance on technology
Potential malfunction	"Wish AR did more teaching"	battery life	More appropriate for incision	AR reduced stress "a great deal"
Get in way during physical assessment data	Younger users "will expect to be able to pick up and use it"	Fragile	Easier to quick look up	AR Confidence in location of incision
Connectivity issues	Useful for training med students for more hands on	Would need to train personnel before use in deployed environment	CPG not helpful for calculating doses	HL helpful to walk through procedure
Red line made depth assessment difficult	good training for escharotomy	Needs IT support	CPGs not organized as well as hoped	More space to move self when having difficulty moving apps
HL obscures accurate visualization of patient	Training/intro was helpful for a non-gamer	Value: austere environment to assist clinicians	Can get the right answers, not as fast as HL	"wish it was more detailed" AR
Hard to move/resize windows	this is future in training/education	Ease of use on battlefield is questionable	Not much instruction on how to do escharotomy	Didn't go into details of why things are done AR
HL very clear with instructions	Good for FTX/Training exercises	may be problem to take off Kevlar	Ketamine dosage should be on Ketamine dose table	Fun
HL clear guidance	If student watched only HL website instructions, they would be able to use the HL	Carrying HL, could get damaged	Cumbersome	Familiarity with oculus/gaming helpful to learn HL
Red line was helpful	for training, to check their ability to perform tasks	needs to be more rugged	"I am more familiar with CPG"	Provider may forget information if they didn't have it
HL faster to find right answers	great as training tool but user may not retain info without previous knowledge	helpful at aid station, not POC	"Muscle memory" with paper CPGs, I'm more familiar	AR "Way better than CPG"

Useful for very specific care		where will it be charged?	Easy to navigate but information is "spotty"	Apple vs Android, hard if Apple user
HL easier to use than CPG		where will it be stored?	Frustrating because not familiar with them	AR much more convenient
Sensitive to hand movements		not practical for tactical field care or care under fire	No frustration with CPGs	Better care
Hand position in "high five" is not comfortable		maybe more useful at FOB	Took more effort to find what looking for	Increase confidence
May take too long to use		in tactical field care with HL may miss what's going on in environment	Felt flustered couldn't find info in CPG	Timely
Bulky		too busy watching the HL	paper CPG had more information on tissue layers so easier to cut	Concern: safety
Could fail		Booting up under fire	previous knowledge of paper CPG help with using HL	Demonstration of procedure increased confidence in performance
Peripheral vision poor with HL		Miss real life		AR was more thorough detail
Concern: reliability		Storing		Concern: availability
Concern: use with glasses		Charging		"Would love to have immediate feedback mechanism in AR performance...did I do this correctly?"
Trouble with touch/hand gestures		"I don't think it's feasible in tactical field care"		"AR does things automatically, so you are forced to trust it"
icons not opening		Useful at FOB		Using in first hour (of injury) is "too much of a distraction"
AR easier to navigate		Easy to use in the field		Use of HL after patient is stable may help
Concern over documentation in electronic record		Role I use		Felt more confident in skill because "HL tells me exactly how to do it"
Assisted as guide path for where to cut and marks where to go		Useful in aid station maybe		AR helps inexperienced in doing a skill with confidence
AR Easy access		may be hard to hear audio in field		HL is "dummy proof"
Easy to use		Concern: ruggedness		"I am old fashioned...it's going to take me a while to catch up"

easy to access		concern: battery life		Concern: loss of human interaction possible
ease of access to information		if limited light, HL makes it harder to see		AR CPG got straight to the point
"High five" hand gesture is not natural		going from bright HL to dark room may make difficult for eyes to adjust		Value: portable without use of internet
Cool if HL ported to medical record				"Provider may get wrapped up in trying to navigate the HL instead of caring for patient that is in front of them"
Cared for the simulated patient quicker with AR				neat to see AR in normal environment
Hand control and response time was most frustrating				Gave visual reference rather than just words on page
HL is easy and accessible way to reference CPG				"Too many things on head already"
HL was easy				May look like you don't know what you are doing if use AR with an awake patient
Speeds up process of information				patient may experience delays until provider accesses information or gets used to HL
HL didn't always pick up voice				
Sometimes HL picked up slightest hand movement				
couldn't see holographic image up close				
<p>Color Key:</p> <p><i>Blue</i> – External Variables: User training or educational experience, familiarity, age, hardware, environmental elements.</p> <p><i>Green</i> – Perceived Usefulness: User's perception of using a particular system enhancing their job or performance.</p> <p><i>Purple</i> – Perceived Ease of Use: User's perception of using a particular system would be free of effort.</p>				