Utility of a Handheld Ultrasound Device for Resident and Medical Student Education

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Introduction

- **Point-of-care ultrasound (POCUS) has been a rising development in the medical field.**
- **POCUS is diagnostic ultrasonography that is performed and interpreted by the physician, as opposed to the routine ultrasound examinations which are completed by a sonographer with the images sent to a radiologist for interpretation.**
- **Images are acquired and analyzed in real-time to help guide physicians in diagnostic and therapeutic management of the patients.**
- **In our study, we investigated the benefit of allowing radiology residents and medical students to train with the Butterfly iQ+ device at home, so as to learn how the POCUS probe works, become familiar with its features, and practice scanning on their own.**



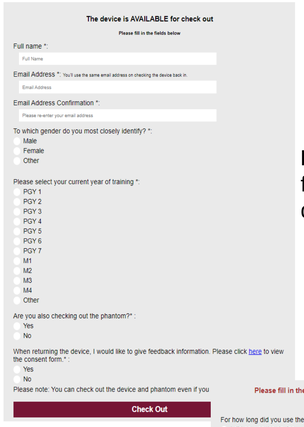
Fig. 1. The Butterfly iQ device connected to a standard mobile device.



Fig. 2. The Butterfly iQ device in use.

Methods

- **IRB approval was obtained.**
- **Funding for the device was via the Loyola Geoffrey Gunnar Memorial scholarship.**
- **16 trainees participated in our study over the course of a year (14 residents, 2 medical students).**
- **Study participants were surveyed prior to and following self-directed use of the POCUS device via an electronic system.**



The device is AVAILABLE for check out

Please fill in the fields below

Full name *:

Full Name

Email Address *: You'll use the same email address on checking the device back in.

Email Address

Email Address Confirmation *:

Please re-enter your email address

To which gender do you most closely identify? *:

Male
Female
Other

Please select your current year of training *:

PGY 1
PGY 2
PGY 3
PGY 4
PGY 5
PGY 6
PGY 7
M1
M2
M3
M4
Other

Are you also checking out the phantom? *:

Yes
No

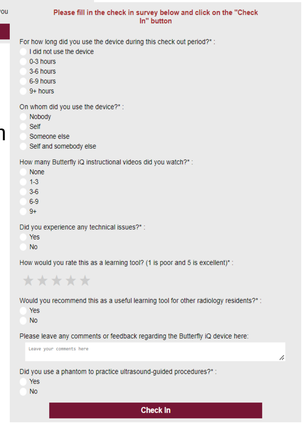
When returning the device, I would like to give feedback information. Please click here to view the consent form. *:

Yes
No

Please note: You can check out the device and phantom even if you

Check Out

Fig. 3. Electronic check out form for the Butterfly iQ device.



Please fill in the check in survey below and click on the "Check In" button

For how long did you use the device during this check out period? *:

I did not use the device
0-3 hours
3-6 hours
6-9 hours
9+ hours

On whom did you use the device? *:

Nobody
Self
Someone else
Self and somebody else

How many Butterfly iQ instructional videos did you watch? *:

None
1-3
3-6
6-9
9+

Did you experience any technical issues? *:

Yes
No

How would you rate this as a learning tool? (1 is poor and 5 is excellent) *:

Would you recommend this as a useful learning tool for other radiology residents? *:

Yes
No

Please leave any comments or feedback regarding the Butterfly iQ device here:

Leave your comments here

Did you use a phantom to practice ultrasound-guided procedures? *:

Yes
No

Check In

Fig. 4. Electronic check in form for the Butterfly iQ device.

Results

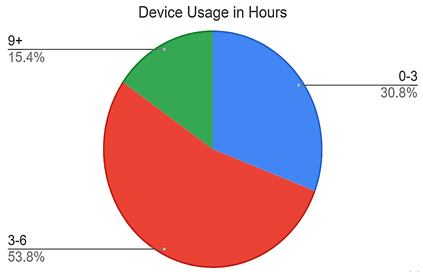


Fig. 5. Device usage in hours.

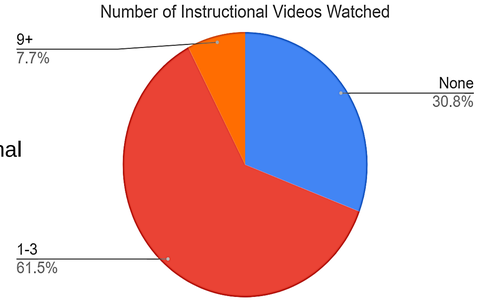


Fig. 6. Number of associated instructional videos watched by participants.



- **All participants rated the Butterfly iQ device as 5 out of 5 as a learning tool, and all participants indicated that they would recommend the device as a useful tool for other learners.**
- A PGY-3 resident remarked: “Love the idea of being able to trial the Butterfly US and practice scanning on my own time schedule. Great way to better conceptualize and understand the studies. The instructional videos are also a helpful asset.”
- A PGY-4 resident reported feeling “much more confident with ultrasound”.
- A medical student commented on the user-friendly nature of the device: “Very compact device that has many features packed into one probe and is very compatible with an iPhone, making it easy to use.”

Conclusions

- **Our study highlights the role of POCUS in residency and medical student training.**
- **The emerging need for ultrasound calls for improved training in this modality for learners in healthcare settings.**
- **Our study demonstrates the positive response residents and medical students had toward use of POCUS in learning ultrasound.**

Disclaimers:

- There are several POCUS devices available.
- This study does not compare the various devices and is not meant to serve as an endorsement for a particular device.
- The authors declare no financial relationships with Butterfly iQ or any other POCUS device.

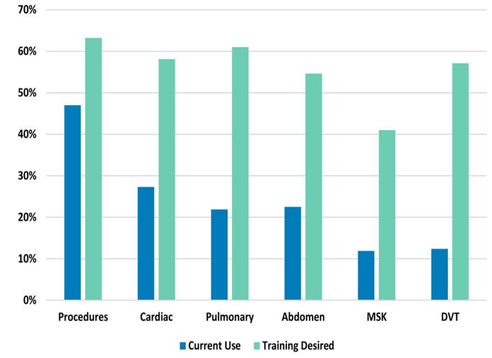


Fig. 7. Current use and desire for POCUS training among hospital medicine groups (n = 105) per published literature.

References

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