



HANDS-ON **ULTRASOUND** EDUCATION

# **Hands-On Ultrasound Education Program for Emergency Medicine (HOUSE EM)**

Program Evaluation

Overview of Evaluation Findings

*December 2019*

**UBC CPD**



CONTINUING PROFESSIONAL DEVELOPMENT  
FACULTY OF MEDICINE

**Rural Coordination  
Centre of BC**



Enhancing rural health through education and advocacy

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# METHODS

Semi-structured phone interviews ranging from 30 minutes to 1 hour were conducted with the following groups:

- 22 past HOUSE EM course participants
- Five HOUSE instructors
- Six ultrasound models who have volunteered as sample patients
- Four local coordinators who have organized a HOUSE EM course
- Three community physician leads working as a communication conduit between UBC CPD and their community
- Two specialists who know physicians who have participated in HOUSE EM
- Two regional continuing medical education administrators who support communities
- Five UBC CPD staff supporting the organization and delivery of the program
- Three leaders of provincial level stakeholder organizations, including the Rural Education Action Plan (REAP), Rural Coordination Centre of BC (RCCbc) and the Joint Standing Committee on Rural Issues (JSC).

## Evaluation Questions

Evaluation questions were derived via the development of a program logic model and associated evaluation framework and were used to guide the development of the interview protocols.

- What is working well with the HOUSE program? How might it be improved?
- How significant an impact does the HOUSE program have on physician practice, including scope of practice?
  - What motivates participants to make changes to their practice?
  - What barriers do they face in making changes to their practice?
  - How sustained are these impacts over time?
- What role do the following elements play in the HOUSE program's effectiveness?
  - Customization of individual course content and delivery
  - Relationship-building
  - Flexible and adaptable course components (e.g. content, teaching style, participants' level of knowledge)
  - Support and quality control provided by UBC CPD to local coordinators
  - Reducing the coordination burden on physicians
  - Urban and rural instructors with diverse skills sets and knowledge bases from various different contexts
- What other aspects make the HOUSE program unique among other POCUS courses?
- What impact does the HOUSE program have on patient outcomes?
- What impact does the HOUSE program have on rural communities?

- What aspects of the program are most appropriate for scaling up? What is required for the HOUSE program to become a model for dissemination to other regions?

## OVERALL CONCLUSIONS

Results from the interviews found that:

1. Participants reported very positive experiences with HOUSE EM, with many indicating they would be involved in HOUSE EM again in the future and would recommend the program to others.
2. Participants felt well supported by HOUSE EM and UBC CPD staff to organize courses and participate as learners.
3. Participants particularly valued HOUSE EM for teaching in community, the instructor-to-student ratio, the practical hands-on-time using ultrasound on real models, the opportunity to tailor course content to community needs, and the ability of instructors to use a flexible teaching approach to meet the needs of a diverse set of learners.
4. Being involved in HOUSE EM provides the opportunity for physicians and healthcare providers to interact with others inside and outside their professional networks.
5. The course changed many learners' own medical practice and impacted patient outcomes as perceived by learners. Changes have not been observed for all learners and their patients, which may be explained by lack of access to point of care ultrasound (PoCUS) and lack of confidence to utilize PoCUS, particularly for diagnoses.
6. A significant barrier to participating in the program is cost. Communities could benefit from more support in accessing funding opportunities available to them.
7. Access to in community educational support is one challenge associated with using PoCUS, particularly due to lack of colleagues with PoCUS expertise.
8. Although the course covers a wide range of content, many interview participants questioned the extent to which the learnings are sustainable. One challenge is maintaining and developing PoCUS skills post-course. For many learners, much of the course content is forgotten after the course. Rural learners may have little opportunity to practice ultrasound skills due to working in low volume centres.
9. Further support with sustaining and developing skills post-course is needed, such as follow up courses with more focused learning content, in-person or virtual coaching opportunities with instructors, and help establishing a community PoCUS champions to lead a community of practice.
10. The HOUSE program has strong and continuous leadership, the necessary complement of staff, effective systems in place, good relationships and communication with faculty and team members, ongoing financial support, and a critical mass of engaged instructors.
11. HOUSE is recognized nationally as a successful, high-quality, and innovative rural continuing professional development (CPD) program. The innovations developed via HOUSE have significantly informed the development of other CPD rural programs and the overall use of ultrasound in rural practice.

# RESULTS

The following sections highlight the main findings from the interviews.

## Past-Course Participants (n=22)

### Background

Participants were family physicians in rural communities, who have generally worked in areas such as emergency medicine, general practice, acute care, palliative care, anesthesia, inpatient care, clinic work, interventional pain, obstetrics and surgery.

Participants ranged from being new to practice, to having practiced for 30+ years.

### Key Quotes



*"It's kind of nice to have the pre-learning material...the days consolidate the theory and it's more about the hands-on."*

*"We have the resources from the HOUSE course as well as BC POCUS...I found that was a really nice benefit of the HOUSE course."*

*"I think it was fantastic...it's very gratifying in that, knowing that if one tries and if one practices [they] might be able to generate an image which may be able to help us with our patient encounters..."*

*"I don't recall having another course where it was a two-to-one [learner to instructor] ratio... I think it's maximizing our potential of learning in a day."*

*"I liked that we did it with our whole department...that really encouraged a lot of people to pick it up [and] talk about it in the department because we all did it together."*

*"Each time I got a chance, I just use it...I try to apply the knowledge."*

*"...It would be really nice to have more follow-up."*

*"I'm trying to practice a half hour a week with my colleagues."*

*"...If I wanted mentorship...I would probably have to go to a different area."*

*"...It was really nice to learn a whole bunch of different [scans] and their different clinical applications so that...I can think of things to do and to scan and...add to the clinical picture."*

*“For us [PoCUS is] not even an alternative. It’s an added value because we don’t have any diagnostic imaging. So in an ER setting, I’m sometimes able to get a diagnosis that I wouldn’t be able to get if I didn’t have the POCUS.”*

*“I think it was really valuable because I did actually start using the ultrasound probe and understanding how the machine works and pulling it out whereas before I really had no idea.”*

### **How did they hear about HOUSE EM?**

- The most common way participants learned about HOUSE was through recommendation from colleagues (some of which who have arranged a course previously).
- Other ways include through an online search for ultrasound education, through the Practice Ready Assessment Program, Kootenay Boundary Division of Family Practice, Emergency Medicine conference registration and flyers, hearing about course coming to a nearby community, personally knowing a HOUSE instructor, UBC CPD emails, during residency and hospital committee meetings.

### **What did they think about the registration process?**

- The registration process was easy and simple.
- One participant reported that, after registering, they learned the course content was not what they had originally expected or hoped for.
- One participant reported being disappointed to learn that they could only participate in one course day rather than two as they had originally expected.

### **What did they think about the pre-course materials?**

- Generally, the pre-course work was found to be helpful and relevant to learning, particularly the videos.
- There was appreciation for having the opportunity to learn prior to the course and review what had been learned using hands on time during the day.
- The pre-course learning also allowed for more time to practice using PoCUS on the day.
- Some participants commented that the pre-learning videos were repetitive and did not necessarily add more value to the content.
- One participant commented that the overall feel of the pre-course reading was “piecemeal” as the videos came from different sources, demonstrating different methods, affecting the flow of the modules.
- One participant mentioned that as some instructors were not familiar with the pre-course learnings, there felt to be a disconnect between the modules and the course.
- Most participants felt positive about the amount of preparation that was required.

- Most participants also felt that they were given an adequate time-frame to complete the pre-course learning.
- It was mentioned that it is important to let people know in advance of how long they can expect to take completing the material.
- Some felt there was too much content.

### **What did they think about the information provided?**

- Participants commented that they found it useful having information accessible to them post-course, such as the modules - a feature that other courses do not offer.

### **What was their overall satisfaction with the course?**

- Participants commented that the course was generally a useful introduction to PoCUS, particularly for beginners with no experience.
- Overall, participants reported having very positive experiences with course instructors and valued instructors for a variety of reasons, including their:
  - Ability to make learners feel at ease when asking questions and handling the ultrasound through patience and non-judgement.
  - Ability to teach with a flexible approach to meet the learning needs of learners with diverse skill/knowledge levels and interests.
  - Ability to answer questions and provide feedback.
  - Diverse range of backgrounds and experiences.
  - Ability to instill confidence in learners in handling the ultrasound machine.
- There was an appreciation for the presence of female, as well as male, instructors, playing a role in emergency medicine education.
- One participant reported that the diversity of teaching approaches were challenging as a learner. Some teaching felt rushed, inhibiting the learner's ability to understand how to achieve clear images and reflect on what they were seeing by themselves.
- Some participants commented that there was too much content covered over the course day(s) and would have preferred to have spent more time focusing on fewer essential areas more relevant for their practice.
- One participant commented that much of the teaching content seemed repetitive because of learning with others who were at a more basic level of understanding.

### **What did participants like about the course?**

- One of the most common comments about what participants particularly like about the course was the amount of opportunity to practice using ultrasound on sample patients.
- The instructor-to-student ratio was also highly valued by participants; facilitating practice and making the environment feel more comfortable.
- Participants particularly appreciated learning in their community, enabling them to practice with their team in their environment, saving time and money on travel.

- Participants liked the opportunity to customize the content of the course to their specific needs.
- Participants enjoyed being able to practice using ultrasound on real people and found patients with positive findings particularly useful.

### How does HOUSE EM compare to other courses?

- Participants made many positive comments on how HOUSE compares to other similar courses, such as:
  - Convenience of course being in-community, reducing travel time and expenses, and also giving participants an opportunity to connect with people in their professional networks and apply community specific scenarios to their learning.
  - More hands-on time and models allowed for more opportunity to practice.
  - More instructors per student allowed for increased engagement and personalized learning.
  - Participants are encouraged to learn prior to the course, which provides an opportunity to learn independently and facilitates developing skills on the day.
  - Continued access to learning resources after the course.
  - Value for instructors who work in emergency medicine who are able to provide advice and tips specific to the working environments of learners.
  - The lack of course standardization and the extent to which instructors can be flexible in their teaching allows them to address specific learning needs across learners.
- One participant commented that HOUSE gives more attention to detail to teaching the key steps of using an ultrasound to give the learner a clear approach of how to handle the equipment, compared to courses such as Emergency Department Echo (EDE).

### How could the course be improved?

- A significant portion of participants commented on the need for follow up courses in their community for further learning. Some suggested the need for mentorship with guided supervision and feedback to increase confidence using PoCUS. This is especially because of a reported lack of opportunity to practice to keep knowledge fresh and develop skills.
- Participants reported wanting more models with real pathology, obese models and models who do not have empty stomachs to practice in situations that are more realistic. Participants also suggested that if there is a lack of ultrasound models in their first trimester available, these could be replaced with video clips and lectures.
- Some participants commented about the high cost of the course and the possibility of the course being subsidized. Perhaps assistance with identifying and accessing funding opportunities available to them could be beneficial.
- One participant suggested standardizing the course to allow for formal certification upon completion.

- It could be helpful to tell participants how long they should expect to take to complete the pre-course materials ahead of time, with a reminder nearing to the date of the course, as well as providing a summary of the materials.
- One participant also commented that there did not seem to be much continuation between the pre-course materials and the teaching content because instructors were not familiar with the pre-course materials.
- Another participant felt that the pre-course materials felt “piecemeal” as there were links to different sources and that the materials would feel more professional and cohesive if they were all prepared and provided by UBC CPD.
- Some participants commented on the need for more pregnancy-related teaching content for their learning, as well as wanting the learning content to be further tailored to their specific needs.
- One participant also mentioned that it would be helpful to know in advance the modules that will be taught for pre-conference courses.
- One participant commented that they would have benefited from less didactic and more hands-on time, to optimize time to practice with the ultrasound on different models.

### **Have participants been using PoCUS since the course?**

- Most participants have continued to use the PoCUS skills they learned at the course.
- Some participants reported not having continued using some ultrasound skills due to lack of opportunity to practice.
- Participants have commented on having gained better access to ultrasound equipment following the course.
- Nearly all participants commented that they practice using ultrasound on their patients in order to sustain their skills following the course, even if patients do not require an ultrasound.
- Some participants commented that they have not been sustaining all the skills they learned at the course but rather have chosen to focus practice on select scans.

### **How could participants be supported to sustain skills post-course?**

- The issue of sustainability of skills in rural practice was mentioned. When asked what could help participants sustain their skills post-course, most commented that they would like to take the HOUSE course again in the future as a follow-up.
- Some participants mentioned a lack of colleagues who can provide expertise in ultrasound and would therefore benefit connecting with someone who can give further training and guidance.
- Participants felt they would benefit from support in maintaining skills via refresher courses, working with coaches, and having access to a local POCUS champion.

### **How have participants been enhancing their PoCUS skills?**

- Participants who reported having taken steps to further enhance their PoCUS skills since the course commented that they have done so by practicing in their community.

- Many participants commented having taken, or interest in taking, additional courses to further their learning.
- Some participants reported that they have been using websites such as the HOUSE website, List Serve, and BC POCUS to further their learning since the course.
- A significant portion of participants reported that they have not yet taken further action to enhance their learning. One participant mentioned this was due to lack of time.

### **What sources of support have participants accessed?**

- Colleagues were reported to be one of the most common sources of support for participants, through consulting over scans, help accessing additional courses, protected time to practice with colleagues, and being an ultrasound champion for a community.
- Some participants mentioned being unable to access support from others due to lack of colleagues or physicians in the community who have enough knowledge with ultrasound to provide support or training.
- Some participants mentioned setting up a community of practice as a source of support, but time was mentioned to be a barrier.
- Access to online resources was another common source of support reported by participants, including the HOUSE website, BC PoCUS and the HOUSE List Serve.
- Online videos of ultrasound scans, most commonly from Google or YouTube, have reported to have been a helpful source of support.

### **Has the course lead to perceived changes to participants' medical practice?**

- Nearly all participants reported feeling more confident to incorporate PoCUS into their practice following the course.
- Some participants did not report increased confidence or confidence overall. For one participant, this was because they were already confident with ultrasound.
- Nearly all participants reported using PoCUS more frequently following the course. For some, this increase went from not using PoCUS at all, to using PoCUS sometimes, or very often.
- One participant reported no increase in frequency of use but this was because they were already using PoCUS frequently prior to taking the course.
- Nearly all participants reported gaining a wider scope of PoCUS use on a variety of indications.
- Most participants did report feeling more comfortable working in the ER because of being able to utilize PoCUS.
- Some reported no increased comfort. One reason is due to not being confident enough to make clinical decisions using PoCUS.
- One participant commented that the course did not lead to any changes in their own medical practice because PoCUS has not replaced the use of any other mode of imaging.

## Has the course lead to any perceived impacts on patient outcomes?

- Most participants reported that they were able to make diagnoses based on PoCUS, or that PoCUS aided in making a diagnosis.
- For some participants, the skills gained from the course has had no impact on their PoCUS use.
- Some participants commented that using PoCUS has enabled them to communicate more effectively with specialists.
- Many participants reported no impact on specialist referrals.
- Many participants reported the perceived benefits of using PoCUS as a decision-making tool for patient care. Using PoCUS has made an impact on patient transfers by giving physicians a better understanding of the need to transfer a patient.
- Some participants reported no impacts on patient transfers.
- Other perceived impacts include:
  - Reduction of unnecessary imaging and other procedures.
  - Increased ability to answer patient questions.
- A few participants have reported that the course has had a lack of perceived impact on patient outcomes. Reasons include because of a lack of skills or opportunity to practice skills. Some participants also did not change the way they treat the patient based on ultrasound use and might still refer to other imaging methods.

## Would participants recommend HOUSE EM to colleagues?

- Responses to this question were incredibly positive, with all but one participant reporting that they would, or already have, recommended the course to others.
- Some highlighted a need for PoCUS to be incorporated into rural practice.

## Conclusions from Participant Interviews

1. Overall, past-course participants reported positive experiences learning with HOUSE. The program has positively impacted participants' medical practice, by way of increased confidence in use of POCUS, increased frequency of use and scope of use, as well as a perception of improved patient outcomes, such as expedited diagnosis, referrals and transfers. A small number of participants have reported a lack of change, mostly due to barriers to practicing the skill.
2. HOUSE stands out as a favorable course over other ultrasound courses. The practical hands-on time was an element of HOUSE that learners particularly liked, along with the instructor-to-student ratio, customized course content, ultrasound models, and the fact that HOUSE is taught in-community.
3. For a few learners, the online learning took longer to complete than expected; however, the pre-course material was generally felt to be useful, relevant and for some, necessary. Learners appreciated maximizing hands-on learning during the course, and also valued ongoing access to the learning materials for later review.

4. Participants felt that HOUSE could be further improved by supporting continued learning with post course follow up visits, having more ultrasound models with positive findings, and more realistic patient models, such as overweight or non-fasting models.
5. Continued use of ultrasound and sustaining skills were reported to be challenging for participants due to their work in low volume centres as well as lack of access to local colleagues with POCUS skills. Participants felt they would benefit from support in maintaining skills via refresher courses, working with coaches, and having access to a local POCUS community champion.

## Recommendations from Participant Interviews

1. Develop a sustainable model for continued learning.
2. Consider including some models that reflect the reality of practice, rather than the ideal scanning model. For example, those with positive findings, obese models, and non-fasting models.
3. Improve communication to participants prior to the course regarding conference course agendas and time required for pre-learning.
4. Encourage instructors to become familiar with the new online learning material to support participants' continuity of learning from pre-course material to course day.
5. Continue ongoing efforts to improve pre-course materials.
6. When responding to physician inquiries regarding the course, provide communities with information on available CME funding options to reduce the barrier of cost of course delivery.

## Instructors (n=5)

### Key Quotes



*"Everybody is very friendly and...it's a very safe environment for learning from each other."*

*"...I just enjoy teaching."*

*"UBC CPD staff is very organized, very friendly, approaches you very professionally, always on top of the game...you email them and you will get [an] answer right away."*

*"Tandi...spearheaded the faculty development weekend that we had just in October...which was great..."*

*"...We've done a really good job in terms of modifying content, even on the fly... it's great for the participants to actually choose what content they want to learn."*

*"I think the biggest challenge is the learners. People who think that they get it when they don't."*

*"It's fantastic to get together with your peers, have your peers teaching you things...they bring in these ultrasound black belts...and they'll show us these either super cool moves or things that we didn't know or new ways to teach, new technologies."*

*"The learner comes to the station and you get to teach in your own style and you get to modify your teaching based on the learner's level of knowledge...I like the fact that there's a fluidity allowed."*

*"...When [you] travel to rural communities [as an instructor]...you meet the physicians and sometimes you transfer patients under these physicians or they transfer the patient to you...I think it will be beneficial for patient safety."*

*"...Keeping each course small, I think, is one of the definite...benefits."*

### **What has been their role with HOUSE EM?**

The instructors interviewed have been involved with teaching for HOUSE as early as its initial launch in 2015 to having become involved more recently in spring 2019.

### **What has been their experiencing working with the course?**

- Overall, instructors' experience working with HOUSE has been very positive and enjoyable.
- One instructor commented that the instructors make up a collegial group that welcomes learning ultrasound skills from each other.
- Having the opportunity to maintain and develop ultrasound skills by sharing knowledge with fellow instructors outweighs any loss of income for one instructor.
- Another instructor commented that the varied backgrounds of instructors from both rural and urban practices lends itself well to collective teaching.
- One instructor also commented that the value of HOUSE over other programs include in-community teaching and customizable learning.
- Instructors have generally taught several times a year. One instructor mentioned they have not instructed as much as they would have liked to.

### **Why do they teach for HOUSE EM?**

- The opportunity to spend time with colleagues and network with other instructors.
- A way of sustaining and developing ultrasound skills.
- Enjoyment teaching physicians who want to learn.

### **What has their experience been working with UBC CPD staff?**

- All instructors commented that they have had a very positive experience working with UBC CPD staff, who are very organized and friendly to work with.
- Instructors in particular commented valuing UBC CPD staff for their timely and helpful responses to questions.

### **What has their experience been working with the course Medical Lead?**

- Comments were very positive. The course Medical Lead is valued by instructors for a range of reasons, including:
  - Great to work with and easy to get along with.
  - Nurtures a safe learning environment.
  - Effective communicator.
  - Ability to be flexible with teaching and adapt to changes to address every learners' needs.
  - Shared passion for PoCUS.

### **What did they think about the remuneration?**

- Opinions on remuneration were split. Some instructors felt the remuneration was sufficient, especially as they were compensated for travel costs.
- One instructor commented that although other courses pay their instructors at a higher rate, they understand how difficult it would be for HOUSE to do the same due to the high instructor-student ratio, so are generally fine with how much they are paid.

### **What is currently working well with HOUSE EM?**

- Success at scheduling course days.
- Success with engaging communities across the province.
- Great instructor-to-student ratio that facilitates learning.
- Revisiting communities to maintain and develop ultrasound skills.
- Instructors' ability to be flexible and modify course content to meet the diverse needs of learners.
- Learners are able to customize the course depending on their needs and interests.
- The amount of course content is manageable.

### **Are there any challenges with being an instructor?**

- Teaching learners with different skill levels, background knowledge and needs can be challenging.
- It can be challenging to teach learners who feel like they have more knowledge and understanding than they do in reality. In these situations, one instructor approaches this by encouraging the learner to reflect on their knowledge by asking them questions.

- Finding a balance between what participants are ready to learn and what they want to learn can be difficult when they don't possess enough background knowledge.
- It can be frustrating for instructors to teach learners who have not completed the pre-course readings, limiting them to teaching learners the very basics.
- Sometimes instructors teach at very different levels and there is lack of standardization with respect to experience and knowledge of instructors. This can cause confusion among learners.
- Although HOUSE is valued for flexible teaching on the go, it can be challenging for first time instructors to teach a certain topic at the last minute without preparation.
- It can be challenging to travel to certain communities which requires a large time commitment.
- Even though the number of instructors around the province has expanded, allowing instructors who live more closely to certain communities to be recruited in replace of other instructors who live further away, some of the most experienced instructors do not teach at certain courses.
- Scheduling teleconference meetings can be challenging due to conflicting schedules.
- It can be hard to predict the level of skill that learners have when they come to a course at a conference.

### How could the program be improved?

- Make learning scenarios more realistic. During the current scenarios, learners are given information that they would not necessarily have access to in real situations.
- Standardize terminology used during instruction with other courses part of the Canadian Ultrasound Society.
- Encourage learners to complete pre-course material in order to optimize learning.
- Decrease amount of pre-course learning content.
- Ensure teaching videos are consistent and add to each other in learning value.
- Provide information on ways in which learners can continue and further their learning after the course.
- Organize follow up learning opportunities for communities sooner and more regularly to help learners sustain skills.
- Provide opportunities for instructors and learners to connect in non-formal settings to establish personal connections and to open the door to connect after the course for support.
- Allow receipts to be submitted electronically.
- Ensure every community is equipped with a team to help with course logistics and set up so the burden does not fall on the instructor.
- Increase opportunities for instructors to maintain and develop their ultrasound knowledge and skills.
- Attach more courses onto conferences to increase outreach to communities.
- Expand HOUSE to urban areas as physicians in urban areas have similar learning needs to physicians in rural areas and could benefit from ultrasound education.

## In what ways have they felt valued and engaged as instructors?

- A number of components of HOUSE have made instructors feel valued and engaged, including:
  - Debrief sessions
  - CPD funding for instructor development
  - Appreciation from learners
  - HOUSE List Serve
  - Teleconference meetings
  - Faculty development days

## How can UBC CPD empower instructors?

- Instructors felt empowered by being able to use a flexible approach to teaching to keep the course interesting and to address learners' needs.
- One instructor commented that they would have liked more opportunity to teach at more courses.
- One instructor commented that they would like to be better informed about opportunities to teach in the future.

## What makes HOUSE EM unique among other courses?

- Teaching in communities.
- The organization of follow up courses to ensure communities are retaining what they learned during courses. However, follow up courses are perhaps not as utilized as they could be for all communities.
- Allowing instructors to teach with a flexible approach to accommodate for a variety of interests and skill levels. Other courses follow a rigid schedule that is less adaptable to learners.
- The value of having a Medical Lead who listens to feedback from the instructors about how to improve the course.
- Unlike other courses, HOUSE has more support from staff to organize the course, reducing the coordination burden on a lead instructor.
- To their knowledge, instructors thought there were no other ultrasound courses that prioritizes a similar instructor-to-student ratio.
- HOUSE allows instructors to meet, and develop relationships with, physicians in their professional networks.
- Instructors enjoy being able to meet new people outside of their regular work environment.
- The opportunity to meet and work with people well known in the ultrasound community.
- Instructors for HOUSE come from different backgrounds of medicine and bring different skillsets to the courses, allowing for a variety of opinions and approaches to problems.
- HOUSE recruits instructors from both rural and urban backgrounds which is beneficial because rural instructors are relatable and have a unique understanding of challenges in rural

communities and urban instructors offer valuable perspectives as they often work with rural physicians.

- Unlike other courses offered by the Canadian Ultrasound Society, there is no standardization of HOUSE EM terminology used across instructors. The instructors observed that this can be disadvantageous for learning.
- Learners can learn without the pressure of exams.

### **What aspects of the program are appropriate for expanding/scaling up? How can HOUSE EM be a model for dissemination to other regions?**

- One instructor commented that they think HOUSE currently has a good model for dissemination to other regions.
- Teaching the most basic ultrasound scans and skills will be valuable to other communities or regions.
- Continue providing in-community training.
- One instructor commented that HOUSE is a good model because it prioritizes adapting to learners' needs.
- Provide in-community training to communities in other provinces, such as Saskatchewan and Manitoba, that may be behind BC on ultrasound skill development.
- It could be useful to measure how impactful the course has been to their practice and have data to prove the value of HOUSE in ultrasound education to other regions.
- Provide more financial support for instructors to travel to small communities.
- One challenge that may be associated with disseminating the course to other regions is scheduling dates with instructors that have conflicting schedules.

### **Conclusions from Instructor Interviews**

1. Overall, instructors reported a very positive experience working with HOUSE EM, including UBC CPD staff, the Medical Lead and fellow instructors.
2. HOUSE EM is valued by instructors for its uniqueness in POCUS education, including in-community teaching, learner-driven teaching, the small instructor-to-student ratio, the opportunity to develop new relationships, and the unique instructor mix, which includes fellowship trained physicians, rural physicians, and ultrasound technicians.
3. Instructors feel that HOUSE EM is a good model for dissemination to other regions and encourage HOUSE EM to expand outside of BC and into urban areas as well.
4. Being an instructor comes with its challenges, including teaching learners with varied needs, and the demands and uncertainty of travel to rural communities.
5. Some suggestions for program improvement include changes to the course content, pre-course material and facilitating an expansion of efforts to support continued learning after the course.

## Recommendations from Instructor Interviews

1. Consider standardizing POCUS terminology in course materials and teaching, consistent with international nomenclature guidelines.
2. Continue to provide information and support on ways in which learners can continue their learning after the course, including further opportunities for learners to connect with instructors.
3. Organize timely and regular follow-up learning opportunities for communities after a course to help learners sustain and enhance skills.
4. Continue to advocate to UBC Finance for electronic submission of receipts, as a way of reducing barriers for instructor participation.
5. In addition to faculty development days, explore further ways that instructors can develop their own ultrasound knowledge and skills.
6. Continue to run courses at existing CME conferences to increase outreach to communities.

## Community Physician Leads (n=3)

### Background

The community physician leads (CPLs) interviewed were rural physicians, ranging from having recently finished residency, to having worked in rural practice for over 10 years. CPLs have worked in emergency medicine, and have done work in in-patient care, walk-in clinics, long-term and palliative care, as well as office work.

### Key Quotes



*“I thought it was very positive, pretty easy for me...my job was really to find local examples, and other than that they took care of everything.”*

*“It’s nice to [take the course] together and talk about that local reality where we’re sharing the exact same experience and the pertinence of what we’re doing is exactly the same.”*

*“I think...assisting people with finding the funding to do [the HOUSE course] would probably be the biggest help.”*

*“I had a few comments on how fabulous this initiative was and how lucky we were to have something like that in our community. There was definitely a sign of local involvement that pleases the community...”*

*“I guess the biggest impact is on myself as a CPD lead and getting to know the organization more.”*

*“...very customizable, well-run course for a reasonable cost to bring to your facility; it ends up being one of the best options.”*

### **How did they hear about HOUSE?**

- CPLs heard about HOUSE through a patient care coordinator at their hospital, the Rural Health Conference or through their community CPD leader.

### **What was their experience working with UBC CPD staff?**

- Overall, CPLs had a positive experience working with UBC CPD staff who provided great support to arrange courses in their communities. Most commented how easy it was to get in contact with staff who responded to questions in a timely manner.
- Information provided to them by UBC CPD was clear and easy to understand.
- For some CLPs, this was a tricky question to answer because they felt like UBC CPD took on most of the work required to organize the course. However, CPLs generally didn't feel like they needed support or felt well supported.
- Initial planning calls were found to be very useful, and for one CPL, essential. CPLs commented that UBC CPD did a good job listening to the community's needs and suggestions for the course content.
- CPLs felt that UBC CPD staff were open to listening to their suggestions and needs and that the process of creating an agenda was straightforward.
- CPLs experience with communication between themselves, UBC CPD and their community was straightforward, and made easier by prompt responses from staff.

### **How did they find the paperwork and administration**

- The paperwork and administration was minimal and made easy by facilitation and support from the Program Coordinator.

### **What was their experience finding a local coordinator?**

- It was easy and straightforward to find a suitable local coordinator.

### **Opportunity to connect with colleagues**

- One CPL commented that HOUSE gave them the opportunity to connect and learn new things collectively with their colleagues which was an enjoyable experience.

### **What would they do differently next time?**

- Most CPLs reported that they would not do anything differently.
- One CPL however did comment that some learners were not well prepared for the course because they had not gone through the pre-course materials. They felt that the responsibility

was on the learners to complete the materials as UBC CPD sent them out well in advance. This caused some frustration for learners who did go through the materials as the course had to be slowed down for those who did not, and frustration from the instructors who could not teach as much as they hoped they could.

### **What could UBC CPD do to better support physicians to organize a course?**

- Most CPLs felt that UBC CPD could not do anything to better support physicians.
- However, one CPL felt that UBC CPD could do a better job of assisting communities to identify and access funding in order to pay for the cost of the course, by providing communities with information about funding options available to them.

### **What impacts has HOUSE had on their community?**

- Since the HOUSE course, physicians are using ultrasound more frequently.
- The main impact has been enthusiasm for local involvement in medical education.
- The HOUSE course impacted one community only minimally because most learners did not complete the pre-course materials and thus did not get much out of the course day itself.
- There was a quality assurance program that existed before HOUSE came to the community of one CLP but it has not been sustained.
- In one community, there is no quality assurance program as they do not have the resources required for facility engagement, as their hospital is small.
- Most CPLs commented that there has not been any initiatives for ongoing PoCUS in their community yet.
- There is an ultrasound program for resident students that existed before HOUSE came to one community.

### **Has HOUSE had an impact on UBC CPD's reputation as an innovator or leader?**

- One CPL commented that they did not understand UBC CPD to be an "innovator" but that they recognize that UBC CPD does have a good reputation.
- Similarly, another CPL did not feel they were the right person to ask but commented that UBC CPD has a good existing reputation in CME.
- One CPL commented that they were not aware that HOUSE was led by UBC CPD before the course came to their community.

### **Would they recommend the program to their colleagues?**

- CPLs would, and have, recommended the course to other colleagues and CPD leads. One CPL commented that although HOUSE competes with EDE, it is favorable for customizable education.

## Conclusions from Community Physician Lead Interviews

1. Overall, CPLs had very positive and straightforward experiences bringing HOUSE to their community.
2. CPLs felt well supported by UBC CPD staff, valued the prompt responses to questions, and felt that staff effectively listened to their community's needs and suggestions for the course content.
3. Overall, the level of administration and paperwork required of CPLs was minimal and this was appreciated.
4. Finding a local coordinator was generally easy and straightforward.
5. CPLs had no suggestions for future improvements.
6. Most CPLs reported not having any facility-led POCUS quality assurance program established, nor were there any initiatives for ongoing learning of PoCUS in the community.
7. UBC CPD has a good reputation in the field of medical education.
8. CLPs do recommend HOUSE to their colleagues.

## Recommendations from Community Physician Lead Interviews

1. Continue to support CPLs by using them primarily as context experts. As much as possible, continue to take on all tasks that can be diverted from local physician leads to UBC CPD staff and local coordinators.
2. Ensure that communities who do not have strong local physician CME leads also have access to the HOUSE course.
3. Renew efforts to provide communities with information on available CME funding options to reduce the barrier of cost of course delivery. Add this discussion into early course planning calls with the community.
4. Continue to encourage the development of a PoCUS quality assurance program in the community and enlist the support of the CPL in this.

## Specialists (n=2)

### Background

The two specialists interviewed have been working in their communities for ten years, practicing internal medicine and general surgery.

### Key Quotes

“...One example [of the impact of the HOUSE course on patient care] would be someone who came in with a cardiac arrest and they got return of circulation and then the

*bedside ultrasound was highly suggestive of high right heart pressures and so through that we were able to determine that most likely reason was a pulmonary embolism. So we were able to lyse the patient right there without having to move a very unstable patient to the CT scanner and then later on we were able to confirm that diagnosis.”*

*“There’s a difference between the physicians who have taken the time to really learn their ultrasound skills and those who, you know, obviously would have just done it in residency...they do seem more confident and more ready to make diagnosis and move forward...”*

### **Familiarity with HOUSE**

- Specialists were somewhat familiar with HOUSE and have heard about the course from colleagues.

### **Are they aware of any referring physicians who have taken HOUSE?**

- Specialists were aware of a few physicians who have taken the course and one who is an instructor.

### **Has HOUSE had any perceived impacts on patient outcomes?**

- Since the course, ultrasound has been helpful in providing information during trauma codes.
- Ultrasound was able to help to identify a pulmonary embolism which avoided the need to move an unstable patient for different imaging.
- Ultrasound has led to a quicker diagnosis.
- They observed an over-reliance on ultrasound to make decisions, when other imaging procedures should have been conducted.
- Answers to whether HOUSE has impacted specialist referrals were somewhat split. One specialist felt no impacts were made, and another commented that using ultrasound has decreased the time to receive formal imaging.
- Physicians with ultrasound knowledge are more comfortable performing procedures such as placing lines, which has led to safer patient transfers.
- Use of ultrasound has been helpful to decide when to transfer a patient.
- Some patients have reported feeling like they have received better care as a result of undergoing an ultrasound procedure.

### **Has HOUSE had any perceived impacts on community?**

- Physicians who have taken the course feel more confident using ultrasound and confident making diagnoses and performing procedures.
- Introducing new technology to practice leads to positive results.

## Conclusions from Specialist Interviews

1. HOUSE was perceived to have increased participant confidence to make diagnoses and perform procedures.
2. Specialists were familiar with HOUSE based on what they have heard from colleagues, past-participants, and a course instructor.
3. HOUSE was perceived to have had impacts on patient outcomes, with specialists citing influences on diagnosis, trauma and arrest care, and influences on patient transfer decisions.
4. Some patients have commented to specialists that they felt better cared for as a result of undergoing an ultrasound procedure and seeing the imaging results.

## Recommendations from Specialist Interviews

1. Continue to seek input on HOUSE outcomes from specialists and bring them into evaluation processes where possible.

## Provincial Level Stakeholders (n=3)

### Background

Three representatives from provincial rural medicine organizations were interviewed. Their positions were Rural Education Action Plan (REAP) Coordinator, Executive Director of the Rural Coordination Centre of BC (RCCbc), and Co-Chair of the Joint Standing Committee on Rural Issues.

The representatives had varying levels of familiarity with the HOUSE program ranging from a high awareness, to having actually been involved in its original development and taken the course several times themselves.

### Key Quotes



*“[HOUSE] has a modular approach so there’s a way in which family physicians and other doctors who are taking the training can follow a learning trajectory that fits in with the work that they’re doing in their own community.”*

*“The program is delivered and offered largely by rural physicians to rural physicians, or the faculty is very sensitive to the needs of rural physicians.”*

*“There’s a process to it now and so that makes it a little bit less intrinsically flexible and nimble. I don’t know that it’s necessarily [something to improve] but something to keep the eye on kind of as it evolves...”*

*“You need a variety of skills and tools in your toolbox to be a generalist who is both competent and confident and I think HOUSE is one of those strategic tools because the stethoscope of yesterday is the ultrasound of today.”*

*“It really does go a long way to support rural doctors making informed decisions about a diagnosis that their patient may have, but also helps to rule out some critically important medical and surgical issues, and often it avoids transporting patients out of the rural community to a more urban or possibly a tertiary centre for an investigation that can readily be done in a rural community where the skills and training exist with the person deploying the tool.”*

*“[The HOUSE course has] elevated the conversations that have occurred between UBC CPD and the Joint Standing Committee to have a much better and more robust understanding of what is UBC CPD’s role, how can UBC CPD respond appropriately to the needs of the rural doctors and new-to-practice physicians to rural medicine in British Columbia. So I think it has. I think it’s enhanced the JSC’s understanding of UBC CPD as not just being a repository of teaching and sharing adult information and education but I think it does squarely put UBC CPD in a very innovative box, absolutely.”*

*“The HOUSE course will be in big demand for the foreseeable future, a growing demand. Because ultrasound education is of great importance... People want to continue to up their skills and knowledge about ultrasound, it’s used every day in clinical practice and it’s growing in its utility in clinical practice so I think that it will be present long into the future.”*

### **What do they believe are the strengths of the HOUSE program?**

- Responds to an identified need in the lack of ultrasound training in formal medical education.
- Goes out to rural communities.
- Employs a modular, customizable approach.
- Serves residents as well as clinicians.
- Interrelates well with other provincial programs.
- Continually adapts and improves.

### **Uniqueness among Other Rural Programs**

- In addition to being a strength, the stakeholders reiterated that going out to communities directly was a unique aspect of the program.
- The program is strongly driven by a community’s specific needs.
- The program is unique in being delivered by rural physicians for rural physicians.

### How could it be improved?

- Ensure that, as the program continues to evolve, it maintains its unique level of nimbleness.

### What value does a program like HOUSE play in their own work or organization?

- The representatives interviewed offered several examples on how HOUSE contributes to achieving their own organization's mandate.
  - HOUSE has facilitated greater sharing among rural medicine organizations.
  - HOUSE has worked to change how clinicians view ultrasound in general.
  - Emphasis on the role that HOUSE plays in supporting their efforts around physician recruitment and retention.
  - HOUSE has served to help maintain the relationships between UBC CPD and other rural medicine organizations.

### What other impacts does the HOUSE program have on rural medical communities in BC?

- HOUSE plays a role in bringing high-quality education to communities and this has impacted physician confidence, competence, and patient care.
- A representative provided a direct example with chronic pain and rural patient care.

### Has the HOUSE program had any impact on UBC CPD's reputation as an innovator and leader?

- HOUSE has had a positive impact on UBC CPD's reputation and relationships.

### Should the HOUSE program expand?

- Representatives felt the demand for ultrasound education was going to continue as it is now viewed as an extension of core clinical skills. One representative questioned the ability of UBC CPD's staffing resources and capacity to do this.

## Conclusions from Provincial Level Stakeholder Interviews

1. The representatives interviewed have a strong understanding of the HOUSE program's uniqueness and its impact on rural practice.
2. HOUSE has aided the mandate of provincial stakeholders by maintaining an ongoing relationship with UBC CPD, facilitating greater sharing among organizations, supporting their own efforts around physician recruitment and retention, and changing how clinicians view ultrasound in general.
3. The demand for ultrasound education is going to continue, as it is now viewed as an extension of core clinical skill. This may impact HOUSE demand moving forward, however there is a concern that the program's capacity to expand may be limited.

## Recommendations from Provincial Level Stakeholder Interviews

1. Recognizing the demand for PoCUS education will continue and develop capacity to meet the future needs of rural communities.
2. Continue to consider stakeholders values in the provision of HOUSE education.

## UBC CPD Staff (n=5)

### Background

Five UBC CPD staff and faculty with ties to the HOUSE EM program were interviewed. Their positions were Medical Lead, Program Coordinator, Past Program Coordinator, Project Manager Rural CPD, and Senior Program Assistant.

### What is currently working well with the HOUSE program?

- The education offered is very high quality.
- The course currently has the necessary complement of staff, effective systems, processes, and feedback mechanisms in place, good communication and trust among team members, continuity of medical leadership, a critical mass of engaged instructors, and good financial support.
- The course has had the opportunity to fine tune and streamline operations over the years to make it run smoother.
- The course is always evolving yet has managed to maintain its unique aspects including a strong learner-centered and rural focus, and customization.

### What makes HOUSE unique among other rural programs?

- Staff observed that the HOUSE program is notable for being very nimble, recognizing that each rural community is different, taking the coordination load off the instructors.
- It has a strong focus on relationship building that greatly stems from the long-standing and hands-on involvement, vision, and passion of the course Medical Lead. This helps the development of strong relationships, keeps faculty and staff motivated, and drives continual course improvement.

### What challenges do they experience in their role working with the HOUSE program?

- Regular challenges associated with rural course delivery such as shipping logistics and instructor travel uncertainties to rural communities were frequently mentioned.

- Recruiting sufficient ultrasound models and/or dealing with no-shows were also cited as regular and time-consuming challenge. Recent steps to streamline model recruitment process may increase efficiency moving forward.
- Meeting the demand for courses, and with appropriate lead time for planning, can be a challenge, particularly with the increased demand for resident courses. One staff member wondered to what degree the resident courses were displacing the regular rural offerings. Even though they have separate funding, they still affect staff capacity.
- Staff is operating at maximum capacity delivering courses, which does not leave much time for additional ideas and improvements, such as trying to implement new post-course support ideas. The field of ultrasound is also evolving so the course continually needs to stay current. Program growth is often more reactive than proactive.
- Staff turnover can also be a challenge. Although staff are usually promoted within UBC CPD, there is some loss of institutional memory and the learning curve for new staff can be significant.
- Getting instructors to submit receipts in a timely way and the UBC reimbursement system was also cited as a challenge.

### **Is there anything that could be improved about the program?**

1. Staff are currently working on how to improve the follow-up components of the course to increase the sustainability of learning including developing a “finishing school” and other forms of post-course support.
2. The Medical Lead would like the opportunity to receive formal feedback on her performance.
3. One staff member commented it would be nice to have more rigorous evidence of impact.

### **How engaged are the instructors in the program?**

- Instructors are very invested in, and passionate about, the HOUSE program. While it can be occasionally hard to recruit instructors, once recruited they are quite engaged. One indicator of this high engagement includes the generally positive response when a call is put out for instructors and the high attendance at faculty development days.
- Some instructors are more engaged than others, but this is understood to fluctuate depending on personal factors at the time. Factors that influence this engagement include the personal relationships developed by the Medical Lead, the camaraderie cultivated in the post-course group dinners, the faculty development days, and the bi-annual teleconference.

### **Has the HOUSE program had any impact on UBC CPD's reputation as an innovator and leader?**

- HOUSE has positioned UBC CPD as a leader in rural programming and it has received recognition via accreditation, conferences, and awards.
- The innovations developed via HOUSE have informed other UBC CPD rural programs, where it is seen as the gold standard for a rural travelling course. These include a strong community

and learner-centered focus, a coaching component, and the use of local coordinators to reduce the burden on physicians.

- The HOUSE name is well-known and the number of direct requests for HOUSE is substantial.
- HOUSE is delivering more residents courses, which is in turn influencing how ultrasound is being used more in rural practice overall.

### **Are there aspects of the HOUSE program that could be scaled-up to other regions?**

- HOUSE is currently operating at maximum capacity so despite requests for more courses, there are limits to its growth. These are staff capacity, availability of equipment, and the need to have a certain volume of courses to sustain staffing needs.
- There is no urgent push to grow. Staff are currently balancing being responsive to requests with their current capacity and evaluating feasibility on a case-by-case basis.
- If the decision were made and funding was available, HOUSE could certainly grow, but it requires a discussion as to how best to approach it.
- Staff have developed a train-the-trainer model to support other provinces interested in HOUSE.
- One trend that may push growth or future adaptation of the program is the observation that ultrasound is becoming more accepted as a standard part of medical practice. HOUSE may need to evolve to meet a different need if more rural physicians receive ultrasound training before going out to practice.

## **Conclusions from UBC CPD Staff Interviews**

1. The HOUSE program currently has an effective system and infrastructure in place. It has the necessary complement of staff, good relationships and communication with faculty and team members, ongoing financial support, and a critical mass of engaged instructors.
2. HOUSE is recognized nationally as a successful, high-quality, and innovative PoCUS training program. The innovations developed via HOUSE have significantly informed the development of other rural PoCUS training programs and the overall use of ultrasound in rural practice.
3. The leadership, passion, and continuity of the HOUSE Medical Lead has played a substantial role in this success.
4. Ongoing operational challenges include meeting the demand for courses, shipping logistics, instructor travel uncertainties, ultrasound model recruitment, occasional CPD staff turnover, and finding the time for program enhancements.
5. Staff have recognized interest from other provinces for HOUSE education.

## **Recommendations from UBC CPD Staff Interviews**

1. Continue to provide the high quality support from UBC CPD staff, which is essential for successful HOUSE programming.

2. Recognize that UBC CPD staff play an integral role in the success of HOUSE and continue to support UBC CPD staff to be able to continue in this capacity.
3. Recognize that relationships between UBC CPD staff and various other elements of the HOUSE course are key to success, and intentionally support these relationships.
4. Continue to support the role of the course Medical Lead and build into that role succession planning.
5. Continue to develop innovations that improve rural PoCUS education and ultrasound use.
6. Continue to address ongoing operational challenges by incorporating our ongoing in office learning into future program enhancements.
7. Develop short and long term plans for future course developments and enhancements, recognizing the inherent tension between course provision and course development when it comes to staff time.

## Local Coordinators (n=4)

### Background

Local coordinators held a variety of roles, including administrative assistants, nurse and unit clerk.

### Key Quotes



*"I learned a ton watching them do their ultrasounds so for me it was super rewarding that I was actually able to participate."*

*"I think because I work at the hospital...I had ...an advantage there with the material that was sent...I had a good understanding of the supplies that were needed and how to get them at the hospital."*

*"I felt well supported. Any time I had a question, it was very easy to text, email, or telephone call and get the answer."*

*"I've known [the community physician lead] for a long time. We have a great relationship."*

*"[HOUSE instructors] were very receptive of what our physicians wanted... they were flexible enough to really elaborate on certain items and they were flexible enough to let the physicians practice a little bit more on certain things they wanted to."*

*"...Everyone was very thankful...the staff that you brought in were...very caring towards us."*

*"It can be daunting for somebody that's never done it before, looking at that [course planning] checklist."*

## How did they become involved in organizing a HOUSE EM course?

- All local coordinators became involved in organizing a HOUSE course through their professional networks. For example, being asked to support the organization of HOUSE by other physicians or managers of hospitals in their community.

## What was their experience as a local coordinator?

- Generally, organizing HOUSE was an enjoyable experience and made easy by support networks.
- The experience of being a local coordinator is a rewarding one; they enjoyed being part of the day, getting an insight into a physician's world, and commented that the ultrasound models and learners enjoyed the day too.
- Generally, expectations of the role were positive. One local coordinator commented that the role turned out exactly as expected.
- For one local coordinator, the role was less work than expected due to the productivity and efficiency of the team they worked with. For another, the role was more detail oriented than expected, possibly due to coming into the role with no previous experience. They nevertheless felt that the organization went well.
- Organizing HOUSE was similar to organizing a Comprehensive Approaches to Rural Emergencies (CARE) course in one local coordinator's community. However, there was some more labour associated with organizing HOUSE that was identified as a logistical challenge.
- Most local coordinators reported successfully recruiting models by utilizing contacts within their professional networks and putting posters around their community.
- For one local coordinator, recruiting models was particularly difficult in their small community and felt that the healthcare staff that work with physicians could have been part of the day to fill in for models and to extend the learning experience.
- local coordinators appreciated having support from the Program Coordinator, physicians and instructors to set up the course, which made the experience more positive.
- Support provided by the Program Coordinator was well received by local coordinators, who commented that her support kept them on track and facilitated smooth organization.

## What did they think of the information provided to them by UBC CPD staff?

- Generally, the amount of information provided by UBC CPD was helpful in organizing HOUSE and appropriately detailed. One local coordinator felt that their experience working in a hospital put them at an advantage for organizing the course.
- However, for one local coordinator who had years of experience organizing similar courses, the amount of information provided was felt to be too much. They also mentioned that for someone new to organizing a course, the checklist may come across as daunting.

### **What did they think of the support provided to them by UBC CPD staff?**

- Generally, communication between the local coordinator and UBC CPD staff was timely and relevant and local coordinators felt that staff could be easily reached and answer questions appropriately.
- For one local coordinator, it was difficult to get in touch with UBC CPD staff, and assumed this was possibly during a busy course season . They therefore felt a lack of support.

### **How did they find the administration and paperwork?**

- The paperwork was organized, easy to work through and navigate.
- One local coordinator mentioned that for someone with less experience organizing courses, the administration and paperwork may be more of a challenge.

### **What did they think of the initial planning call with UBC CPD?**

- local coordinators felt well supported during the initial planning calls and felt they were an important stage in the organization of HOUSE.
- One local coordinator commented on the timeliness of UBC CPD staff.

### **What was their experience with the community physician lead?**

- Positive experiences were reported for working with CPLs. Having a strong, existing working relationship with the physician lead played a significant role.
- One local coordinator commented that the physician lead was well informed about what needed to be done which made the experience positive.
- One local coordinator appreciated having the independence to organize the course without being micromanaged by the Community Physician Lead.

### **What was their experience with the instructors?**

- Overall, local coordinators commented very positive experiences with, and impressions of, instructors, for reasons including:
  - Ability to adapt to last minute changes.
  - Instructors were relatable as they had experience practicing in rural communities.
  - Flexibility of teaching dependent on learners' needs.

### **Did they feel their contribution was valued and appreciated?**

- Most local coordinators felt appreciated for their work from physicians and UBC CPD staff.
- For one local coordinator, their appreciation felt somewhat valued by physicians but less so by UBC CPD staff.

### Were there any challenges organizing the course?

- Overall, organizing the course was reported to have gone smoothly, with only a few challenges.
- Recruiting models was particularly challenging for some, particularly models with positive findings.
- Difficulty working with one model was reported due to the model being uncooperative.
- There was some challenge faced when trying to contact a model who had not turned up to the course day.
- There was some trouble with catering arriving late.

### What knowledge and skills do they think are important for local coordinators to have?

- The most common attribute mentioned as important for a local coordinator was having a background in a medical environment, which puts one in advantage for accessing resources and recruiting the right models with positive findings.
- Being respected in the medical community was felt to be important in accessing patients in order to recruit models.
- One local coordinator went as far as to say that experience in a medical environment should be an essential requirement for local coordinators.
- Having prior experience with planning a course and understanding of the coordination required was commented to be an important attribute.
- Being organized with paperwork was also commented to be an important attribute, a skill that would likely come with having prior experience planning a course.

### How could UBC CPD better support local coordinators?

- Most local coordinators felt well supported and did not have any further suggestions.
- One local coordinator encouraged anyone new to the role of supporting local coordinators to be well supported by teammates and provide timely responses.
- Payments to local coordinators and caterers should be paid in a timely manner, or notify if payment cannot be made quickly upfront.
- Providing examples of how previous communities have organized courses may be especially helpful to local coordinators with little planning experience.

### How could the course be improved?

- One local coordinator felt that an alternative area for the catering to be set up may have prevented people not part of the course from helping themselves to the food as the venue was set in an academic building during term time.
- It was suggested by one that payment to models should be increased and that many of the models they paid were surprised at how low the payment was.

## Would they do anything differently next time?

- Most local coordinators commented that they would not do anything differently. One local coordinator felt that they might try different ways to recruit additional models.

## Conclusions from Local Coordinator Interviews

1. Overall, local coordinators had a positive experience organizing a HOUSE course in their community, with all local coordinators commenting that they found it to be a rewarding experience. They felt well supported by the course Medical Leads and UBC CPD staff and appreciated the comprehensive materials provided to help with their role.
2. The main challenge for local coordinators was recruiting and working with potential models.
3. There was a request for more timely payments of local coordinator wages.

## Recommendations from Local Coordinator Interviews

1. Continue to customize support for local coordinators during one-on-one phone calls.
2. Update the local coordinator guide to address minor improvement suggestions from interviews.
3. Improve the information we provide to potential local coordinators to help them better understand the needs of the role and remuneration.
4. Continue to provide support to local coordinators for finding models and address other model related issues.
5. Continue to ensure all local coordinators feel supported and appreciated by UBC CPD staff.
6. Continue to evaluate the local coordinator experience.

## Regional CME Administrators (n=2)

### Background

The CME administrators interviewed provide support for rural communities to increase access to CME education, support with accreditation applications, supporting locally driven conferences and managing community CME funds and regional funds.

### Key Quotes



*“I think it’s really, really well known. Most of our physicians in the North know about it. We’ve run multiple HOUSE courses.”*

*“I have to say that working with the staff at UBC CPD has been fantastic. Everyone is so nice and so willing to help... They’re just very helpful in facilitating things...”*

*“Sometimes finding a local coordinator that has clinical knowledge on scanning is difficult... I’ve worked to support rural physicians’ further education and administration for a decade and I still find it difficult, even for me, to know what is needed.”*

*“I think that the impact is community...UBC comes and they deliver all this amazing information and we’re building capacity at a local level, closer to home, you’re building ...the community up. So the community of physicians is stronger.”*

*“There aren’t many people [other than HOUSE] that are willing to...travel to some of our really rural and remote communities.”*

### **How did they first hear about HOUSE?**

- CME administrators first heard about HOUSE either through research or physician request.

### **How recognizable is the HOUSE brand in BC?**

- HOUSE is very well known, especially in the North, and more well-known than alternative ultrasound courses such as EDE.

### **What has their involvement been in HOUSE?**

- Involvement in HOUSE has included support with; organization and logistics, navigation of funding, bursary applications, invoicing, online registration, identifying physician leads, and course promotion online and in newsletters. CME administrators have also played a role liaising with UBC CPD staff, local coordinators and others who provide local administrative support.

### **What has their experience been working with HOUSE?**

- Experience working with UBC CPD staff has been incredibly positive due to their willingness to help, connection with REAP and ability to facilitate courses.

### **What have been the challenges and barriers of bringing HOUSE to their region or a specific community?**

- A significant challenge was finding someone willing to support HOUSE as a local coordinator, who also has relevant clinical knowledge and knowledge about the community, despite not being a physician or other health care practitioner.
- Cost is a significant barrier. Communities have not had enough money for HOUSE in the past, despite being interested.
- One CME administrator commented that they do not think UBC CPD can do anything to reduce barriers to participate.

## Have there been any impacts of the program at a regional level?

- Any impacts that HOUSE has made remains at a community level where education is being delivered, including potentially less referrals to regional centres and increased ultrasound skills.
- The development of a group of certified instructors that can provide expert knowledge to colleagues.
- With access to ultrasound training, physicians have been in a better position to request ultrasound equipment from regional Health Authorities and clinical administrators and communicate a need for this equipment.

## What is working well with the HOUSE program?

- Not many educational offerings are willing to travel and teach in communities due to challenges of travelling to remote communities. The willingness of HOUSE to teach in community puts it apart from other courses.
- The instructor-to-student ratio was commented on being a valuable part of HOUSE.
- Having instructors local to some communities helps to reduce the cost.
- People trust the content of the course because of the Medical Lead, Tandi, being available locally.
- HOUSE is easy to organize because of the support and resources it provides to communities.

## How can HOUSE better meet the need for local PoCUS training?

- Access to gaining Independent Practitioner certification is challenging in rural areas.
- Learners are not confident enough with ultrasound skills after taking a HOUSE course, especially because of the low volume in rural areas leading to little opportunities to practice.
- Learners would benefit from completing a series of scans following the course to gain IP certification and thus feel more confident with ultrasound skills.

## Conclusions from Regional CME Administrator Interviews

1. The HOUSE brand is very recognizable in BC and a popular choice over other existing ultrasound courses.
2. Challenges and barriers for regional administrators in bringing HOUSE to a community include finding a local coordinator and the course cost.
3. Providing supervised scans towards IP certification is desired (editor's note - although currently not possible for HOUSE to provide).
4. In-community teaching, the low instructor to participant ratio, the use of local physicians as HOUSE instructors, course reputation and ease of organization are all working particularly well with the HOUSE program.

## Recommendations from Regional CME Administrator Interviews

1. Recognize that regional CME administrators may have difficulties with identifying local coordinators, unlike courses supported by local community physician leads. As much as possible, assist with this process.

## Ultrasound Models (n=6)

### Background

Age of models ranged from 17 to 60 years old. Models were students in high school or university, or retired.

### Key Quotes



*“... I felt like I had contributed to the learning.”*

*“It was kind of weird at first...because I didn't really have...a strong understanding of how this works and what's going to happen but overall it was pretty good.”*

*“...You get to see [your] body – you're hearing them explain...You're talking about your body all day.”*

*“It was super – we got told of all the list of materials that we needed to bring, which was awesome.”*

*“...The emails were very clear and the directions were very clear.”*

*“You're the human model in a station where a doctor is coming to practice a technique that he can only do on a live model and you have to listen very carefully to what the instructor's telling you and then the doctor who's practicing on you. Because the doctor needs you to respond...and he only has a very short time to practice this technique of finding the exact spot that he's looking for... the ultrasound machine and the model are equally important.”*

*“I felt I was comfortable telling them if I was uncomfortable –if they were, say, applying too much pressure.”*

*“I enjoyed being an outlet for doctors to gain more knowledge. I found it very humbling for me.”*

*“I would love to be an ultrasound model again...you can't ever really get tired of watching your own heart beating...”*

## How did they hear about HOUSE EM?

Models heard about HOUSE through a number of avenues, including volunteer programs, Craigslist, family member working in medicine who know about HOUSE, and through having worked in a venue that has held a HOUSE course.

## What motivated them to participate?

- A desire to give back and interest to contribute to medical education.
- Remuneration.
- Learning opportunities, including learning about their own body and interest in ultrasound technology.
- Fulfillment of volunteer hours required to graduate from school.

## Was the role what they expected?

- The role of ultrasound model was what they expected for most models. One model reported that they did not quite know what to expect.
- For one model, the day was less organized than expected, as well as feeling less welcomed than expected. This was because there was little coordination for the models, which lead to some confusion and uncertainty about where they needed to be.
- There was some uncertainty experienced on the day and a lack of understanding of what will happen on the day for one model. They would have benefited from a step-by-step guide of what to expect.

## What was their experience as an ultrasound model?

- Overall, models report having positive experiences as an ultrasound model.
- They felt comfortable as ultrasound models and felt respected by instructors and learners.
- One model particularly enjoyed getting an insight into what physicians see when they use ultrasounds on patients.

## What was their experience with course organizers?

- Overall, most models felt that course organizers adequately prepared them for the day. However, one model reported that they did not feel adequately prepared and that there was some coordination confusion.

## Information

- Overall, most models commented that they received the information they needed in advance. However, one model mentioned that they would have liked to have been given more information about what to expect on the day.

### **How well did they understand their role as an ultrasound model?**

- All models reported to have understood their role as an ultrasound model.

### **Did anything happen during the course to make them feel uncomfortable?**

- Most models reported that there was nothing that happened during the course to make them feel uncomfortable.
- One model commented that they found the cold gel uncomfortable but that the instructors were very friendly about this.

### **Were they diagnosed with any abnormal findings during the course?**

- Generally, models reported that they were not diagnosed with any abnormal findings.
- One model mentioned that something did initially look abnormal but did not find anything concerning on further inspection. They felt the instructors handled this very professionally and made them feel comfortable.

### **Did they feel comfortable to speak up and voice any comments or concerns?**

- Most models felt comfortable to speak up and voice any comments or concerns and that the instructors and learners were encouraging and friendly.
- One model mentioned that they only felt somewhat comfortable and did not want to discourage learners when finding something of interest.

### **What did they enjoy about the course?**

- Many models mentioned that they enjoyed being an ultrasound model for the unique learning experiences it afforded them.
- Some models enjoyed being a model to contribute to medical education.
- New experiences outside of one's comfort zone.
- Going to the community.

### **What were their thoughts on payment?**

- Overall, most models were satisfied with how much they were paid to be a model. One model felt the honorarium was low.

### **Would they participate as an ultrasound model again?**

- All models commented that they would participate again, some reasons being; opportunity to interact with physicians, enjoyable and fun hands-on learning experiences, learning new things, contributing to medical education, and food.

## How could their experience as an ultrasound model be improved?

- Provide ultrasound models with more information about key areas of the venue, instructions and contacts who can answer questions on the day.
- Provide ultrasound models with more information about PoCUS and describe to them what is happening during the ultrasound procedure.
- Recommend ultrasound models bring warm articles of clothing or provide these on the day as the venue can be uncomfortably cold.
- Set up screens to maximize privacy for ultrasound models.
- Remind physician learners about bedside manner when interacting with models.

## Conclusions from Ultrasound Model Interviews

1. Overall, models generally report very positive experiences being an ultrasound model; they felt well informed and prepared by course organizers, and enjoy interacting with physicians.
2. Models report many benefits from their participation. The opportunity to facilitate physicians' learning was a rewarding experience, as was learning more about the human body and ultrasound technology.
3. Some models would have liked more information about what to expect over the day and during the scanning, as well as having a designated person to answer their questions.
4. All models reported that they would participate as an ultrasound model again in the future.

## Recommendations from Ultrasound Model Interviews

1. Review information provided to models to enhance the quality and detail of information provided in advance, as well as the process by which information is provided.
2. Communicate with models about the level of privacy they can expect during ultrasound scanning.
3. Help participants to be sensitive to the needs of models, by ensuring appropriate communication and management of their experience.
4. Include testimonials from previous models in the ultrasound model volunteer pamphlet to encourage prospective models to participate.