2019

Barriers to Implementation of Point-of-Care Ultrasound in Primary Care

Jack Dubuque
University of Vermont

Follow this and additional works at: https://scholarworks.uvm.edu/fmclerk

Part of the Medical Education Commons, and the Primary Care Commons

Recommended Citation
https://scholarworks.uvm.edu/fmclerk/464
Barriers to Implementation of Point-of-Care Ultrasound in Primary Care

South Burlington, VT March-April 2019

Jack Dubuque, Class of 2021
Mentor: Aaron Reiter, MD
Problem Identification

Point-of-care ultrasound (POCUS) is a safe and rapidly evolving diagnostic tool that has changed the practice of many hospital based specialties and has been introduced into Family Medicine residencies over the last few years.

POCUS enables a provider to ask a simple yes or no question and after a brief examination get an answer immediately thus helping narrow the differential diagnosis.

POCUS has the potential to bring significant value to the providers and patients in the outpatient setting, and even more so to rural practices.

This technology has the potential to reduce health care costs by evaluating the need for more comprehensive imaging and increasing the rates of screening as recommended by the USPSTF.

While the UVMMC Family Medicine residency has introduced POCUS into the curriculum, many practicing physicians have limited knowledge about the technology. This study aims to document the views and concerns of primary care providers about use and implementation of POCUS.
Public Health Cost

In adopting POCUS there is a cost in purchasing the ultrasound machine, the cost to train and teach the provider the new skill, and the cost to maintain the technology.

Ultrasound machines range from $2,000 to $100,000 depending on the size and quality of the model. Smaller handheld devices can be more accessible and have shown to be useful in evaluating simple questions or providing screenings, but do require the provider to know the limitations of the device.

As POCUS is a newer technology, many practicing physicians have never been trained in ultrasound use and interpretation. The current cost to train physicians is highly variable and dependent on the requirements set forth by each hospitals credentialing service.

Despite the large start up costs, the benefits have been proven to be cost effective.
“Providing longitudinal care to patients has many components. At its core, we strive to provide care that results in improved outcomes for our patients as well making that care high quality, accessible and convenient. Point of care ultrasound has the potential to contribute to the attainment of these goals. When applied correctly, it can confirm a diagnosis or narrow a differential diagnosis, decrease time to treatment and improve the patient experience by being performed in the office as opposed to an off site location.”

Dr. John Miller, Adult Primary Care Internal Medicine Physician, Assistant Professor Larner College of Medicine

“Point-of-Care Ultrasound has the potential to bring immense benefit to primary care. Having the ability to ask a diagnostic question and immediately get an answer in the office could save patients days of waiting and the hassle of scheduling multiple appointments. It could decrease the number of emergency room and urgent care visits too. While the benefits to both patients and providers are incredible, it is a new technology and precautions must be taken to make sure patient safety and good outcomes are maintained. However, once the system has been setup for providers I would enthusiastically adopt POCUS into my practice.”

Tim Schad, APRN, South Burlington Family Practice
Intervention and Methodology

An electronic survey was developed with the aid of Dr. Aaron Reiter and Dr. John Miller.

The survey was distributed via REDcap to the health care providers at University of Vermont Medical Center Family Medicine offices in South Burlington, Colchester, Milton, Hinesburg, and Berlin as well as Outpatient Adult Internal Medicine offices in Burlington, South Burlington, Essex, and Williston.

The survey was open for 10 days.
Results - Demographics

Age

<table>
<thead>
<tr>
<th>Range</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gender

<table>
<thead>
<tr>
<th>Sex</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Years in Primary Care

<table>
<thead>
<tr>
<th>Years</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specialty

<table>
<thead>
<tr>
<th>Specialty</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Med</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Med</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

License

<table>
<thead>
<tr>
<th>License</th>
<th>0</th>
<th>7</th>
<th>14</th>
<th>21</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of time clinical

<table>
<thead>
<tr>
<th>Percent</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results – Current Use

Do you use point of care ultrasound for procedures?

Of those surveyed, POCUS is currently used by one provider for OB/Gyn and one provider for musculoskeletal exams and for joint injections. One trained in fellowship and one through an ultrasound certification course.
Results - Perceptions

Do you believe point of care ultrasound can be used to increase patient satisfaction?

Do you believe point of care ultrasound can expedite patient care?

Do you believe that point of care ultrasound use will increase the number of patients that receive screening recommended by the USPSTF?
Results – Barriers

In your opinion, what are the potential issues in adopting point of care ultrasound in your primary care office? (Select all that apply)

- None
- Lack of awareness
- Lack of training
- Lack of equipment
- Lack of evidence for any patient benefit
- Lack of time
- Lack of respect from other specialties
- Legal concerns for practice
- Non-billable services
- Other

In your opinion, what are the prerequisites to adopt point of care ultrasound in primary care practice? (Select all that apply)

- None
- Training guidelines
- Credentialing arrangement
- Acquisition of equipment
- Collaboration with other specialties
- Approval by risk management
- Recommended by professional body
- Other
Results - Implementation

After appropriate training, credentialing, and collaboration with radiology, would you be willing to introduce point of care ultrasound into your practice?
Effectiveness and Limitations

**Effectiveness**

Identifies 5% of providers are currently using POCUS in their practice but 78% would like to use it.

Greater than 70% of providers believe POCUS will increase the rate of health care delivery and increase patient satisfaction.

Providers are split about how POCUS can be used in screening exams and this provides a nidus for further education.

Over 50% of providers are concerned about risk management and greater than 30% are concerned about the legal aspects of POCUS.

**Limitations**

Survey was only available for a period of 10 days

Small sample population of UVMMC family medicine and outpatient internal medicine (approximately 80 people)

Response rate of approximately 43%

Despite testing the survey the “other” category did not propagate with write in data

Not all surveys were filled out completely
Future Direction

Expand the survey to all primary care providers throughout the state of Vermont.

Distribute an educational document with POCUS FAQ and concerns to providers.

Evaluate interest in handheld ultrasound devices compared to classic larger and more expensive machines.
References


5. Group BMJP. Multicentre aneurysm screening study (MASS): cost effectiveness analysis of screening for abdominal aortic aneurysms based on four year results from randomised controlled trial. BMJ. 2002;325(7373):1135. doi: 10.1136/bmj.325.7373.1135


