Standardized Central Venous Access Insertion Education: Measuring Practice, Change and Limitations

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BACKGROUND:
Advancing the vascular access specialty is a rapidly growing trend, one that requires additional education to develop this dynamic discipline. Simulated, hands-on education helps to enhance knowledge, skill and procedural confidence across multi-disciplinary groups. Advancing these healthcare professionals to include central venous catheter (CVC) insertion empowers clinicians to assess the vascular access needs of patients and insert the most appropriate device, based on intended therapy and full assessment of the vasculature, adding a valuable resource to their organization without added costs, risk, or delays in care.

PURPOSE:
To measure healthcare professionals’ procedural confidence and ability to advance their individual scope of practice after attending standardized ultrasound-guided central venous catheter insertion training.

METHODS:
To survey multi-disciplinary clinicians that attended a standardized ultrasound-guided CVC education program and measure CVC procedural confidence through pre- and post-course surveys. This project measured the number of courses and attendees, clinician type, number of catheters inserted prior to the course, procedural confidence, and the relationship between CVC program satisfaction and collegial education recommendation.

RESULTS:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Jan – Mar 2015</th>
<th>Apr – Jul 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendees</td>
<td>6</td>
<td>24 (15 sites)</td>
</tr>
<tr>
<td>PHYSICIAN (P)</td>
<td>63 (15.9%)</td>
<td>238 (60.2%)</td>
</tr>
<tr>
<td>NON-PHYSICIAN (N)</td>
<td>12 (3.0%)</td>
<td>82 (20.7%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>n=31</td>
<td>Total</td>
</tr>
<tr>
<td>PHYSICIAN (P)</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>NON-PHYSICIAN (N)</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>n=395</td>
<td></td>
</tr>
</tbody>
</table>

The total number of clinicians who attended standardized education was 395 over a 6 month period. During the Jan-Mar period, 75 attendees were not survey for levels of confidence. A total of 24 courses were delivered between Apr-Jul and physician (P) (n=301) and non-physician (N) (n=94) groups were both surveyed for confidence. 33% of clinicians had experienced a complication, with 15.3% rating bleeding as their greatest hazard. Of the sites, the internal jugular vein (IJV) was used in 62.8% of all insertions.

Q4. Have you experienced a complication associated with CVC insertion?

- YES 33%
- NO 67%

Q5. If Yes, what complication have you experienced?

- Bleeding 15.3%
- Arrhythmia 6.3%
- Pneumothorax 6.9%
- Infection 7.1%
- Skipped 3.6%
- Arterial 2.6%
- NA 6.9%

Q7. The site I have used most for CVC insertion is:

- IJ 61.8%
- SC 15.2%
- AX 14.6%
- Fem 1.4%
- Skipped 11.5%
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RESULTS:

Of the attendees who completed the course, 91.8% were at the high end of the Likert scale for recommending this program to a friend or colleague to expand procedural skills and confidence. Measurement of confidence was performed using an unpaired Student T-test online calculator and showed statistical significance in the change of attendee confidence between pre- and post- assessments. This supports the understanding that dedicated clinical education has significant impact potential on procedural confidence and skills acquisition. 98% of attendees reported increased knowledge and assessment skills for CVC insertion with use of ultrasound during this course.

Standardized CVC education has the ability to empower and educate healthcare professionals, aiding in advancement of assessment, skills and scope of practice, while optimizing organizational efficiencies.

CONCLUSIONS:

Standardized ultrasound-guided CVC education is enhancing a multi-disciplinary healthcare group of professionals to include CVC insertion as a potential device option for patients requiring both long and short term vascular access. Procedural confidence increased post- education, demonstrating a high probability that attendees would enhance their newly learned skills within their facilities and recommend the benefits of this program to a colleague. Local institutional limitations demonstrate that standardized CVC education is only one variable for advancing clinicians’ scope of practice.

REFERENCES


MC-001606