

Circle of Learning Using High-Fidelity Simulators Promoting a Better Understanding of Resident Physicians on Point-of-Care Ultrasound in Emergency Medicine

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Abstract : Introduction: Ultrasound in emergency room has advantages of safer, faster, repeatable and noninvasive. Especially focused Point-Of-Care Ultrasound (POCUS) is used daily for prompt and accurate diagnoses, for quickly identifying critical and life-threatening conditions. That is why ultrasound has demonstrated its usefulness in emergency medicine. The true value of ultrasound has been once again recognized in recent years. It is thought that all resident physicians working at emergency room should perform an ultrasound scan to interpret signs and symptoms of deteriorating patients in the emergency room. However, a practical education on ultrasound is still in development. To resolve this issue, we established a new educational program using high-fidelity simulators and evaluated the efficacy of this course. Methods: Educational program includes didactic lectures and skill stations in half-day course. Instructor gives a lecture on POCUS such as Rapid Ultrasound in Shock (RUSH) and/or Focused Assessment Transthoracic Echo (FATE) protocol at the beginning of the course. Then, attendees are provided for training of scanning with cooperation of normal simulated patients. In the end, attendees learn how to apply focused POCUS skills at clinical situation using high-fidelity simulators such as SonoSim® (SonoSim, Inc) and SimMan® 3G (Laerdal Medical). Evaluation was conducted through surveillance questionnaires to 19 attendees after two pilot courses. The questionnaires were focused on understanding course concept and satisfaction. Results: All attendees answered the questionnaires. With respect to the degree of understanding, 12 attendees (number of valid responses: 13) scored four or more points out of five points. High-fidelity simulators, especially SonoSim® was highly appreciated to enhance learning how to handle ultrasound at an actual practice site by 11 attendees (number of valid responses: 12). All attendees encouraged colleagues to take this course because the high level of satisfaction was achieved. Discussion: Newly introduced educational course using high-fidelity simulators realizes the circle of learning to deepen the understanding on focused POCUS by gradual stages. SonoSim® can faithfully reproduce scan images with pathologic findings of ultrasound and provide experimental learning for a growth number of beginners such as resident physicians. In addition, valuable education can be provided if it is used combined with SimMan® 3G. Conclusions: Newly introduced educational course using high-fidelity simulators is supposed to be effective and helps in providing better education compared with conventional courses for emergency physicians.

Keywords : point-of-care ultrasound, high-fidelity simulators, education, circle of learning

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