



Title Portable Ultrasound Devices in Emergency Departments

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Reference CADTH Technology Report, Issue 63, March 2006. ISBN 1-897257-10-4 (print), 1-897257-11-2 (electronic). Full text available at www.cadth.ca/media/pdf/384_Portable_Ultrasound_tr_e_no-appendices.pdf

Aim

To review and analyze evidence relating to the effective use of portable ultrasound (pU/S) by professionals who are not trained radiologists; to review and evaluate existing guidelines regarding the use of pU/S devices; and to examine the ethical and legal implications of their use.

Conclusions and results

Emergency department (ED) use of pU/S by non-radiologists for assessment of abdominal trauma, abdominal aortic aneurysm (AAA), and ectopic pregnancy improves diagnostic certainty. There is no convincing evidence that ED pU/S administered by a non-radiologist has an impact on health outcomes, or improved time to diagnosis, or operative treatment. The non-therapeutic advantages of using this technique are that it is easier to use and repeat, inexpensive to perform with available technology, and is non-invasive. There is evidence of misdiagnosis from using pU/S in EDs, which is associated with inexperience. There is additional evidence of improved performance from training non-radiologist physicians. Training programs that use didactic and practical sessions (a minimum of 50 scans for each medical use) improve effectiveness. Misdiagnoses with pU/S scans performed by trained non-radiologist physicians can still occur, but at rates similar to those observed in similar studies of radiologist performed U/S scans.

Recommendations

Not applicable.

Methods

The literature was searched using a defined search strategy that included biomedical databases and websites of regulatory, HTA, and other relevant agencies. The bibliographies of selected papers were searched for further references. Case series and comparative studies that focused on pU/S use by non-radiologists in EDs in patients with suspected abdominal trauma, AAA, or ectopic pregnancy were included. A quantitative review of the clinical effectiveness of pU/S use in EDs was con-

ducted. Summary likelihood ratios (LRs) and post-test probabilities in clinical scenarios were calculated, based on the data from individual studies, to evaluate the clinical effectiveness of ED pU/S. A qualitative-review approach was adopted to answer questions related to legal and ethical implications.

Further research/reviews required

Additional prospective, comparative, high-quality studies, designed to measure the impact of ED pU/S on efficiency, while monitoring clinical efficacy, would be helpful for making evidence-based decisions. The body of evidence describing diagnostic performance needs to be supplemented with results that demonstrate the effect of this intervention on diagnostic reasoning and time to definitive care.