patient’s preferences and their actual code status orders. First, we agree that surrogate decision making for previously capable adults is expected to follow a standard of substituted judgment so that surrogates represent their loved one’s preferences, not their own. Second, it is important to emphasize that when a surrogate served as a participant in our study it was because he/she was the patient’s legally authorized decision maker. Whether surrogates’ expressions of patients’ preferences were accurate, those expressions would in fact serve as the basis for decision making unless a patient’s physician had independent knowledge of a patient’s previously expressed wishes or had reason to question the validity of a surrogate’s decision making.

Regarding the literature-based goals of care we used,\textsuperscript{1} we agree that their interrelationships caution against overinterpretation of differences between goals of care identified as most important by physicians as opposed to patients/surrogates. In terms of impact on clinical decision making, there may not be, for instance, a clinically meaningful difference between wanting to achieve a specific life goal vs simply wanting to live longer (though personal significance for patients may vary when a highly valued life goal is at stake).

Last, we agree that different goals of care often are and should be pursued simultaneously. Early in the course of a disease trajectory it is common to pursue cure, longer life, increased function, and comfort. Even in incurable conditions, it is common (at least for some time) to pursue longer life, increased function, and comfort. However, it is also true that sometimes some goals of care are mutually incompatible and need to be prioritized,\textsuperscript{2,3} such as when a patient has to choose between comfort (resulting in an earlier death) and cure (resulting in a more burdensome life) or between being alert (resulting in the ability to communicate with loved ones) and sedated (resulting in greater comfort and the ability to sleep). Since patients must at times choose between multiple preferred goals, we believe it is sometimes clinically necessary to engage patients in dialogue to learn which goal is most important to them.

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REFERENCES


The Value of Chest Ultrasonography in Diagnosing Pneumothorax in Patients With Trauma

To the Editor:

Dr Baumann, in his editorial in CHEST (October 2011),\textsuperscript{1} comments on the higher sensitivity of ultrasonography compared with chest radiography in the detection of pneumothorax, as reported in a meta-analysis by Ding et al\textsuperscript{2} published in the same issue of the journal. He also suggests that more prospective, randomized studies are needed to demonstrate the comparative clinical effectiveness of ultrasonography. From our perspective as emergency physicians treating patients with trauma, the current available evidence seems to suggest that there is little value in incorporating chest ultrasonography in the evaluation of patients with blunt chest injury.

First, a retrospective study of patients with trauma and occult pneumothoraces (pneumothoraces not identified on chest radiography but diagnosed using thoracic CT imaging) found that 59 patients were managed by observation without tube thoracostomy, of which 51 cases (86%) were successful.\textsuperscript{3} For the eight patients in which delayed tube thoracostomy was required, five were placed because of the increasing size of the pneumothorax noted on chest radiography, two were placed prophylactically prior to exploratory laparotomy, and one was placed because of the increasing size of the pneumothorax noted on CT scans.\textsuperscript{4}

Second, in a series of blunt thoracic injuries from another level 1 trauma center, including 82 cases of occult pneumothoraces, clinical outcomes for patients in terms of mortality and duration of mechanical ventilation of patients with occult injuries (injuries not identified on chest radiography but diagnosed using thoracic CT imaging) were not significantly different from those patients with no abnormality on chest radiography and CT scans.\textsuperscript{4}

The authors concluded that occult injuries have minimal clinical consequences.

Finally, in a retrospective study of 44 consecutive cases of occult pneumothoraces (same definition as in the previous paragraph) from blunt chest injury in our trauma center in Hong Kong, 36 patients were managed expectantly without significant complications. No pneumothoraces progressed even though eight patients were mechanically ventilated.\textsuperscript{3}

Although the sensitivity of ultrasonography in detecting pneumothoraces approaches that of thoracic CT imaging (89% according to Ding et al),\textsuperscript{2} these three studies suggest that utilizing chest ultrasonography to detect pneumothoraces that may be missed by chest radiography is likely to have very little impact on improving clinical outcomes in the setting of a contemporary trauma system with modern CT scanners. We agree with Dr Baumann that more high-quality evidence, preferably from prospective randomized studies, is needed to establish the precise role of ultrasonography in this clinical setting, along with its cost-effectiveness, if any.

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Response

To the Editor:

Thank you to Dr Chan and colleagues for their comments regarding my editorial about chest ultrasonography. As they aptly note, ultrasound may not have a role in the discovery of an occult pneumothorax (one not seen on a chest radiograph but seen on a chest CT scan), especially in the setting of blunt chest trauma. Given the now-frequent incorporation of a chest CT scan in this clinical setting, ultrasound may be obviated as a pneumothorax diagnostic tool. Also, the discovery of an occult pneumothorax in the blunt chest trauma setting may not require specific intervention, further marginalizing the need for its discovery by CT imaging or ultrasonography.

The meta-analysis by Ding et al includes 11 studies out of 20 with the patient type being listed as “trauma,” with four of these 11 being performed by emergency medicine physicians. How often were occult pneumothoraces specifically and systematically searched for and/or an issue in these studies? Were any occult pneumothoraces diagnosed independent of an accompanying CT imaging? What was the sequence and timing of the diagnostic examinations, and where was an ultrasound positioned in this sequence? These and other questions need to be systematically answered to effectively position (or not) ultrasonography as a diagnostic tool for occult pneumothorax. Dr Chan and colleagues show a particular interest in the emergency and trauma settings, as reflected in their comments and in the related publication regarding occult pneumothoraces. They and their similarly situated colleagues are ideally located to assist in answering these and other incompletely answered questions regarding the role of ultrasound in pneumothorax diagnosis.

We should not lose, in this specific discussion about occult traumatic pneumothoraces, the fact that ultrasonography, despite potential study flaws to date, has a role in pneumothorax diagnosis. The analysis by Ding et al, at a minimum, indicates that ultrasonography is as accurate as a chest radiograph for the detection of a pneumothorax. But, understanding the limits of chest ultrasonography (including for occult pneumothorax and other clinical settings), the need for adequate training and the need for appropriate patient selection and timing for its implementation are fundamental to its safe and most effective use. Meantime, the comments by Dr Chan and colleagues point to a universal issue with any evolving technology: Extending applications of any technology beyond areas of its known efficacy must be done very carefully. Stated differently, just because you own a hammer does not mean the whole world is a nail!

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