

Do pediatric intensivists and radiologists concur on the interpretation of chest radiographs?

ABSTRACT

These findings demonstrate significant agreement between the interpretation of chest radiographs by PI and PR in selected clinical situations. These data support the current practice of the PI making therapeutic decisions based on their interpretations of chest radiographs.

INTRODUCTION

Introduction Chest radiographs are obtained in the pediatric intensive care unit to assess cardiopulmonary abnormalities, evaluate acute clinical deterioration, and to determine the position of invasive life support devices such as central venous catheters and endotracheal tubes. Immediate interpretation of these chest radiographs is often necessary to assess whether further diagnostic or therapeutic interventions are necessary and to determine proper position of invasive devices. The pediatric intensivists (PI) at the bedside are often the first physicians to interpret a radiograph and frequently base diagnostic and therapeutic interventions on their interpretations. With fewer than 30% of hospitals having a radiologist available in the hospitals having a radiologist available in the hospital 24 h a day, a formal interpretation by the radiologist is not readily available until after most acute interventions have occurred. Accurate interpretation of chest radiographs by a PI when a radiologist is not immediately available is crucial for optimum patient care. Few centers have mechanisms to determine if discrepancies exist between the radiologist and the treating physician or whether these discrepancies lead to inappropriate changes in therapy. To our knowledge no previous studies have evaluated the accuracy with which board-certified PI interpret chest radiographs. This study was undertaken to determine the concordance of chest radiograph interpretation between PI and pediatric radiologists (PR) and to determine whether discordant interpretations resulted in adverse patient outcomes.

CONCLUSION

Future implications In today's healthcare environment, capitation is stimulating the move towards reduced cost and eliminate the duplication of services. Is the routine review of all radiographs by a radiologist therefore still cost-effective or clinically necessary? In a study comparing the interpretation of plain orthopedic films, Turen et al found no difference in interpretations between radiologists and orthopedists. They concluded that the review of orthopedic films by the radiologist did not influence patient care and that concurrent review by both radiologists and orthopedists was redundant, resulting in unnecessary expense to the patient. Simon et al, in another study comparing radiographic interpretations by pediatric emergency room physicians and radiologists from our institution, concluded that a substantial cost saving could be obtained by eliminating the radiologist's routine interpretation of all radiographs and consulting the radiologist with difficult or high risk cases. From the data that we have presented, it could be concluded that the radiologist may not need to review all chest radiographs ordered in the PICU. Radiographs that are obtained solely for determining central venous line or endotracheal tube position may only need to be reviewed by the PI for the accuracy of placement. The charges associated with interpreting the radiograph could be bundled with the charges associated with the procedure. If other studies show similar results, perhaps the current policies of requiring radiologists'

review of all chest radiographs, as in our institution, can be reconsidered. Additional cost reductions would be generated. Additional cost reductions would be generated if, for example, radiologists were required to review the initial chest radiograph upon patient admission to the PICU and were then consulted for specific clinical questions by the PI on subsequent radiographs. For this change to truly be effective, it will require additional emphasis during the training for PI to aid in their interpretation of radiography. Future studies will be required to more accurately determine clinical predictors that could help clinicians determine which radiographs would need further evaluation by a radiologist.