

Protocolling CT Chest in the acute setting – Are we getting it right?

P Nandra, E Chang, LNWUH NHS Trust

Introduction

Protocolling CT chest requests appropriately for the patient and the pathology is crucial to ensure the best image quality and patient care, and help us 'get it right first time'. An audit was undertaken to assess whether we are appropriately vetting non-contrast CT chest, CT chest with intravenous (IV) contrast, and high resolution CT chest (HRCT) in the acute setting, where registrars and non-chest radiologists are more likely to protocol these scan requests than chest radiologists.

Method

Based on standards established from multiple sources (Trust guidelines, protocol guidelines from a tertiary centre, relevant publications, and corroboration with supervising consultant) a detailed review of CT chests vetted in the acute setting in March 2025 was undertaken using Soliton and Sectra PACS. There is no national standard for appropriate vetting standards of which we are aware, and a target of 100% was chosen as best practice for avoiding the need for any additional scans due to inappropriate first choice of examination. 91 total scans yielded from the initial search, with 6 exclusions due to various reasons (e.g. part of a staging scan requested separately) leaving 85 scans after exclusions. Each request and vetting note was reviewed on Soliton by an ST5 registrar, images reviewed on Sectra PACS, and any queries discussed with the supervising consultant (a chest radiologist).

Examination type	Number	Appropriate protocol	Inappropriate protocol	Notes on inappropriately protocolled scans
CT chest	15	15	0	N/A
CT chest with contrast	61	56	5	Should have been non-contrast: 4 x ARDS/parenchymal pathology 1 x query rib fracture
HRCT	9	7	2	Should have been non-contrast: 1 x hx Flu A, COPD Should have had IV contrast: 1 x mass on CXR, SOB

Figure 1. Table with breakdown of examinations, protocol appropriateness, and notes on inappropriately protocolled scans

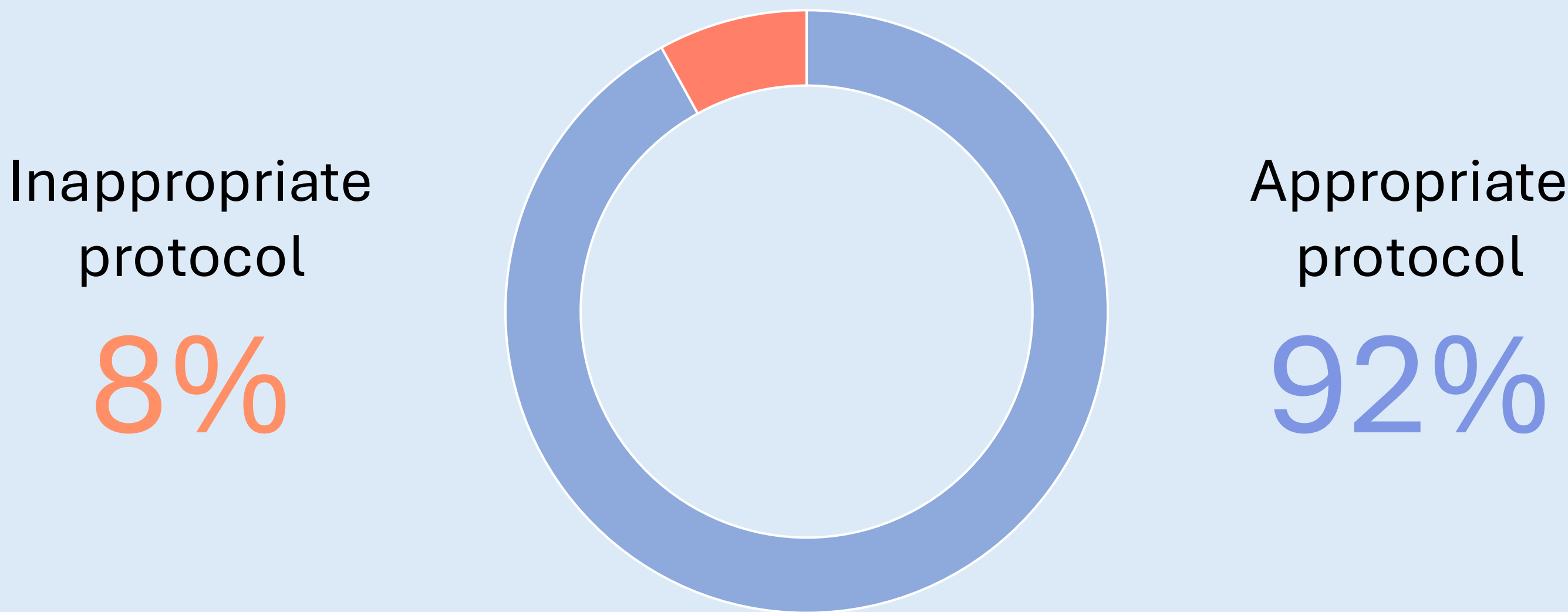


Figure 2. Doughnut chart showing percentage of appropriately vs inappropriately protocolled examinations

References

- Sharif B, Batool I. CT Protocol Guideline, LNWUH
- Iezzi R, Larici AR, Franchi P, et al. Tailoring protocols for chest CT applications: when and how? *Diagn Interv Radiol* 2017; 23:420–427
- ACR Expert Panel on Thoracic Imaging - Hemoptysis (2019) - American College of Radiology ACR Appropriateness Criteria® Hemoptysis
- Ellis S. CT chest protocolling and vetting. *RAD Magazine* 2015, 41, 476, 14-15
- L Richardson, S Ralhan. Rib fracture management in the older adult; an opportunity for multidisciplinary working. *JTO* 2020, vol.8 iss.3 p58-61

Results

78 examinations (92%) were appropriately vetted, with 7 (8%) inappropriately vetted, falling short of the 100% standard we had decided upon. The most common reason for the scans deemed inappropriately vetted was the unnecessary use of contrast. There was also unnecessary use of HRCT in two cases, one of which led to the patient having a further CT chest with IV contrast the same day. This could have been avoided with thorough vetting, as a mediastinal mass was clearly seen on admission chest x-ray.

Conclusion

Appropriate vetting and protocolling is an important part of the imaging pathway, enabling correct diagnosis and preventing further avoidable imaging. It is important to understand why contrast is not required in many chest pathologies, and that non-contrast CT is appropriate in most parenchymal lung pathology. HRCT should only be used in specific cases such as investigation of interstitial lung disease, cystic lung disease, and bronchiectasis; in many other cases standard non-contrast CT provides diagnostic images at a lower radiation dose. These learning points were emphasised when the audit was presented, and within follow up emails. As a result of this audit, there has also been a positive discussion in the department regarding creating a comprehensive and readily available departmental guideline database to assist vetting radiologists, with the goal of establishing this in the future.