INTRODUCTION
Assessment of the contrast enhancement in CT pulmonary angiograms to ensure sufficient for diagnosis.

OBJECTIVES
Suboptimal enhancement of CT pulmonary angiograms leads to non-diagnostic studies and therefore unnecessary exposure to contrast and radiation.

STANDARD
Previously published research suggests that a level of 210 Hounsfield Units (HU) is required in the vessel to identify chronic thrombus from enhancing vessel (Ref 1). Acute thrombus has lower Hounsfield units than chronic and therefore the level of vascular enhancement can be lower but still distinguishable from the thrombus. Given that contrast enhancement is often lower in more peripheral vessels, a level of 210 HU in the main pulmonary artery was defined as the level for acceptable enhancement.

TARGET
Papers have suggested that approximately 10.8% of CTPAs may be suboptimal based on all causes, including poor contrast enhancement and motion artefact amongst other factors (ref 2). Therefore the target has been defined as no more than 11% of CTPA having HU <210 in the main pulmonary artery.

Steady improvement of diagnosis and management of patients presents a challenge to minimising exposure and effective care.

Data Collection / Methods
Assess local practice
Indicators
A circular region of interest is measured in the largest axial image of the main pulmonary artery with a diameter of approximately 50% of the vessel.

Data items collected
The details of scan and the average HU for each patient is recorded in a database. The percentage of scans below the threshold of 210 HU is then calculated.

Study:
Retrospective study
50 consecutive CTPAs per protocol is assessed.

RESULTS

Suboptimal vs Adequate Enhancement

Ranges of HU in CTPA

**< 11% of CTPAs having HU <210 in the main pulmonary artery amongst other factors (ref 2). Therefore the target has been defined as no more than 11% of CTPA having HU <210 in the main pulmonary artery.**

Suboptimal Enhancement

Adequate Enhancement

Target was defined as no more than 11% of CTPA having HU <210 in the main pulmonary artery. Result showed 5% deviation from the standard. (Total 16% Suboptimal enhancement)

RADIOLOGY REPORT

Adequate Enhancement

Suboptimal Enhancement

Re-Audit

Re-audit will be done after implementing the changes.

REFERENCES