Kevin Flintham

CoRIPS Research Grant 138

£4,725.83 awarded

Title: A pilot study to compare supine and erect pelvis radiographs – assessment of impact on radiation dose and diagnostic markers (SEPRAIDD)

Aims: This pilot study aims to ensure that X-ray image of the pelvis are performed with evidence based protocols. It will also determine if patient posture (erect or supine) has an effect on radiation dose and diagnostic measures.

Objectives:

The study objectives are to:

- Develop trial procedures, imaging protocols and patient information for a future study
- Estimate the recruitment rate to a prospective study which will the diagnostic and dose differences between supine and erect pelvic radiographs
- Identify the recruitment and refusal rates to such research.

Outcome measures and data collection:

Objective measures (radiation dose): The exposure factors (kVp, mAs), source to skin distance (SSD) and the dose area product (DAP) will allow comparison of radiation dose between positions. In addition, patient height and weight (to calculate BMI) will be used in addition to the above factors in order to allow the calculation of the effective dose. In order to determine entrance surface dose the X-ray tube/generators will be calibrated by the MPE team prior to and at regular intervals during the study.

Objective measures (images): To determine the variation in anatomical appearance between the supine and erect X-ray images measures will be taken from the digital images. This will include magnification, pelvic tilt, evidence of acetabular variation (CEA, COS, PRISS) or leg length discrepancy, joint space width and K-L grading. The measures will be applied to coded images

displayed in a random order to ensure the reviewer is blinded to the patient posture. These outcomes will establish the analysis strategy for a larger scale study.

Methodology: This is a pilot study comprising a multiphase approach. An experimental study utilising anthropomorphic phantom will be supplemented by a small scale cohort study comparing image appearance and radiation dose between two different radiographs of the pelvis. Patients will have an additional radiograph performed erect alongside a standard supine examination.

Dissemination Strategy: Dissemination will be through peer review publications and conference presentations to clinical audiences. Importantly the research will establish an evidence base standard for erect pelvic radiographs and will inform future research protocols. Results will be fed back locally and patients will have the option of receiving a lay summary of the key results.

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