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## Use of preoperative calibration markers and digital templating in patients undergoing hemiarthroplasty at St Mary's Hospital

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**Introduction:** Use of pre-operative digital templating is useful in selecting the correct size implant, anticipate potential intraoperative difficulties and minimize postoperative complications including Limb Length Discrepancy (LLD) and dislocations in patients with neck of femur fractures undergoing total hip arthroplasty or hemiarthroplasty. Calibration markers should be placed on digital radiograph to correct the variation in magnification factor between X ray images.

**Standard:** The British Orthopaedic Association 2012 guidance recommends that X ray calibration and digital templating should be used in all patients undergoing hip arthroplasty.

**Aims/Objectives:** To evaluate whether a calibration device is used in preoperative imaging in patients who are admitted with a neck of femur fracture in St. Mary's hospital. In addition, this audit will assess if digital templating software (Trauma CAD) is used by surgeons for preoperative planning.

**Methods:** Inclusion criteria was patient's at St. Mary's Hospital with a neck of femur who had undergone a hemiarthroplasty. Patients were identified from the departmental neck of femur fracture database that St. Mary's Hospital. Data was obtained from Picture Archiving and Communication System (PACS) to determine percentage of patient's that had a calibration marker on preoperative radiograph and evidence that digital templating had been used to plan the hemiarthroplasty.

**Results:** 34 cases were identified that met in inclusion criteria. Only 6 out of 34 patients had a calibration marker on preoperative radiographs and use of digital templating. The majority of patients did not have calibration marker of preoperative radiographs. VoyantMark® was the preferred calibration marker over King Mark®. In patient's that did have a calibration marker, it was either incorrectly positioned or only partially visible on the radiograph. Therefore, we implemented an education programme for radiographers including posters in the X-ray department and tutorials on the use of calibration markers.

**Conclusion:** The number of patients have calibration marker and digital templating prior to hip arthroplasty needs to increase. The calibration marker should also be appropriately position on preoperative radiographs. We will re-audit in 3 months' time to close the audit loop and assess the impact that our changes have made.