A CT-simulator (AcQsim) networked to a 3D treatment planning system (Cadplan) has been commissioned at our institution. It has been in clinical use for approximately one year. Its incorporation into and impact on our clinical practice of radiotherapy is discussed.

Acceptance testing, commissioning and subsequent quality assurance of the following system components have been conducted: i) the CT scanner. ii) the laser patient marking system and iii) the virtual simulation software. The CT scanner was tested in accordance with AAPM report #39. These tests include mechanical motions, light localisation accuracy, image quality, CT dosimetry and CT number calibration. The virtual simulation package was commissioned as follows: the target localisation package was evaluated by comparing the physical contouring and isocentre definitions from test object to that defined by the virtual simulator. DRRs were tested for geometric accuracy. CT scans of two test phantoms, containing lead wires at predetermined distances, were transferred to the virtual simulator to test the ray-line divergence and spatial distortion. "Virtual" motions (gantry, collimator, etc.) were tested using a modification of the test phantom. A quality assurance protocol was then established to ensure that all parameters remained within their accepted tolerances.

Commissioning data obtained are within those reported in the literature. Accuracy of geometric parameters are within 1mm and 0.5° for linear and angular dimensions respectively. Introduction of this facility into clinical use improved the efficiency of the treatment planning process significantly as it has combined the CT planning, simulation and "sim-on-plan" steps into one session