health

SLE Capital and Establishment

Final report

Radiology phantoms

Date completed: 30 June 2012

Author: Greg Wilton
Email: gregw@bhs.org.au

Background and context

The Radiology Department at Ballarat Health Services (BHS) provides high-quality care to patients in the Grampians Region via dedicated staff experienced in their modality. The Radiology Department is equipped with a computed tomography (CT) scanner, single-photon emission computed tomography (SPECT-CT), ultrasound, magnetic resonance imaging (MRI), mammography units, bone densitometry, angiography, general and interventional radiography. A cardiac catheterisation laboratory has recently opened and a second CT scanner is due to be installed by the end of the year. Over 72 000 examinations are performed annually in the Radiology Department.

Students from across the country are placed at BHS Radiology for the purpose of gaining clinical experience. These students come from RMIT and Monash University in Victoria, The University of Sydney, Newcastle University, Charles Sturt University in New South Wales and The University of South Australia. Students are usually placed for between two and six weeks throughout the year.

This project was to purchase phantoms suitable for the task of simulating humans in order to allow students and interns to practice the effects of different exposure factors, positioning of patients as well as the acquisition and reconstruction techniques required to produce high quality medical imaging.

The BHS Radiology Department did not possess any phantoms suitable for this task, therefore simulation hours were not able to be delivered.

Project aims

Due to delays in receiving funds transfer from the government, the ordering of the phantoms was unable to occur until much later than expected. Once the transfer of funds had been confirmed, the orders were placed with the suppliers who have indicated a delivery time within the next month.

The phantoms have been ordered and delivered.

Project governance

To provide modern anthropomorphic phantoms for the use of radiography and nuclear medicine students in a clinical placement setting so they may be able to simulate the effects of differing radiation doses, positions and processing factors.

BHS Radiology Department employs a tutor radiographer to ensure adequate clinical training and supervision is provided to students on placement in the department. Each modality supervisor is a senior member of staff, experienced in their field and in training students whilst on placement.

The Radiology Department is equipped with a 128 slice CT scanner, Symbia T16 SPECT-CT, ultrasound, MRI, mammography units, bone densitometry, angiography, general and interventional radiography. A cardiac catheterisation laboratory has recently opened and a second CT scanner is due to be installed by the end of the year.

BHS is committed to the highest ethical standards in activities, communications and relationships.

Project performance against stated deliverables

Project activity	Project deliverable	Due date	Achieved/not achieved
Purchase of phantoms	Implementation of phantoms in the training of students on placement at BHS Radiology	30 June 2012	Achieved

Project outcomes

This project will not only provide additional education to the students and interns placed at BHS Radiology Department but will also allow for a greater number of students to be accepted since the students will have access to additional training resources and will not be reliant on specific patient referrals in order to gain competency.

The use of phantoms for simulation learning in the clinical environment has not been widely used in the radiology and nuclear medicine professions. The implementation of this proposal at BHS has the potential to inform other sites of the importance of implementing simulated learning environments (SLEs) into these professions.

Phantoms allow students to test the effects of varying radiation doses and settings without exposing patients to additional radiation, increasing their knowledge and understanding whilst at the same time potentially reducing radiation doses to the public.

As a regional hospital, BHS trains students from a number of universities across the country, the Radiology Department trains students from RMIT, Monash, Newcastle, University of South Australia, Charles Sturt University and Sydney University. The introduction of phantoms at BHS Radiology will provide access to SLE training in this regional setting.

The phantoms will allow these students to practice a wide range of medical imaging procedures and manipulate settings to vary exposures to achieve an understanding of the effects of changing doses in order to achieve acceptable image quality with minimal patient exposure.

Evaluation

The funding allowed the purchase of phantoms suitable for the task of simulating humans in order to allow students and interns to practice the effects of different exposure factors, positioning of patients as well as the acquisition and reconstruction techniques required to produce high quality medical imaging.

As these phantoms are not available in most medical imaging departments, learning for radiography and nuclear medicine students is mostly carried out in the patient context rather than SLE. By introducing this type of learning experience for the students will enable them to test protocols and exposure factors without endangering patients. Hopefully the funding of this project highlighted the need for increased funding of SLE and other projects in the medical imaging environment.

The most difficult aspect of this project was the delays experienced due to the late release of funding by the government; this meant that the phantoms were not able to be purchased in time for this final report.