

**Countess of Chester
Radiology Department
Visit to Kisiizi Hospital**

May 2012

Report

Contents

1. Introduction

2. Aims

3. X-Ray Imaging

3.1 Project Work Undertaken

3.1.1. Equipment

3.1.2. Radiography Teaching

3.1.3. Image Interpretation

3.2. Recommendations

4. Ultrasound

4.1. Project Work Undertaken

4.1.1 Staffing

4.1.2 Equipment

4.1.3. Education

4.1.4 Service Development

4.2. Recommendations

5. Summary

1. Introduction

From the 19th May to the 1st June a team of three from the Countess of Chester Hospital (COCH) were on a visit to Kisiizi Hospital to work alongside colleagues and friends in the Radiology Department.

The team included:

Darren Rowlands Senior Radiographer
Janet Galley Senior Sonographer
Mark Smallwood Reporting Radiographer

The group provided a strong skill mix with differing areas of expertise.

2. Aims

The main focus of this visit was education, maintaining standards and equipment repair/maintenance.

3. X-Ray Imaging

3.1. Project Work Undertaken

3.1.1. Equipment

Improvements were made to the darkroom in order to keep it light tight. Light limiting curtains were utilised to more adequately prevent light penetrating through the darkroom doors, these were correctly hung utilising curtain wire. This was complimented by the use of bristle draught excluders which were successfully fitted along door edges, thus creating a double barrier. Where necessary the red filters within the darkroom light fittings were repaired and the appropriate 15 Watt bulbs installed. Numerous spare bulbs have been supplied, tested and safely stored combined with staff training to enable replacement of failed bulbs to be undertaken by Kisiizi staff. A new source of light contamination, via the power lights of the RCD multiplug were tested and safely obscured.

Light sources via fluorescent watch dials were tested for their impact on film processing and staff informed of the very low potential for these to impact the films. However the highly significant risk of the lights from mobile phones fogging films was emphasised to all staff.

Historically equipment used for cleaning/replacing chemicals has been stored within the darkroom on a rusty table. This was an undoubted hazard to all personnel working in this area combined with the rust particles creating a major cause of dirt to the

processor creating damage and contamination to both pre processed and processed films damaging diagnostic quality of all resultant films. This was removed and the carpenter commissioned to fabricate and install a new wall mounted wooden shelving unit. The outcome was a cleaner, safer environment with the benefit of improved access to equipment and greater floor space.

The top cover on the OPTG machine was loose. A successful and safe repair was made using simple fittings taken from the UK. Inappropriate wiring was made safe, by dismantling the control panel and concealing the said wiring within, until such time as an engineer is able to complete full commissioning service of this equipment.

Appropriate bulbs for the x- ray name marking unit were supplied in order to repair. Upon arrival it was working therefore bulbs were tested and safely stored in the darkroom.

The silver recovery unit was emptied and is successfully working. It is showing a small amount of silver halide which was dried and kept in Radiology. Unfortunately the sump was emptied two months earlier. Relevant staff have been trained on the appropriate procedure to clean the unit and safely and efficiently retrieve the silver halide. It is therefore hoped future silver halide retrieval will be more substantial.

Previous attempts to find a buyer for the silver halide has been unsuccessful. Norman was asked if he could find out who buys the silver from his previous placement radiography placement within Uganda.

The sensi/densitometry has been performed and new times for testing applied (twice a week and daily towards the end of the chemicals life).

The departmental laptop is kept with Brenda for safe keeping as the Radiology Department is not particularly secure. This is unfortunate if it is required for an unexpected teaching point. It would be beneficial for Brenda to do some IT teaching sessions with Bennon and Ezra so that they are able to access internet, for research, and e-mail for communicating with COCH

The chest stand remains in a poor state of repair, and to date an acceptable replacement has yet to be found. A successful repair has been made allowing the unit to continue in safe and adequate use for some time to come. However a more substantial repair can be achieved by the design and fabrication of certain parts that may be simply replaced allowing the unit an increased lifespan. Dimensions to assist the design process shall be obtained with the hope that the new part may be fabricated and installed by the next visit in October 2012. If successful this shall negate the need to replace the whole unit, indeed the latest quote received for such a replacement was obtained by Moses during June 2012 and was for \$1800. This quote made no reference to delivery costs, installation costs or taxes.

An equipment fault book has been supplied, and the staff taught the merits and methods of recording as much information about an equipment fault as possible. This book is to be kept in the x -ray room on Reverend Ezra's desk.

A second free standing fan was installed in the dark room to assist with ventilation of chemical fumes and to reduce the temperature. This can also be used in the second ultrasound room if required.

A new 24x30cm grid lid was provided and its operation demonstrated. This requires less radiation to generate an image. However the chest stand would benefit from some modification to accommodate this. This is likely to be addressed during the chest stand part fabrication.

The gonad protection is being used and the equipment well maintained.

A small chair was supplied to assist the Radiographers when imaging children's chests. This worked well and attempts were made at PA imaging. This proved difficult it is therefore likely to be wise to continue with the AP view for most patients.

The wooden box holding the x ray cassettes was repaired and the large grid repaired enabling to fit into the chest stand securely.

3.1.2. Radiography Teaching

The standard of radiographic positioning has improved since the previous visit and discussions with clinicians has shown that this has been noted. An area for improvement suggested was exposure which can be looked at for the next visit. The work with sensitometry, removal of obsolete blue films and completion of exposure charts shall further improve this area.

Great improvements have been made with regards to patient communication and assistance; this would have had a positive effect on image quality. Patient dignity has also been improved. For example, care has been taken to cover patients up where possible.

Discussions on technique were given as patients arrived for their X-rays on various body parts. The calcaneum was discussed as requested and reference made to how to find the correct technique from available literature.

More reference books were provided and an updated inventory drawn up to show who has borrowed certain books and at what time. Benon has kindly offered to check this log monthly to see if any are missing. Happily, there were no missing books at the time of the visit.

Although no IVU's were required during the stay, the protocol and contrast forms were discussed and a cannulation kit delivered.

The staff are now competently completing the LMP (Last Menstrual Period) book which is important to prevent irradiation of the unborn foetus.

The emergency drugs box is stored safely and located within easy access for the whole department. These drugs are regularly checked and staff fully aware of how to report any problems to pharmacy.

Reject analysis was performed by the Radiographers providing information on how improvements can be made to reduce numbers in the future.

Infection control was a regular theme of the latest visit, with emphasis being placed on hand hygiene between each patient. Adoption of tidiness and the regular daily and weekly deep cleansing of the whole department were felt to be vital to create and maintain a safe environment for staff and patients alike. Also the frequent changing of linen to the x ray table is important and the cleansing of the x ray table mattress was encouraged each time this procedure is undertaken. All staff demonstrated great enthusiasm and professionalism in this area.

3.1.3. Image Interpretation

Almost all images that were taken during the visit were reported. The reports were made overly descriptive in order to impart as much learning as possible to the recipient, especially as some rare pathology was demonstrated during the visit.

As the images were being generated, discussions on the pathology demonstrated were given to the Radiographers present over the two weeks.

Images of depressed fractures were requested during the last visit and shown to at least Benon.

Formal tutorials following chapel were given on three occasions. The first on chest trauma, this was asked to be repeated the following week. Following the second tutorial a number of chest trauma patients presented which helped cement theory. This tutorial was also given to Brenda and Norman, the same pathology was discussed with the Rev. Ezra and Benon as the patients presented.

The third tutorial for the medical staff was MSK as requested by the clinicians following the chest trauma tutorial.

Attendees

Chest Trauma

An attendance sheet was not completed during the first tutorial. Around four Kisiizi staff attended and also roughly six non Kisiizi staff.

Attendees at the second tutorial were;

Muhimdo Patrick Medical
Dr Gabriel Okumo Surgeon
Matilda Oppinheimer GP
Francis Banya Obstetrician/Gynaecologist

Ian Spillman Paediatrician
Micheal Rwonwihana Clinical Officer
James Mugume Clinical Officer
Gordon M Clinical Officer

MSK

Ntumwa Bedard Clinical Officer
Omilimza Patience Clinical Officer
Birungi Wilson Medical Student
Micheal Rwismishana Clinical Officer
Matilda Oppenheimer GP
Muhindo Patrick MCO Francis Banya Obstetrician/Gynaecologist

3.2. Recommendations

As a team, we are very pleased with the progress that the Radiology staff are making and the complimentary comments received from other staff are pleasing. Difficult examinations like the lumbar spine are achieved with ease. Difficult extremity examinations are made more difficult by the limitations of the X-ray unit and would benefit from a refresher on our next visit. In the meantime detailed notes are available to help the Radiographers which should be frequently referenced.

Completion of exposure charts.

Clarification of a set protocol for the imaging of the acute abdomen, erect/supine.

A monthly emailed report highlighting any relevant issues or faults.

Inform COCH what tutorials or equipment would be useful for the next visit.

It was decided that staff uniforms would be desirable for issues of smartness, infection control and maintaining a sense of professional identity. A number of scrubs were left for Rev. Ezra and Benon and a housecoat will be sourced for Annette. Brenda and Proscovia will decide what type of uniform would be desirable to them. It would also be more professional to wear name badges.

The benches in the waiting room are solid but the padding is badly worn exposing cushioning creating an infection control risk. They have been measured and new covering will be provided on the next visit.

4. Ultrasound Imaging

4.1 Project work undertaken:

The main emphasis was on overall assessment of the workload and the sonographers competency with supervision and tutorials given as required and reviewing of their further educational needs.

Also checking of equipment and assessing feasibility of using the portable machine in Outreach clinics.

4.1.1 Staffing

Since our initial visit to Kisiizi, the staffing of the ultrasound department has changed completely. Brenda Kamwesigye has been in the department for over 18 months during which time she has mainly worked single handed. Proscovia Tumubwine has completed her ultrasound training in Kampala in 2011.

From speaking with colleagues and to Brenda herself, it is obvious that she has gained a lot of experience in scanning since her arrival at Kisiizi. She appears competent and confident and is keen to learn new techniques and further her knowledge.

Proscovia has not had as much experience as Brenda – her time has also been limited by her recent maternity leave. However she has learned a great deal, appears to enjoy her work and will improve even more with experience if given the opportunity. With her nursing background I see a strong role for her in obstetrics and hopefully setting up ultrasound in the Outreach clinics.

I hope they will continue to develop existing and learn new skills whilst nurturing a professional team approach to their ultrasound responsibilities.

4.1.2. Equipment

The GE Logic Book has now been refurbished by GE and appears to work well with good image quality although the battery life is limited. It was taken to the outreach clinic but until a spare battery can be funded it would need to be used sparingly for only the cases that are deemed urgent. It will, however, provide an excellent back up for the department using mains power and for use in the wards if required.

The Aloka does not appear fit for purpose. The image quality is poor; there is no imaging facility and no freeze button. I would suggest that it might be removed from the Department as it takes up useable space, possibly relocated in the labour ward/antenatal clinic where it could be used for basic foetal lie or checking viability.

The Main ultrasound machine the GE Logic 9 was in reasonable condition. The trackball required cleaning and the hard drive needed to be cleared as it was causing the unit to run slowly. The sonographers were instructed how to do this and also it was suggested that this general maintenance was done on a regular basis. Two of the knobs were broken and these have been temporarily fixed using ballpoint pen tops – these work adequately and can be cheaply replaced as required. The 3.5 MHz transducer cable has been damaged for some time and has been re-repaired using available materials. Ideally it should be replaced. The filter is rather ragged and a template was taken to see if one could be made to fit from appropriate material. Failing this then a replacement from GE should be sought.

The remaining transducers appear to be in good order.

There does appear to have been some basic servicing undertaken by a general engineer coming from Kampala. It was difficult to establish who this was and what exactly it was that they did. Ideally a full service by a GE qualified ultrasound engineer should be done. The machine has been there for 3 years now and in order for it to continue in good working order this should be a priority.

4.1.3 Education

The sonographers were observed and generally assessed. Quality of scanning is good and imaging adequate for service needs.

A hands-on workshop tutorial was given on thyroid scanning.

Trans vaginal scanning was taught to Brenda over the two weeks with encouragement for this technique to be used on a regular basis. There was still some reluctance to use this approach but with repeated practice she became much more comfortable and competent

Demonstration of leg vein scanning and breast ultrasound was given

Encouragement was given to explore the use of the array of transducers available for optimal imaging.

Files and paper were brought out so that the sonographers could present a portfolio of their work to show it is of acceptable standard.

Although it would be optimal if both Brenda and Proscovia could do further specialised training in Kampala e.g vascular and small parts, this may not be practicable and I am unsure if any such courses are available but I feel that they would benefit from better and more comprehensive ultrasound reference books to enable them to develop their knowledge and practice. Also improved internet access might be useful to access ultrasound imaging sites.

4.4 Service developments

On the whole I feel that the service has been improved greatly since the beginning of the project. There are two young and enthusiastic sonographers with differing but complementary backgrounds i.e. imaging and nursing.

With the return of Proscovia from maternity leave there will hopefully be full ultrasound cover in place.

The request forms have improved being specific to the imaging required.

The portable machine was taken to the Outreach clinic to assess the feasibility of starting up an obstetric service. The main problem is the battery life which is short. If funding can be made for a spare battery then I think the service would be of great benefit to the community and as an aid to the midwives. However there do appear to

be some costing issues in terms of patients paying for the services, this needs to be explored by the Kisiizi administration.

4.2. Recommendations

The department walls particularly by the bed are rather grubby and would benefit from some repainting and possibly some protective film/ plastic in the area by the bed.

The water filter has not yet been purchased but this is currently being attended to by Proscovia.

It was proposed that a curtain rail or screen was put up to compartmentalise the two adjacent rooms in the ultrasound department thus giving two private areas for scanning.

Suggested equipment for next visit

Spare battery for GE Logicbook

Reference Books preferably a comprehensive text e.g. “Diagnostic Ultrasound” by Aluja.

Paper cups for water filter when installed

Curtains and curtain wire or track

Screw in low energy light bulb for desk lamp

Antiseptic wipes for probes

Replacement knobs for GE Logic 9

Replacement filter for GE Logic 9

5. Summary

This recent visit to Kisiizi Hospital was very much enjoyed by staff from the Countess of Chester Hospital. Two of the team members were returning for their third and forth visit and one was experiencing Kisiizi for the first time. Again everyone was made to feel very welcome.

The Radiographers and Sonographers in Kisiizi are progressing very well accepting all the new challenges set them with immense enthusiasm. All of the education programs have now been delivered and OSCEs completed by the Radiographers. Personal portfolios are in progress by the Sonographers. These will be a good measure of success for the next and final report.

The equipment in the Radiology Department is at present in working order but it has been noted on this visit there are several issues with certain items highlighted in the report. A Radiology Department can have the best trained staff but without good quality working equipment it will grind to a halt. It is imperative that management take action to have items serviced annually and repaired when necessary. A fault

reporting system has been set up so that small faults can be looked at on future services. This will save an engineer from been called for all but critical events.

We are approaching the end of our three year project with the next visit been the last guaranteed trip. We intend to continue our support to Kisiizi for as long as is desired by Kisiizi. It will be even more important to maintain regular communication and so a monthly reporting system has been set up to facilitate this. This will be between Brenda and tracy.hughes2@nhs.net

The Staff in Kisiizi, Brenda, Proscovia, Esra, Bennon and Annette should be very proud of all their achievements to date and we would like to thank everyone in Kisiizi for making us feel to welcome. Thank you.



Brenda repairing the probe



Benon mixing chemicals



Ezra maintaining the processor



Collecting recovered silver



Darren giving a tutorial



Silver collected over 12 months



Barium meal films



Darren with the new shelves



Simple repairs done to the logic 9



Chest stand to be repaired at next visit



Damp in rooms needs attention



The team