

**NCCPM Report to
Breast Screening Physics CPG meeting
1st December 2020**

1. NCCPM, PHE meetings with Manufacturers and suppliers

a) Meeting with MIS – 28th November 2019

- All of their systems have Windows 10
- MIS would like to trial the use of Contrast Enhanced Mammography (CEM) with the Giotto Class. At the moment this can only be undertaken as part of a trial in the NHSBSP.
- At the previous meeting, an issue was highlighted that the maximum height of the gantry of the Giotto Class was too low for some women. This has now been increased by a further 15 cm to allow imaging of women taller than 176 cm.
- It was planned for Planned Clarity to have a full automatic exposure control in early 2020 for tomosynthesis. The exposures on the Clarity were based solely on the height of the paddle.

b) Meeting with Fujifilm – 3rd March 2020

- Fujifilm have had a successful trial of CEM at Bangor with Dr Gash. They plan to publish the work. They are keen on an evaluation to be undertaken in England.
- Windows 10 – Fujifilm still developing a plan for the remaining systems.
- Fujifilm were unhappy at the NHSi process for the replacement of equipment over 10 years old. Adrian Waller complained that it was not a competitive process. They were not successful in any of the tenders.

c) Meeting with Siemens – 11th May 2020

- Siemens offered training for tomosynthesis in Germany but there was not enough interest. They arranged training for Frimley, but this had to be re-arranged to April 2021 due to the pandemic.
- Siemens are exploring the requirements of training for physics staff in Siemens equipment. They would like advice from the CPG.
- There was some discussion about the passing of information from the service engineers to physics groups, in particular about changes that have or have not been undertaken following recommendations from physics staff.
- There has been an issue with supplying needle guides. Siemens have been supplying metal bushings. If customers want the plastic type then they can order directly with Turon Medical.
- Windows 7 is no longer supported by Microsoft. Windows 10 is used in all Revelation systems. The Inspiration systems use Windows 7. However, Siemens have negotiated an extended security contract.

d) Meeting with GE – 13th July 2020

- GE use software (Fineview) to apply a sharpening correction to images. There are three levels of enhancement available. The level selected will depend on the measurements during commissioning. It can be changed during the equipment lifetime as the modulation transfer

function (MTF) of the system decreases. The value selected can be found in the DICOM header. Previously the system could be tested using raw images with or without FineView. However, for the Pristina this is not possible and the raw images don't have the FineView applied. Therefore these changes can be made without the physics staff being aware. GE agreed to set up a process to inform physicist of any of the changes.

- GE have run a number of educational events for physics and clinical staff. They run reader training events in Nottingham.
- Windows 10. It is possible to change reporting workstations to Windows 10, however, if the centre has a service contract then this will come as a cost option. The X-ray systems are Linux based and will be unaffected.
- The use of GE CEM is being evaluated as part of the BRAID trial. GE would like to trial contrast-enhanced biopsy for assessment. At the moment PHE is not evaluating CEM and is awaiting clinical evidence. CB recommended contacting potentially interested clinical departments to undertake a trial.

e) Meeting with Hologic 10th September 2020

- One department has had issues with image quality of very small breasts.
- An issue was found with different noise values measured on the Hologic workstations compared to downloaded images. This is being investigated.
- Hologic have put in a request for the evaluation of 3Dquorum
- Hologic stated that there is some confusion within the medical physics community on how to test the breast doses with the smart curve compression paddle. It was suggested that a short note could be escalated. The information is in the NCCPM evaluation report but could have been more explicit.
- Windows 10 upgrade is ongoing and generally scheduled with preventative maintenance
- Some of the Barco monitors are now end of life or end of service and Hologic will no longer be able to service or support these. Hologic will give advance notice to users if their systems are affected.
- Dimex support was for software not hardware and this may not have been clear to all centres. Hologic are now offering two levels of support – software only or software and hardware.

f) Future meetings with suppliers

Meetings with MIS and Fujifilm are expected to be held in the next few months. We will try to arrange short meetings with the companies, as the request for issues was not received by all the relevant groups.

2. Technical evaluation reports:

All of the technical reports are online.

(a) Published since last meeting

- GE Pristina 2D

NCCPM published reports

- Use of emergency exit as a routine exit on mammography vans
- Care of mammography systems out of use over a prolonged period
- Essential system - contrast enhanced mammography functions

(b) Reports submitted to PHE for review and publication

- None

(c) In preparation

- Contrast enhanced mammography: Hologic 3Dimensions, GE Pristina
- Update on Siemens Revelation

(d) Evaluations in progress/planned

- None

3. Practical evaluations:

(a) Published since last meeting

- Siemens Inspiration tomosynthesis – St Georges
- GE Pristina 2D and tomosynthesis – Nottingham
- Hologic 3Dimensions 2D and tomosynthesis – Jarvis Centre, Guildford
- IMS Giotto Class 2D and tomosynthesis – Cheltenham
- Siemens Revelation 2D and tomosynthesis – Southampton
- Fujifilm AMULET Innovality tomosynthesis – Burnley

(b) Evaluations completed, reports being finalised/awaiting publication

- None

(c) Evaluations in progress

- None

(d) Closed Evaluations

- Planned Clarity 2D – Pennine, Bradford: this system passed the technical evaluation. However, the clinical staff had concerns about the clinical image quality, there were a few cases of cancers visible on the screening images (from a different system), but not when imaged on the Clarity. Planned were in the process of producing a new image processing package and aimed to have it complete it in April 2020. In the meantime it was agreed to stop the evaluation and the equipment to be removed from Bradford.

(e) New Evaluations

- Hologic 3Dquorum: A technique of showing the tomosynthesis images as slabs, but the slabs are created in a similar manner to synthetic 2D images using AI methods. This would be a practical evaluation, but has not been agreed yet.

4. Online fault reporting

John Loveland has taken on the role of running the fault database. The system has been running well over the last year. There are still a number of centres reporting few or no faults. We are asking for more information from the radiographers on which systems are used for screening, assessment or a mixture; static unit or mobile

Martha Stuffins presented work on the relationship between faults and age of equipment. This was published in Stuffins et al (2020) “The relationship between age of digital mammography systems and number of reported faults and downtime”. IWBI2020. SPIE, p 18. This was also presented at UKMPG.

Access to the fault database had already been given to a limited number of physicists. This will be extended as part of the roll out of the KPI database. This will allow the users to produce their own reports

on the faults within their areas.

5. Key performance Indicators (KPI) database

The database is online and is being tested by Plymouth, St Georges, Royal Free, Royal Surrey, Manchester and Northampton. The testing is slow but a number of adaptations to the software has been made to correct bugs or adapt for the realities of centres. There are still a number of potential improvements to the site but essentially it is ready to be rolled out. We plan to roll this out to a few more sites before Christmas and then the rest in January.

Currently, the QA data can be exported from the database but there are no collated reports for PCAs/SQAS. I have prepared draft reports for comment.

6. Dose survey (2016-2019)

The survey has been completed for 2D mammography. See enclosed executive summary. Main conclusions

- 2D mean glandular dose (MGD) on DR systems for 50-60mm compressed breast thickness (CBT) has not changed since last survey.
- Average CBT has increased to 62.4 mm for MLO view
- Average population MGD on DR systems has increased by 11% from last survey, due to increase in CBT.

7. Dose survey (2019-2021)

It is proposed to undertake a 2D and tomosynthesis dose survey (2019 -21). There are a number of issues with the current dose database on Access:

- One is simply that it is not allowed in some centres and Microsoft are going to remove support.
- The collection of data using the access database was a lot of work due to a number of issues with the way the database was used.

NCCPM are currently preparing to convert the dose database to online software. The database would be linked to the Equipment database currently collecting data on equipment faults and the physics QA data. The timescales are still to be agreed, but we would hope that it could be available in the summer of 2021.

8. Uniformity measurement

There is a potential issue for quality control measurement due to the method used for flat fielding of the Siemens Revelation. See enclosed report for a discussion of the issues and potential resolution.

A Mackenzie, J Loveland (NCCPM)