

Quality Assurance of Nuclear Medicine Investigations in Sweden

L. Edenbrandt¹, A. Gustafsson², L. Johansson¹, C. Jonsson³, A. Norén⁴, K. Riklund⁵, D. Afzelius⁶

¹Dept. of Molecular and Clinical Medicine, Sahlgrenska University Hospital, Gothenburg, ²Radiation Physics, University Hospital Linköping, Linköping, ³Dept. of Nuclear Medicine, Karolinska University Hospital, Stockholm, ⁴Dept. of Nuclear Medicine/Diagnostic Radiology, Umeå University Hospital, Umeå, ⁵Dept. of Radiation Sciences, Diagnostic Radiology, Umeå University, Umeå, ⁶Equalis AB, Uppsala, all in SWEDEN

Objective

In 2008, the Swedish Society of Nuclear Medicine initiated national External Quality Assessment (EQA) schemes in Nuclear Medicine together with the non-profit company EQUALIS AB.

The main objective is to increase patient safety by continuously improving the quality of nuclear medicine.

EQA Schemes

The objectives will be reached by comparing methodologies and nuclear medicine image data from different departments. The two first EQA schemes focused on whole-body bone scintigraphy, thereby allowing all nuclear medicine departments to participate.

Participation was voluntary and all results were confidential.

EQA 1 – Image Quality

The aim of the first EQA scheme was to assess image quality. Thirty of the 32 nuclear medicine departments participated. They submitted their first whole-body bone scan acquired in February 2009 on an adult patient between 60-80 kg together with information of injected dose, scan speed, and other clinical information. The most striking result showed that 12 departments submitted bone scans containing less than 1.5 million counts per image, i.e. less than recommended in the EANM Procedure Guidelines for bone scintigraphy.

EQA 2 – Image Interpretations

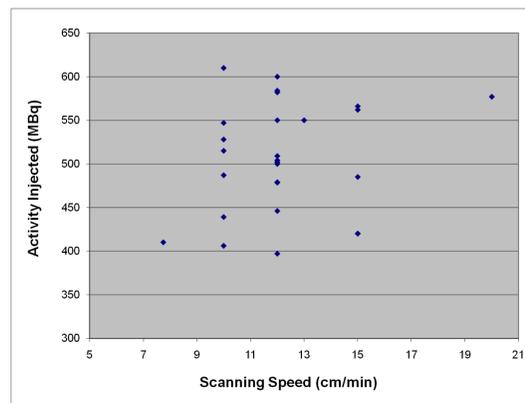
The aim of the second EQA scheme was to assess interpretations from nuclear medicine physicians. Five whole-body bone scans from prostate cancer patients were made available to all participating hospitals. A total of 54 physicians sent their interpretations, both as verbal reports and assessments regarding the likelihood for metastatic disease. The results showed considerable variability in physicians' interpretations.

Conclusion

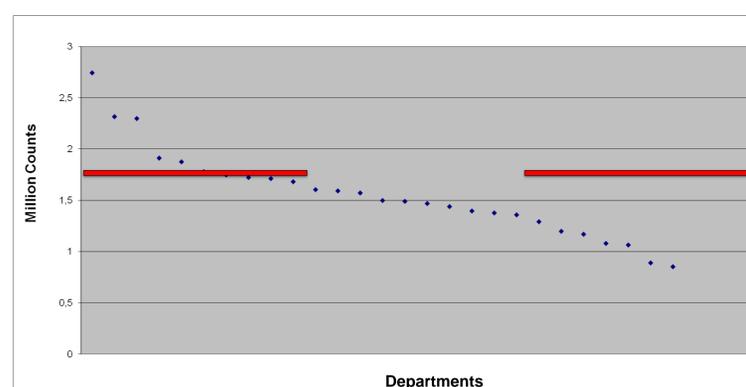
The two first EQA schemes indicate that there is a need for quality assurance work in the nuclear medicine field. There are differences in image quality and image interpretations between nuclear medicine departments and hospitals. EQA schemes could be a complement to the quality control covered in legislation, national and European guidelines and recommendations.

Equalis AB

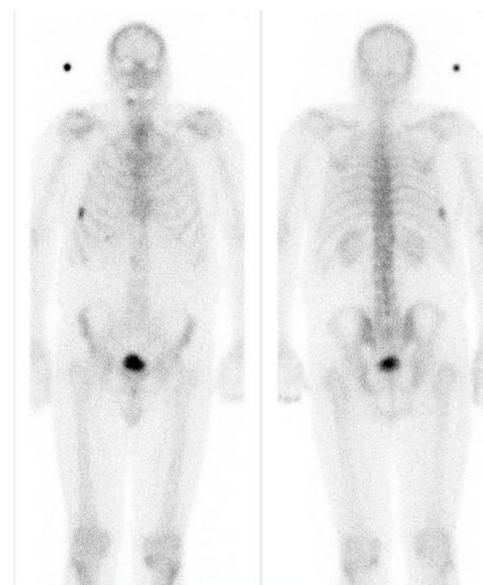
EQUALIS AB (External Quality Assurance in Laboratory Medicine In Sweden) is a non-profit company jointly owned by the Swedish Association of Local Authorities and Regions Enterprises (52%), The Swedish Society of Medicine (24%), and The Swedish Institute of Biomedical Laboratory Science (24%). (<http://www.equalis.se>).



A low injected activity is not always compensated with a low scanning speed and vice versa



Bone scans from the hospitals contained between 0.9 and 2.7 Mcounts



Bone scan interpreted by 54 physicians as shown below

