

TRAINING OF NON RADIOLOGIST MEDICAL DOCTORS IN ULTRASOUND IN GHANA

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INTRODUCTION

Ultrasound is an important diagnostic equipment widely used in modern medical practices. Appropriate high quality ultrasound services are best provided by properly trained and committed radiologists and sonographers, using high-quality ultrasound equipment. In terms of use of both manpower and equipment, the Department of Radiology ultrasound service offers the best value for money. An ultrasound service sited within the Department of Radiology allows patients to be given the benefit of the radiologist's ability to use alternative or additional imaging techniques to deal with the clinical problem without delay. Outreach services, staffed by sonographers or radiologist are likely to provide the most cost-effective use of skilled manpower in providing a wider, more accessible ultrasound service for patients where appropriate.

Notwithstanding the points made above, there is the need to extend ultrasound services outside the main teaching and regional hospitals to the district hospitals and the polyclinics. Hence the need to train non-radiologist to these centres and to provide ultrasound equipment for these centres. Unfortunately, there have been acquisition of all types of ultrasound equipment by private individuals and clinics in the country which is being operated by doctors with very little or no technical know-how and issuing ultrasound medical reports.

AIMS AND PRINCIPLES

In the developed countries, all who provide an ultrasound service are ethically and legally vulnerable if they have not been adequately trained. The training offered by the Philips Medical Systems in Ghana and the Ministry of Health in conjunction with the Departments of Radiology and Obstetrics of the Korle Bu Teaching Hospital is aimed at providing guidelines for the training of the medical non-radiologists in basic ultrasound skills but in specific modules, thereby making available to the district hospitals and polyclinics ultrasound serv-

ices. This is further aimed at reducing the number of referred patients to the teaching hospitals for routine scans and also to protect the public from dubious, incompetent and unqualified ultrasound operators.

METHODS

In 1976, the government of Ghana acquired Ultrasound equipment from the Philips Medical Systems to be installed in some district hospitals and polyclinics nationwide. Selected doctors, 12 in number per training section, received intensive training for 3 weeks. The doctors are selected by their Regional Medical Directors. The selection criteria used are hospitals or polyclinics with 3 or more medical officers at post. No individual application for the programme is considered. However, provisions are made for Mission Hospitals to nominate one or two doctors for each of the training programme. The Ultrasound equipments used in the training programmes are Philips Diagnost 240 with linear and convex probes, frequency range 3.5, 5.0, 6.0 and 8.0 MHz with Mitsubishi P90 Printer.

Training consists of theoretical module for one week (Appendix I) at the Philips Medical System headquarters in Accra followed by 2 weeks practical modules training (Appendix II & III) of the Department of Radiology and Obstetrics, Korle Bu Teaching Hospital.

APPENDIX I THEORY

1. The basic physics and components of an ultrasound system
2. Types of transducer and the production of ultrasound
3. The frequency of medical ultrasound
4. Safety of ultrasound
5. Image recording system
6. Normal Anatomy
7. Patient information and preparation
8. Indications for examining

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9. Scanning techniques
10. How to get round common problems
11. Machine and probe care
12. Practical examinations and bands on the machine

APPENDIX II PRACTICAL SCANNING/ ABDOMINAL & OBSTETRIC AND GYNAECOLOGICAL SYLLABUS

1. Normal Anatomy
Liver, biliary system, pancreas, spleen, peritoneum, peritoneal space, retroperitoneum including aorta, vena cava and kidneys, the pelvis including bladder, prostate, uterus, ovaries and the adnexal structures
2. Abdominal Pathology
Liver -focal lesions, fatty infiltration, benign and malignant tumours; primary and secondaries, abscess, cirrhosis, portal hypertension
3. Biliary System
Gallstones, biliary obstruction, tumours
4. Pancreas
Acute pancreatitis, chronic pancreatitis, pseudo cysts, abscess, tumours
5. Spleen
Portal hypertension
6. Peritoneum and mesentery
Masses, collection, abscess, ascites, appendix masses
7. Retroperitoneum
Aortic aneurysm, lymphadenopathy, urinary tract obstruction, renal tumours, chronic renal failure (CRF)
8. Pelvis
Bladder outlet obstruction, bladder tumour, pelvic abscess, prostatic tumours, collections, uterus especially fibroid, ovarian cysts and masses ectopic gestations

APPENDIX III OBSTETRICS

1. Confirmation of Cyesis
2. Number of Fetuses
3. Maturity
4. Expected date of Delivery (EDD)
5. Presentations of Fetus
6. Fetal Viability/Fetal Heart
7. Placenta localisation
8. Liquor volume
9. Fetal abnormality
10. Fetal Sex Determination

The doctors were divided into two groups of 8 or 9. In the morning section of four hours, one group

goes to the Radiology Department for abdominal scan while the other group goes to the Maternity Department for the Obstetric Scan. The afternoon section is 3 hour duration and the groups change over the departments for scanning. All the scanning is done by the candidates with assistance from the Consultant Trainers. At the end of the third week, there is assessment of the training programme.

The assessment is done at the Philips Medical Systems (PMS) headquarters by Technical personnel from (PMS), trainer Radiologists and a personnel from the Ministry of Health. It simply involves interaction with the candidates for assessing whether the training programme is adequate or not, under the given circumstances and any problems or criticism they have in connection with the programme.

These information are used to modify the subsequent training programmes. Retraining programme has been instituted and is on going for doctors who have had previous training.

RESULTS

A total of 128 doctors selected from all the 10 regions of the Country have been trained in the programme. Table 1 shows the number of doctors trained and the regions where they are practising.

Table 1 Medical doctors trained on ultrasound 1996-1999

Region	No of Doctors
Greater Accra Region	31
Ashanti Region	20
Eastern Region	18
Western Region	12
Volta Region	12
Brong Ahafo Region	11
Central Region	8
Northern Region	7
Upper West Region	5
Upper East Region	5
Total	128

Fifty-one of the doctors trained so far had retraining for further 2 weeks. Some of the trained doctors, particularly in and around Accra, do send some difficult cases to us for re-scanning and we give them the feedback.

DISCUSSION

Three weeks intensive training in ultrasound is still inadequate particularly for the abdominal scan. Most doctors were, however, happy and confident with the Obstetrics Scanning at the end of the training period, because it is quite a routine, stereotype and uncomplicated; the availability of subject material (pregnant women) is no problem. With the abdominal scanning, it may be that during the two weeks of scanning a candidate may not even have the opportunity of seeing a gallstone or chronic renal failure which does have characteristic ultrasound features. Hence the abdominal scan is regarded as introductory rather than complete abdominal scan training because there is a lot of pathology to study.

The training of these medical non-radiologists should foster relationships between radiological and non-radiological sonologists, so that mutual support

continues beyond the initial training period. Training should be achievable in terms of the commitment of time to training, the provision of funding and the content and practicability of the training programme and it should be on going. Continuing medical education after training is essential with further organised post-training courses to improve on their performance and diagnostic quality.

The purpose of this programme therefore is to make available ultrasound services to the door steps of the district hospitals and polyclinics by training Non-Radiologist medical doctors to run the ultrasound services~ since the application of ultrasound scanning cannot be restricted to radiologist -indeed there is nothing to prevent any health care professional from offering ultrasound scanning provided that person is trained to do so and he or she knows his or her limitations.

REFERENCE

Guidance for the training in ultrasound of Medical Non-Radiologist. Published by the Board of Clinical Radiology, The Royal College of Radiologists, March, 1997.