

Radiography in Remote Northern Ghana – Recent Experiences

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Introduction

On first impressions this article may not appear to break new ground. There have been other recent publications featuring radiography in Ghana ^{1,2} mostly relating to the more wealthy south of the country. No less deserving of attention is the very poor north of Ghana, which is simply at a different stage of development. It is the north that features here, illustrating a situation far behind the south and a million miles from our daily practice here in the UK.

That Ghana is currently in the spotlight is not surprising when one considers that this west African country is clawing its way out of longstanding poverty into medical competence and perhaps into future excellence. Politically stable and with the promise of new found wealth from recently discovered oil, the situation in Ghana now is more favourable for change, than for many of its neighbours. That said, there is a very long way to go. Former NHS chief executive Nigel Crisp specifically mentions Ghana and its healthcare needs in his 2007 government publication³ and this work forms part of the UK's response to the millennium goals. To be able to embark upon a project that contributes to these aims is a worthwhile step.

How it came about

Having had recent success with shipping some of our older x-ray equipment to a mission hospital in Swaziland (where it continues to give reliable service) I felt reasonably well prepared to repeat the exercise for a charity called AfriKids⁴. The charity, which is mainly concerned with the welfare of children in the Upper East region of Ghana, had raised funds to develop a small medical facility in Bolgatanga and are now at the stage of wishing to develop an x-ray facility. Before I had drained my tea cup at our SOHMED⁵ (Southampton Overseas Medicine) meeting I had succumbed to the persuasive enthusiasm of one of the charity's supporters and agreed to become involved. I have just arrived back from my first visit.

Equipping the facility

Staff are incredibly helpful when told of this kind of project, no-one likes waste and most people truly want to help. In no time we had found another mobile, an x-ray trolley, viewing boxes, cassettes (from a neighbouring hospital) and lead aprons. All of this equipment is now in place in Ghana and has been supplemented by a new wall mounted chest stand, kindly donated by Tony Knight of Southern Scientific. So as soon as the building is complete, the new service can begin.

At this point it needs to be said whilst this shipment may sound a simple task, is it not at all - the appropriate Trust permissions and paperwork must be researched and completed in terms of the transfer and sales of goods, amendment of asset registers, signatories, records and so on. If in doubt, go to the 'organ grinder' for permissions – your chief executive can help you make it happen in a way that others cannot. Then there is the matter of Customs information, sourcing road freight, packers and shippers. I am planning to write some local instructions on this for our hospital, but there also is some useful guidance on equipment transfer from overseas medical organizations such as THET⁶ and WHO⁷ and also some

informative published articles on correct and meaningful equipment donation⁸ which importantly, help to avoid short-sighted benevolence turning into yet more waste and expensive disappointment.

Objectives

The aim of my visit and also that of one of our consultant paediatric radiologists (who visited three weeks before I did), was to deliver a short programme of training for a small group of selected staff. Our radiologist taught some very basic ultrasound techniques and some plain film image interpretation and I taught some theory and basic radiography training for chests and extremities. Now the purists amongst us are already gasping! When it takes years of training for either role as radiologist or radiographer, what on earth could we hope to achieve in a few weeks? The answer is actually quite a lot, because *any* training in this part of the country is rare or non-existent. Those who go to the south where training is available, all too often remain there or move abroad. The few who do venture north perform imaging and diagnosis to the best of their ability, but often above their level of competence due to 'the needs must' environment. It is not unheard of for a lab technician or other suitable person to take on the role of radiographer, when they one day unpack an unexpected x-ray machine and are told to proceed! Hopefully the recent training will inspire the practitioners to carry on learning from the reference books and resource files we left them.

Delivering the training

Of course the heat, which was consistently 40+ degrees and the mosquitoes, were the first things I noticed! Working in this is not easy. Working with five students instead of the planned two, whom it transpired were neither medically or nursing trained but were in fact school leavers, presented a further challenge.



Ghanaians speak English and in the Upper East, predominantly Fra Fra. I naturally chose English...but soon found that my very British accent was not only hilarious but totally incomprehensible to my young audience. After a few days of adjustment and several re-written course plans, I followed a new route, aiming to mould my willing protégées into darkroom assistants who would later support a trained technician, perhaps progressing to assistant practitioners in the future.

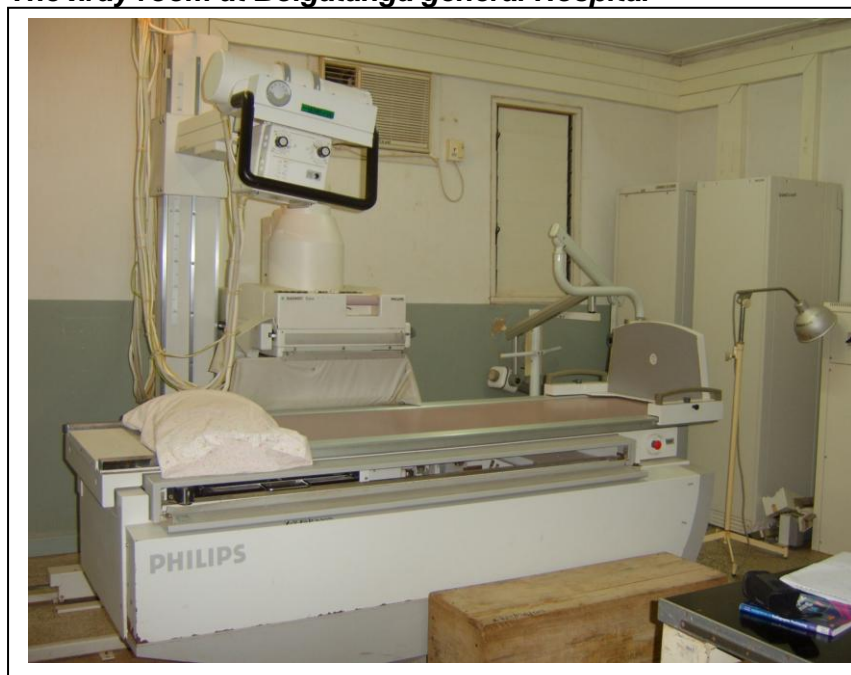
Jane training the AfriKids students at Bolgatanga Hospital

As the medical centre facilities were not yet ready, the AfriKids staff in Ghana had organised for me to use the local government hospital's x-ray facility to do the practical part of my training. This took considerable persuasion of an understandably suspicious staff, but they succeeded and this arrangement turned out to be both useful and fascinating.

Radiography in the upper East.

87% of the population in the Upper East region is rural⁹. Many have no access to medical facilities without considerable travel and of course money or insurance. Bolgatanga Radiology Department is in the regional hospital and consisted of one room with a Philips Practix 100 mobile (used as a static unit) and a Philips Diagnost 15+ fluoro unit with a reasonably modern Optimus control panel. The darkroom used manual processing as the rather mature Afga processor had also broken some time ago. Repair it appears, is not only optional but rare and difficult to obtain. It seemed however, that this may be more due to unwillingness to spend scarce resources on 'non-essential' tasks, rather than a complete unavailability of relevant expertise.

The xray room at Bolgatanga general Hospital



There was one trained technical officer, two darkroom/clerical assistants (who it turned out, became 'radiographers' if the need arose) a wilful goat and several inquisitive chickens. There are very few advantages to getting a bit older, but I discovered some that are: knowing how to mix chemicals and wet process, set your own exposures with an assortment of films and screens (a mixture of green and blue sensitive) and how to do dental radiography

with a full size tube. I was instantly transported back about twenty years and was soon in my element. Even the formality with which I was addressed as 'Madame Jane' contributed to the feeling of time travel.

It was interesting to meet a radiographic colleague, of which there are very few indeed in the North of the country. Training is four years, three academic and one year internship. There were only three in the whole upper east district and I have since discovered they are in fact technicians rather than fully qualified radiographers. There are no radiologists at all in the north and only *five* in the whole country, all of whom are in the South such as Kumasi or the capital Accra. In fact there are only seven doctors of any sort in total¹⁰, in the Upper East Region. Role extension was therefore essential and the Bolgatanga technician undertook all general radiography, Upper GI fluoroscopy, IVUs and Hysterosalpingograms, interpreting them all himself with the assistance of his referring clinicians, who it seems, defer to his opinion for the most part. For those of us UK advanced practitioners rightly supported by our radiologist mentors, it is sobering to note that all this was done with no radiologist input at all, no formal training and no remuneration or official recognition of the role.

Experiences

To be honest when I arrived, despite the groundwork of the Afikids team, there remained a little suspicion and reticence, doubtless they wondered what on earth could this tiny British woman be hoping to achieve or even be capable of, but I was soon and unexpectedly given

the chance to demonstrate (as much to myself as to them!). The technician had a family emergency and had to leave the next day to return to his village with his wife. His three day round-trip would leave the x-ray facility un-manned. This was always the case if he was unavailable as he is the only technician for the hospital and is on call 24 hours a day, 365 days a year. The alternative was to allow the willing but untrained darkroom assistants to take over. They apparently often do, but their practice is limited by the standard of images that the doctor will accept! Morally and practically, there was nothing for it but for me to offer to hold the fort and so I did.

I do not believe I have done a more worthy thing in a long time and it was a privilege to have been trusted to do so. Slowly, my five young students and the two darkroom technicians some 30 years in post, formed an strange but cohesive team, learning from each other as we went. I certainly needed that support because I have never seen such late presenting injuries and neglected disease in my life. The very limited resources and the patients' conditions presented a challenge to say the least. We worked well together and I produced some work to be proud of I am pleased to say. I x-rayed some very sick babies, mostly with malaria related infections. There were no mattresses on the table, no linen, no distraction techniques and no restraints available except the mother (sorry paed radiographers – I did my best). Speed was the only answer and I still feel bad about making them cry (not the mothers!)

There were terminal patients presenting with fungating tumours, significant penetrating injuries, longstanding fractures way past any hope of union and so it went on. Ironically, there were a good number of dental patients, perhaps rather reflecting academic interest and skills than the real healthcare priorities. On the other hand, orthopaedics for example is very sketchy and desperately needed. One patient, with both femurs broken by a truck as he pushed his wooden hand cart, was brought in a wheel barrow by his brother. He had been in bamboo splints for two months, one of which did not even extend to the fracture site.

Patient with bilateral femoral fractures in split bamboo splints



Too late for traction and with no hope of a nail, I doubt that at 23, this vibrant young man will ever walk again. It dawned on me then, that the number of bilateral amputees that I had come across in the craft markets of Accra could simply be down to this lack of adequate care and not the mystery tropical illness I had imagined.

The wider picture

There is a positive side. During my visit, I was taken by AfriKids staff to meet the Regional Health Administrator and the Public Health Doctor for Upper East Ghana. After an interesting and lively discussion I was asked if I would consider visiting some district hospitals that were within a day's travelling. They asked me to report back on my findings with regard to their imaging services and any other observations I could make. I visited four remote hospitals, some only accessible by miles of dirt track. There is a charming formality about Ghanaian etiquette and a letter of introduction was produced to be given to the Medical Superintendent of each hospital (equivalent of Medical Director) as such undertakings were a very important part of protocol. It seemed strange when arriving so bedraggled and covered in orange dust to be received with such polite formality, but that was the case.

I had decided to make a checklist of things to assess so that I could derive the most from each visit. In each case the story was the same. Limited facilities, supplies and lack of on the job support or training, led to difficulties in recruitment and retaining staff from radiographers to medical personnel. One department had some reasonable equipment but it had never worked since the day of installation. An aging mobile was their only working machine. A bureaucratic supplies hold up in Accra (the southern capital, from where most supplies were sourced) meant that the developer tanks were now so low in one hospital that they would soon be unable to practice as there was only half a tank of diluted fluid left. They had ordered in January and in April when I visited it still hadn't arrived.

It seemed to me that the need for basics in terms of equipment, were the same as observed by a visiting radiographer back in 2003¹. In training it was the same. Technicians had no CPD opportunities and received no extra pay for being on-call every day. Despite some hospitals being relatively close (2 hrs apart in one case) the technicians had never met one another. Doctors quickly left or steadfastly refused postings in the first place because support services were lacking. For example the newly built school nursing extension remained unfinished and empty of students due to a lack of additional teachers to match the expansion.

Also, I suspect we underestimate the value of collegiate support for our learning, here in the UK. One of the technicians I spoke to who had shown me a copy of a fractured patella, had no understanding of why a horizontal ray method should have been used; he had never seen it done. It left me questioning the quality of training given despite its apparently appropriate length. There are no schools of radiography in Ghana, one establishment in Accra trains technicians only so there is nowhere top produce fully qualified radiographers. Despite the Ghana Society of Radiographers being set up¹ none of the technicians I met had heard of it.

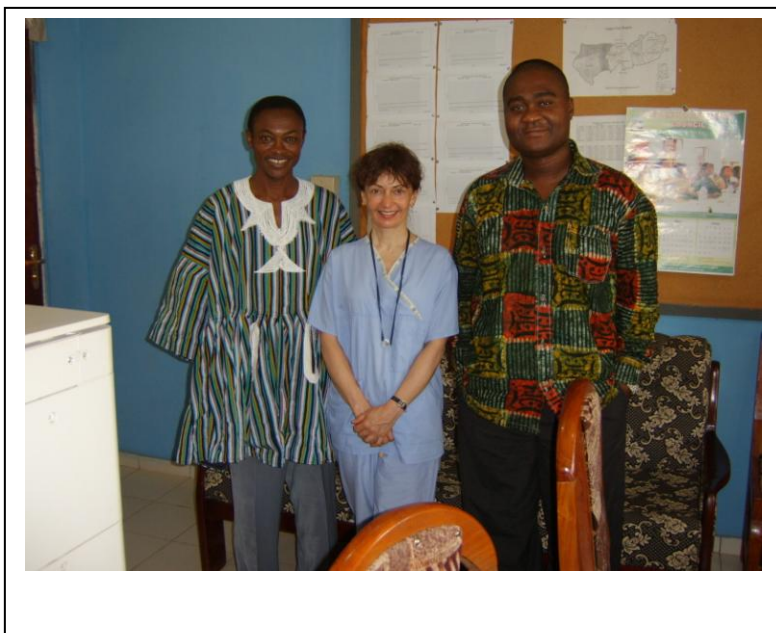
Cause and effect

Such a difficult environment breeds bad practice. Although it seemed that the knowledge of how to practice correctly was present in some cases, it had fallen by the wayside probably through frustration and isolation. As other visitors to Ghana observed recently "even the most willing clinical and scientific community will drift away from best practice"¹¹ I saw two films being placed in cassettes to obtain copies. In other cases the patient was x-rayed twice so that a copy could be produced (which was I how I got to see the # patella!). I was surprised to frequently find a different size film inside the cassette than expected, which was of course due to economy and supply problems. Others bottled and re-used 'waste' developer to top up the tanks that were currently in use, so optimum processing probably never occurred. Those that did not do this, disposed of everything down the open drains, including fixer, which could then quite possibly contaminate the drinking water. Health and safety just didn't really exist.

By far one of the most striking issues for me was the lack of infection control measures. Cleaning of equipment between patients, wearing gloves (I did find a box), hand-washing or even washing the only set of linen at the end of each day, was pretty much non-existent. This is an area where improvements could be made very quickly and effectively at very little cost. In the setting of HIV, TB and so on, this practice change is vital. There is little radiation protection but there *is* some. However, my tight collimation for an OM of the sinuses brought quizzical looks and questions about why some of the head was missed off. Apparently doctors tended to insist that the whole head was included in the field, but I could not confirm why.

Similar to the observations made by Patti Edwards in 2008² I found that kVs were reminiscent of my student days with chests being done around 70kV and limbs in the 40's. The concept of skin dose was not really understood. I believe a great deal could be done in reducing patient dose by simply optimising film/screen combinations and updating exposure factors. It seems to me that the recommendations from the 1998 work undertaken by Schandorf and Tetteh¹² remain largely outstanding.

Jane meets senior staff of Ghana Health Services



Future hopes

My feedback to the health administrator on my findings and suggestions was received with enthusiasm and gratitude. There was no defensive bluster, simply a refreshingly positive keen response which has already resulted in him producing a high level strategy paper to be submitted to our Trust. It calls for continuing work on building local links between our hospitals, and at a higher level, asks for continuing UK support for the Upper East of Ghana. I don't doubt that with this attitude they will receive that help and it is well deserved.

For this trip I was lucky enough to be awarded some funding from the Society of Radiographers Overseas placement fund and from my own hospital's Travel and Education fund and I intend to return in October, finance permitting, to further develop the work at AfriKids medical centre and with the local hospitals. Having broken the ice and started to build relationships with the local technicians and with the support of the health administrator, I believe that I now can begin to suggest some changes in practice that truly stand a chance of being accepted and embedded.

There is undoubtedly a very long journey ahead, but on my recent visit this April, I was impressed by a people in whom despite much hardship, there is a strong a culture of altruism, optimism and determination to learn. Who can resist offering help when it is so graciously and enthusiastically accepted? It is also important to give this from the right standpoint, the aim being to encourage and support independence. The IAEA¹² are in the process of producing a revision of the International Basic safety Standards and are providing some training¹⁴ and I hope that the Ghanaian government will look at providing an equitable funding system across the country so that developments can become a reality rather than

simply documented intention that can often become the case without proper targeted support.

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Foot notes:

We are constantly looking for equipment to send, donations, and willing volunteers.

Please contact me if you think you can help in any way. Even if it is dusting off that old Kitty Clark to send us, you *will* make a difference. So before you put your tea down on this article - at the risk of sounding evangelical, I'll ask "what have you done today to make you feel proud?"



Jane Spring and children of the AfriKids sponsored Mama Laadi's Foster home

AfriKids

There are many other projects that AfriKids are involved in such as removing children from work in dangerous gold mines, a foster home and the Next Generation Homet. Read about these on their website www.AfriKids.org otherwise I'll have to write a whole new article.....