# Swaziland placement report

## 1   Background

### 1.1   Swaziland

The Kingdom of Swaziland, is a sovereign state in Southern Africa. It is neighbored by Mozambique to its east and by South Africa to its north, west and south. At no more than 200 kilometres (120 mi) north to south and 130 kilometres (81 mi) east to west, Swaziland is one of the smallest countries in Africa. The population (approx. 1.2 million) is primarily ethnic Swazis, whose language is siSwati. The country is an absolute monarchy, currently ruled by King Mswati III. He is head of state and appoints the country's prime ministers and a number of representatives of both chambers in the country's parliament. Swaziland has a GDP per capita of $7,917 meaning it is classified as a lower-middle income country. The Swazi population faces major health issues: HIV/AIDS and tuberculosis are serious challenges. As of 2013, Swaziland has an estimated life expectancy of 50 years.

### 1.2   Good Shepherd Hospital

Located near the eastern border of Swaziland in the small town of Siteki, the Good Shepherd Hospital (GSH) is a 201-bed rural hospital run by the Catholic Diocese in partnership with the Government. All capital expenditure (equipment, buildings, vehicles etc.) is from funds generated by the hospital whilst the Government pays the staff salaries. GSH is the primary hospital responsible for the health care of the Lubombo Region, making up around 1/4 of the land area of Swaziland. The catchment area comprises of 250,000 people predominantly from the rural community and the hospital also works closely with over 20 rural clinics.

### 1.3   COMDIS-HSD

COMDIS-HSD (Communicable Diseases and Health Service Delivery) is a Research Programme Consortium, funded by UK Aid, lead by Professors John Walley and James Newell of the Nuffield Centre for International Health and Development, Leeds University, UK. It currently has 23 research projects across its 7 partner countries, including Swaziland, Pakistan, Bangladesh, and China. COMDIS-HSD conducts primarily operational research using an 'embedded approach' meaning the projects are designed and implemented within ministries and national programmes, and according to local priorities.

### 1.4   Bradford Institute for Health Research

The Bradford Institute for Health Research (BIHR) is a research partnership between NHS Trusts and Universities in and around West Yorkshire, UK, led by Professor John Wright.

### 1.5   The public health placement

Over the last twenty years a strong partnership has been developed between Good Shepherd Hospital, COMDIS-HSD and BIHR. For the last ten years, a public health post at GSH has been almost continually occupied, primarily by UK based public health specialty registrars. These training posts are accredited by the Faculty of Public Health and the General Medical Council. Registrars are seconded to GSH for the duration of the placement, and are supervised by the Senior Medical Officer at GSH, and from Professors John Walley and John Wright in the UK. The job consists of two parts, operational research and capacity building. The incumbent is based at GSH but works in close partnership with many organizations including the Ministry of Health, regional healthcare providers and international NGOs.

# 2    My placement

## 2.1    Arrival and handover

I was fortunate to spend the first two weeks of my placement with my predecessor Dave. This was a whirlwind of introductions, meetings and long discussions about the project histories. There were a lot of stakeholders to get to know; around 50 people actively involved in the projects, from a half a dozen organizations (I had to make a list to keep track). The projects were simple enough on paper, but the devil's in the detail, and there was a good deal of detail and project history to understand. I wasn't able to learn everything in those two weeks, but it was a great start, and it laid the bedrock for the rest of the placement. After Dave left, I was able to hit the ground running. I remember Dave pointing out that each registrar basically has to work with whatever their predecessor has left them, both their successes and their mistakes. He humbly warned me to expect to uncover many mistakes, (and to expect to make many of my own!) but I was confident that he'd left things in a good order and this proved to be right. I was bolstered by the fact that our COMDIS research officer, Bongikele Nxumalo, had been in post for eight months and was fully up to speed.

## 2.2    Orientation

My projects were primarily about health service development, so the first task was to get to know the Swazi health system. Doctors are rare, and they generally only work in the hospitals and 'health centres' (essentially small hospitals). Some outreach work that takes place, where doctors visit community clinics, but this is patchy. Community clinics themselves are relatively well distributed and most people live within 8km of a clinic, though that is a substantial distance given the available infrastructure. Clinics are almost exclusively nurse-led, and nurses take on the diagnosis and management of a huge range of problems, meaning the 'traditional' role of the nurse is almost unrecognisable. Primary care is almost entirely provided by the nursing cadre, and as such. Transport is a major issue. There are several significant tar roads joining up the main towns and the largest sugar farms, but Lubombo is a largely rural population and is mainly served by sluggish dirt roads. To do outreach work requires an all terrain vehicle. There is a nascent ambulance service in operation, but it cannot handle many of the country's back roads. Swaziland has a thriving informal network of mini-buses (Khumbis) and you can get just about anywhere by public transport if you know how, but for many people the price of a journey prohibits regular trip taking. Most of the Swazis who live furthest from care, also have the least means to access care. This means follow up is difficult and treatment adherence is fraught with difficulty. Access to medicines could be easier if there was a network of pharmacies offering public prescriptions and refills, but this is not the case. Most repeat prescriptions come from clinics, which also function as dispensaries, though because nurses, not doctors, run them they are only able to order a limited formulary of drugs. Also, because the drug supply is unreliable, clinics are reluctant to give out more than a month's supply at a time (effectively rationing supply), which means more regular visits to clinic, more cost to the patient and more work for the nurses. Most public healthcare in Swaziland is funded through cost-sharing, where the patient contributes a fixed amount to for appointments and drugs. The amount depends on whether you attend a government or a mission facility, and the cost is a major barrier for many.

## 2.3    NCD Decentralisation

### 2.3.1    Overview

This project aims to follow on from recent the success of the HIV and TB the decentralisation programs, which have successfully trained nurses in the community clinics to safely initiate and refill HIV/TB drugs, thereby massively increasing access to these treatments. The programmes are overseen by hospitals and health centres (called mother facilities) who provide mentoring and some outreach, although nowadays the clinic nurses do most of the management themselves. The NCD decentralisation project is trying to do the same thing with diabetes and hypertension. This will progress to asthma and mental health next.

The pilot intervention is a complex package of resources for nurse-led clinics, including treatment protocols and pathways, training, desk-based resources, record-keeping systems, drug

supply systems, education materials and equipment (such as blood pressure cuffs and blood glucose monitors). The key document is the desk guide, which acts as both a clinical guideline for use during patient encounters, and a patient pathway, agreed by local partners. This is not a complete decentralisation, rather it is a shared care arrangement between primary and secondary care, which details the treatments that patients should receive and the location of that treatment. What is new is that nurses will now be better equipped to recognise and correctly diagnose hypertension and diabetes and they will be able to initiate treatment and follow up uncomplicated patients. They will also be able to follow up and monitor more complex cases, and provide refills of drugs normally only available in hospital. Finally, they will be using a record keeping system that will help with supervision and identification of treatment failure. The research study to evaluate the programme is a paired cluster RCT design. Out of twenty government clinics, we chose ten at random to pilot the service and another ten (paired based on location and services available) to continue business as usual and act as a control

### 2.3.2    Progress

At the point when I arrived, my predecessors had made huge strides in this project, but there was still great deal to do and this project was my primary focus during my placement. In summary, during my time in post, I led on the final stages of preparation and the early implementation of the programme. I worked with the existing multi-agency technical working group, and with the national NCD Committee to finalise the treatment protocols, drug procurement arrangements the desk guide and training materials. I worked closely with the management of our provider clinics and visited all ten clinics to identify their needs and address any outstanding issues. I arranged the procurement of the necessary equipment, materials and medicines. I developed and co-delivered two week-long training sessions for nurses both in the clinics and in good Shepherd and a separate one-day training for control clinics. When I left, we were just awaiting delivery of equipment, materials and drugs. I would have loved to see the first case enrolled in the pilot, but alas, this was not to be.

### 2.3.3    Needs assessment

When we interviewed nurses for the needs assessment we discovered that the existing treatment arrangements were somewhat more hazy than the official guidelines suggested. The clinic formularies are ever changing and many of the drugs that were not available at the time of the study's inception, had since entered clinic stock rooms, though not the full range required. Nurses had already been refilling with whatever they have, though not generally initiating patients on these treatments. Anecdotally, the practice around review and refill of drugs was of variable quality, with some patients passing through without even a BP check and certainly without blood glucose monitoring. It was also routine to refill drugs that were not in line with guidelines, namely Aldomet, which is an antihypertensive still used in pregnancy but has long been superseded for general use in hypertensive adults. The reality is that nurses are put under extreme pressure to meet their patients needs and will often take pragmatic decisions when patients are faced with otherwise insurmountable barriers like transport and money. In the training we went to great lengths to emphasise the process that should be used to correctly diagnose, initiate, review and refill patients, along with those situations where referral to hospital is required.

### 2.3.4    Record keeping

A big part of the intervention is introducing a clinical recordkeeping system for NCDs where currently there is none. We went to great lengths to agree on the most streamlined system possible and finally settled on three documents, one record card for the clinic, one for the patient and one enrolment register which is just used once when patients are enrolled. These materials do not just function for data gathering however; they are intended to be useful tools to trigger actions, such as checking the BP. Due to the lack of IT systems clinics face a heavy burden of paperwork. Currently the clinics use separate paper registers for HIV/TB/MNCH/General appointments and some others. At some point, these will need integrating; indeed, there are plans to move to a computer based system in the near future. For me this showed just how much I have taken IT for granted. There is a lot to consider when designing these systems, for example details like which is the best way to allocate patient numbers (unique identifiers allocated by clinics vs unique identifiers allocated by hospital vs separate clinic/hospital numbers), and

where to keep patient records (clinic vs hospital vs both). Doing all record-keeping on paper means it is especially important to have as lean system as possible.

### 2.3.5   Study protocol

The study protocol evolved somewhat during my placement, partly in response to the above finding that clinics were already doing some independent work with hypertensive and diabetic patients. Firstly, we agreed to expand the number of entry points into the study. The original idea was that clinics refer all suspected cases to hospital for diagnosis and initiation, so that was supposed to be the point of enrolment. As the pathway developed all parties agreed that nurses should diagnose and initiate patients themselves, provided they were uncomplicated and had mild disease, and enrol them into the study. No explicit consent process was deemed necessary, as patients will be offered care in their clinic regardless of their inclusion in the study.

The second development was around the control clinics. We had expected be able to identify and enrol control cases from hospital, but we now knew that some patients would never make it to GSH. In theory, this group stood to benefit a lot from the intervention. The difficulty was that in order to enrol them and measure their outcomes we would have to either initiate a record keeping system in the control clinics, or try and ensure that all such patients are be referred to hospital. In the end we decided against a record keeping system for control clinics, as this is itself a big part of the intervention, and to do so would muddy the study design substantially. Instead as a compromise, we opted to deliver some training to control clinics, where we dealt with the appropriate diagnosis and management of these patients, within the current system. Most new cases should be sent to hospital anyway for diagnosis, so we should only miss a few of the existing case load, which we can recognise as a limitation. Note that with this in mind, we could have decided to only enrol new cases into the study to increase comparability of the intervention and control groups, however this would have excluded the existing hospital and clinic case load, which would massively reduce sample size.

The third development was the decision to include Sithobela health centre as a second referral centre in the study. This came from the fact that several of the clinics in both intervention and control groups (especially in the South) were a long distance from good Shepherd tended to refer to Sithobela. If we didn't include them in the study, we would in effect be excluding patients from the southern clinics as we would not have records of any hospital care they received. We had time during my placement to visit Sithobela and begin the engagement process. Another complication was the fact that there was a new referral hospital being set up in Siteki, which had just began to provide a functional outpatients department. There was already evidence that GSH patients were being drawn to the new hospital, no doubt due to their cheaper consultation fee. Of course this would mean further exclusions to our study, so we agreed that in principle they should be included in the pilot. As I left, the addition of the two new hospitals was awaiting approval from the national NCD committee.

### 2.3.6   Training

The two training sessions were I think a great success. This is a crucial part of the intervention and required a good deal of planning. We adapted the generic COMDIS materials and spent four with each group, covering all the details of the desk guide, from assessment to drug side effects. We certainly needed this amount of time to cover the material in sufficient detail. We were blessed to have Dr Kalungero and Sister Sweetness deliver most of the teaching, imparting their considerable knowledge and experience. We were also lucky to have guest lectures from Dr Kevin Magatsane (WHO), Dr Al Hartman (GSH) and the Mrs Lindiwe, national NCD lead and dietician.

### 2.3.7   Challenges

Overall, the biggest challenge with this pilot was making the research study work in the complex real world. There are so many details that take one away from the idealised pure study design of an RCT. There may be cross contamination between groups, as patients hear about drug availability in neighbouring clinics. Patients may be drawn away from hospital by cheaper fees in participating clinics. Given the lack of post codes, recruitment into study arms will be prone to

bias. The list goes on. Furthermore, the baseline, against which we are measuring, is ever changing, as clinics gain more drugs and hospitals are built. Finally, the design of the pilot has to serve the research study, which creates its own challenges. Ten clinics is a large number for a pilot, but the study needs to be powered. At the same time, it was hard to say to the control clinics that we would not be implementing for them until a later phase, when on the face of it the intervention seems so obviously effective on paper. I feel this study is pushing right to the edge of the capabilities of the RCT design. The intervention is itself a complex system, which is being placed within a complex system. It is easy to argue that this will produce the best quality evidence effectiveness, but I did sometimes stop and ask myself, what are we actually testing? This is a study of guideline implementation and training and service redesign and task shifting. The research is clearly justified, and this is no doubt the best possible design to prove that benefit outweighs harm, but many of the components of the intervention, such as proximity to health services, or provision of equipment, probably do not require RCT evidence, and could be justified on theory alone. Overall, I see this as an equivalence study. We do not expect patients treated in clinics necessarily to do better than those who already attend the hospital (though they might) but if the outcomes are the same then it is proof of concept that we can train nurses and capacitate clinics to do a thorough job with these patients but in a much more convenient location.

### 2.3.8    Conclusion

Despite the challenges we faced, what was striking was that there was almost universal support for this pilot study. Nobody needed much convincing that it was a good idea and everyone was grateful for our help in making it happen. We were even invited to give a presentation to a hospital in another region who was interested in undertaking a similar project. That said, this is still another somewhat vertical programme amongst vertical programmes, and several issues facing primary care still need to be resolved, such as having an efficient universal record keeping system and access to the full range of medicines. In fact it became increasingly clear that if we had doctors in clinics, we would solve many problems simultaneously. Even just a couple of outreach visits per month would make a big difference, as doctors would be in a better position to demand a wider range of drugs and equipment, and nurses would have a chance to discuss complex cases and learn from the doctors.

There is talk of employing a rural doctor for the region, which I feel would be extremely helpful. For our pilot, it would also mean a more complete decentralisation as complex cases could still be seen in clinics.

## 2.4    MDR TB Decentralisation

### 2.4.1    Overview

This is also a decentralisation pilot but this time the decentralisation is from tertiary to secondary care. Historically, patients found to have multi-drug resistant (MDR) TB could only be treated in the national TB hospital in Moneni. This development aims to capacitate regional hospitals, including GSH, to manage MDR patients. Rolled into this is the job of equipping local clinics in the surrounding area to support these patients, with delivery of injectable drugs and review. The study protocol is much simpler than the NCD study, just a before and after comparison of 'centralised' vs 'decentralised'.

### 2.4.2    Progress

When I arrived, Dave had done a terrific job of broadening the technical working group and unpicking some of the issues that had arisen during early implementation. The National TB Control Programme had provided GSH with a specialist MDR TB doctor and two nurses and the service was running reasonably well. There was good ownership and meetings were well attended. All I had to do was keep the meetings ticking over, troubleshoot issues, and try to hold all parties to account on agreed actions. There is a SOP for the Lubombo region and our TB lead doctor started writing an SOP for GSH itself. In addition there were a couple of documents developed by our partners, University Research Council: an MDR field guide and a flow chart.

NTCP provided some training for community clinic nurses on MDR TB. The existing X-ray facility at GSH was inadequate so after much work from my predecessor, we successfully managed to procure and install portable X-ray machine, extraction system, UV lamps refurbishments to create a safe X-ray facility for TB patients and others.

The study population pre-decentralisation is all the MDR patients seen at the national hospital in Moneni. They have two paper registers that contain about two years' worth of patients – unfortunately they overlap as they had to switch at some point to the new register, and they transferred a bunch of patients over. Those registers had had been photographed and the data entered into spreadsheets, however without a functioning copy of SPSS (downloading this over Swazi wifi proved problematic) I wasn't able to do much with that data by way of analysis. The study population post-decentralisation consists of all cases of MDR in the Lubombo region diagnosed after the date of implementation. At first these were fewer than we expected, but later on it seemed we had set our expected numbers a little high. Also, at the time I left we did not know the number of Lubombo residence that were still being treated at Moneni due to being unsuitable for down-referral.

### 2.4.3    TB Contact Tracing

One area where there was a recognisable gap in the service was contact tracing. For MDR patients, nurses visit the patients to conduct a home assessment. They use this opportunity to screen household contacts. Screening for TB really just means warning/informing and checking for active disease, as there is no testing for latent TB, and providing a sputum pot. Previous registrars have done a lot of work trying to sharpen up contact tracing for general TB. Now we have MDR patients, we absolutely have to get it right for them it is likely that any improvement will spill over into general TB care. With the help of some medical students we conducted an audit of current practice around contact tracing of MDR patients. There were lots of issues, many of which came down to infrastructure, such as transport and communications. There were also some issues around record keeping and follow up. Overall, the focus of the service is much more about treatment than public health, which is understandable given the vastly high prevalence and low resources available. That said, even in high prevalence settings, contact tracing and case finding is considered a good use of resources. I wasn't able to see this through into implementing solutions but there is a good deal of interest both nationally and locally, and this decentralisation provides an opportunity to reinvigorate this aspect of the service.

### 2.4.4    Conclusion

This is well-established pilot with high levels of interest and ownership among stakeholders. My role was to facilitate the ongoing improvement and to lead on the evaluation. Similar developments had already taken place in other regions so were helped by a national precedent and a good deal of experience. From what I have seen I am confident that we will find an improvement in outcomes for patients.


## 2.5    Other projects

### 2.5.1    NCD Screening

These were two pilots set up by my predecessor to screen patients in TB and ART clinics for hypertension and diabetes. He wrote an SOP and figured out a data collection system. Essentially it is a two tier screening, with weight measurement, BP measurement a couple of risk questions for everybody, then further BP measurement, and possible blood glucose for a sub group of people. On the ART side it has been pretty successful and is now embedded into routine practice. We have compiled the data for the ART side and are writing an evaluation. On TB side we are still waiting on further data. Part of the SOP was for patients to be referred to their local clinic for repeat measurements then sent back to GSH. This wasn't working well and patients either didn't see their clinic or we don't have documentation. Checking BP from time to time should be part of routine care (and in fact I think it already was before we started, as is weight). Diabetes screening is more complex and there is no clear consensus internationally about the benefits of any given protocol. This became a pertinent issue when we were training the nurses in the NCD study to think about primary prevention and opportunistic screening. The approach we took was

to say, everyone needs BP checking if they have any risk factor, but diabetes requires some clinical judgement to pick out the high risk patients. At the same time, another partner agency, ICAP, was also piloting some NCD screening in HIV clinics across the country, though this just involved issuing a 'tool' with about a dozen NCDs to test for. I don't believe there was very high uptake and there is limited information for evaluation. For me this emphasises the importance of taking a programmatic approach, even in the face of pressure to just do more screening.

### 2.5.2    Infection Prevention and Control

Most public health registrars at Good Shepherd are involved in IPC to some degree, either proactively or in response to outbreaks. I would have liked to do more as this is an area of interest. The focus of my tenure was a visit by Phil Stanley and his wife Jane, both ID physicians (Phil is also DIPC at Bradford) and fonts of knowledge and sensible advice. The trip was a success in that we felt we did a thorough assessment of the situation and raised the interest levels considerably. Phil and I prepared a report for the management, which seemed to make a big impact. At the point of my departure, senior management were considering reorganising the IPC management structure and investing in IPC in the hospital. I feel we can make huge gains if we can establish a functioning and appropriately represented infection control committee, on the other hand, I do not think we can achieve much without this senior buy in. The first priority should be getting the basics right, e.g. soap and hand towels at every wash basin. Any spending will pay for itself many times over in reduced lengths of stay etc. There is burgeoning national interest in this issue and I hope GSH will be a beacon of good practice.

### 2.5.3    Palliative Care

During my time in Swaziland I had the pleasure of getting to know Kathleen and Al Hartmann, a retired nurse and doctor who visit Swaziland for 6 months out of each year to work in home-based and palliative care. They have supported the setup of an outreach programme serving a 70km radius around GSH. There is relatively little government provision of district nursing care, so this team is addressing a great need. Palliative care is highly undeveloped in Swaziland; it is not unheard of for a doctor to say there is nothing they can do for your cancer, and be sent home to die. Kathleen approached me to ask if I could help her team prepare a bid for funds from the African Palliative Care Association. This was a small grant of £5000 to be used for purchase of provisions. We only had a few days to prepare the bid. Unfortunately, we weren't successful but we were encouraged to try again and we are still awaiting the results of round two. Kathleen and the team felt it was a useful process to go through nonetheless.

# 3    Conclusion

## 3.1    Reflections on the placement

### 3.1.1    Working in Swaziland

When people ask me what it was like to work in Swaziland, my overall feeling is that it is much the same as working anywhere else. I'm totally convinced that UK public health training can equip you to work in any public health setting. That said there were some differences in the way people do business, largely due to the differing access to and use of technology. Few of my colleagues routinely used email, or calendars. Organising meetings was a tortuous affair, involving mass text messaging and reminder calls. There are different rules around punctuality. The working day certainly starts and ends on time, but a meeting time is more of a rough guide and meetings would regularly start an hour late or more.  The lack of email posed a challenge to mass communication, and there were several occasion when something that would usually just be cc'd en masse, had to be printed and hand delivered. The up side of this is that you are forced to talk to people when you might otherwise just email. People are happy to be called on their mobile phones, and it is perfectly acceptable to call even very senior officials without prior arrangement and they will usually answer. Even in a meeting it was normal to answer incoming calls, though I didn't feel comfortable to follow suit on this one. Colleagues also used clever ways to get around the obscenely high charges for calls and SMS (much more expensive than UK), in particular by using What's App groups, which is something we could do more of in the UK. One

thing I did find is that I had to be quite relentless in following up on agreed actions. In many cases this was the expected norm, and for really important things I had to be relentless.

### 3.1.2    Challenges

The big challenge with this placement is the fact that the projects outlive the registrars' placement durations, by many times over. The NCD project had been in the pipeline for years when I arrived. Public health projects are complex, messy, unpredictable things. Each project has its own rich history, ideas, plans, big decisions, small decisions.  The first job of a new registrar is to become a project historian. Every day I would uncover some unforeseen thread of discussion and decision making. Technology helped here; being able to sort the contents of the company Dropbox folder by 'date modified' gave me a sort of chronology of events. My predecessor Dave was always on tap and I regularly emailed him with extremely banal questions. The biggest historical source was of course living memory, and I was blessed beyond measure to have Bongikele, our local research officer, who had been to every meeting with Dave, and a few more without him. With time I was able to put the puzzle pieces together and see some of the missing pieces that I would have to find.  The other challenge was to rapidly build relationships with such a wide number of stakeholders in such a short time. They all knew your role as the public health registrar, but you still needed to build those relationships again, in order to move forward together. This is of course a key public health skill. Another big challenge was project staffing. There is far more work than can be done by a team of two and you are constantly asking busy people to do things for you. In a UK setting there would no doubt be many more people involved in a project of this magnitude, but then that does have its own disadvantages. Even though we were a small team, we were a significant player in the system and able to make a real impact. A bigger team would have made progress quicker and no doubt smoother, but it wasn't actually critical for project progress.

### 3.1.3    Final thoughts

This was my first substantial experience working in a developing country. As a training placement this was invaluable, both providing a taste of international public health, and a fresh perspective on UK public health. The same issues pervade public health work in all settings, from the practical details of transport and communication, to the difficult choices that we have to make about how best use our finite resources. I have puzzled about what development actually means. In simplistic terms I understand it to mean an accumulation of physical, human and social capital. Any introduction to public health will tell us that social determinants matter, and factors like income, education, sanitation, infrastructure etc, will probably have more of an impact than health care. I could see the truth of this in Swaziland as clearly as here in the UK, and I was bolstered to see the strides that Swaziland is taking in all of these areas, with contributions from every individual who offers their gifts to society.

## 3.2    Learning outcomes

## 3.3    Thank you! Siyabonga Kakhulu!