Report for Ear Aid Nepal, June 2019

Ms Hafiza Choonara Audiological Scientist, and Dr. Robert Morse, Hearing and Sound Scientist

We would like to thank EarAidNepal for enabling our visit to the Ear Centre at the Green Pastures Hospital in April/May 2019. We report here on our activity during this visit and the current work we are doing for the Green Pastures Hospital in collaboration with Mike Smith.

Hafiza Choonara visited the Green Pastures Hospital from April 2nd to April 24th overlapping the visit by Robert Morse, who visited from April 10th to May 2nd; the later visit from Robert was to enable him to meet Mike Sanders, the head of audiology, who returned from leave in the UK on April 21st. Through generous donations from the Royal Blackburn Hospital and the East Lancashire Hospital Trust, and free calibration from P&A Medical Limited we were able to bring out and gift a calibrated manual audiometer together with hearing aid cases, impression material and programming cables along with some new and boxed hearing aids that can be programmed in camps. During our visit we also brought two audiometers at Green Pastures back into service.

Hafiza was involved in training the two Ear Care Workers, Nita and Srijina, and the two Ear Care Practitioners, Surya and Subash, who were recruited in 2018 to expand the service, work in triage roles and work in outreach camps. She also worked with the two bachelors degree level local audiologists. The outpatient department at Green Pastures is currently understaffed because of staff changes and during our visit the Ear Care Workers (ECWs) and Ear Care Practitioners (ECPs) were required for syringing and microsuction. This unfortunately limited the amount of training that we could provide. Nonetheless, Hafiza was able to give some one-to-one training, concentrating on pure-tone audiometry and masking, the recording of results, and tympanometry. This training met the requirements of the curriculum that we had helped develop in collaboration with Mike Smith. During our visit we installed AudSim, which enables computer emulation of an audiometer for air and bone conduction testing and helps users understand the rules of masking. The program normally costs $19.99 for a single user license, but we were able to get a free license for all the audiology staff at the Ear Centre. Hafiza also provided material to enable directed study and was able to observe the practical audiological skills of the ECWs and ECPs. They still need to build on their existing basic skills and require further training and more one-to-one sessions to enable independent practice. The expectation is that at least some this training will be provided by Dr Mike Sanders, volunteer Audiological scientist from New Zealand, working in the audiology department for 2 years.

Hafiza's principal time was spent training the local audiologists (Aashish, Prabuddha and the audiology assistant Pratiksha) and the Speech and Language therapist, Dipika, who also occasionally assists in Audiology. Training was also given to members of the physiotherapy team, who are involved in vestibular rehabilitation. Training covered the following topics:

- General counselling skills and motivational interviewing
- The causes of tinnitus and tinnitus management options
- Common vestibular conditions, bedside testing and rehabilitation

We were also able to provide a practical session on calorics tests, for diagnosis of vestibular problems, using caloric equipment that was developed in-house by Mike Smith. They have been guided to each produce a portfolio with patient information leaflets translated into Nepali along with information on conditions and related journal articles. They have already made a good start on this and Mike Smith and Sushmita, the new training co-ordinator, have copies of everything provided.

Robert Morse's principal time was spent on an analysis of ENT data for the 1069 patients operated on at Green Pastures Hospital from November 2015 to February 2019. An analysis of this data can be

used to provide evidence to existing sponsors of the Hospital and to support future grant applications. The original data were on paper records that were transcribed to Excel before our arrival. This transcription took three months. The data, however, were transcribed by someone not familiar with the medical terms and the Excel file was highly confounded with information from the patient notes entered inaccurately and inconsistently across the various columns; for example, terms used to denote myringitis were spread over columns to describe the size and type of retraction pocket, to give the state of the middle ear mucosa, to denote the presence of squamous epithelium, and to denote the presence of tympanosclerosis. Moreover, the terms used by the surgeons were not consistent, for example tympanoplasty was given as "t platy", "t plasty", "t'platy", "tympaniplaty", "tympaniplasty", "tympanoplaty", "tymanoplaty" and "typanoplasty". To avert the need to re-enter the data, we used routines written in VBA (Visual Basic for Applications), the programming language of Excel, to correct and organize the data accurately and to categorize pre-operative findings, peri-operative observations and post-operative outcomes. The routines made use of substitution tables so that there was a record of what changes were made and further changes are easily possible. The visit enabled discussions with Mike Smith so that we could get greater understanding of the data and program the appropriate substitutions. The data is now in a form where more detailed analysis is possible, for example to investigate the efficacy of ossicular prostheses that are made in-house.

To improve clinical practice and make future analysis easier, we started developing an electronic records system for ENT during our visit. Following discussions with Mike Smith and Mike Sanders, we started by developing a form for stapes operations that can be used by people not familiar with Excel and enables continuity with the current processes at the Green Pastures Hospital. The form was developed in Excel using VBA. We have implemented a workflow that ensures that only valid data can be saved or printed and there is traceability for any changes to patient data. In the long term, it would be better to have a full database, either by extending the current hospital electronic record system or by implementing a new one in Microsoft Access, or an equivalent database program. It would, however, take longer to implement and it might be hard to find someone locally to maintain it. By doing it in Excel, an administrator at Green Pastures should be able to maintain it. The initial form took about two to three weeks of programming and was completed after our return to the UK. Because of the commonality across the forms, development of the further forms will be quicker. The next stage is to develop forms for more general surgery and to develop an integrated system that will enable ENT to view electronic records generated by Audiology and vice versa.

During our visit Robert participated in the training day that Mike Sanders had arranged to train GPs from the Gurkha Welfare Trust. The training was to enable the GPs to diagnose hearing loss and to fit the Siemens Run hearing aid, which can be done using an Android phone. The training was followed by a visit to a residential home run by the Gurkha Welfare Trust in Pokhara, during which the GPs fit two pensioners with a hearing aid.

We are delighted to be continuing our collaboration with Mike Smith and the Green Pastures Hospital and are very grateful to EarAidNepal for making this visit possible. In addition to the work described above, the visit enabled us to appreciate further the services provide by the Ear Centre at the Hospital and to have many useful discussions with the staff. We were particularly grateful for the discussions with Mike Smith and Mike Sanders that have enabled us to focus on priority areas such as developing tools for hearing assessment.