

ELECTIVE (SSC5c) REPORT (1200 words)

A report that addresses the above four objectives should be written below. Your Elective supervisor will assess this.

Elective Peru

Objective 1: To explore the differences in the day-to-day medical needs of the people of the Peruvian Amazon to the west.

Arriving in Lima, I was unsure as to whether there will be much difference in the medical needs of the Peruvian people to west due how developed the capital was. Flying in to Iquitos only accessible by air and sea, however my opinion changed. Whilst landing, all I could see were large bodies of water and green and I suspected much more tropical medicine was practised here. Whilst staying in the Town, which was the gateway to the Amazon, I saw how the locals had adapted to rely on tourism. A notable activity for tourists was taking of Ayahuasca, a hallucinogenic drink made from a vine used by the locals for religious practices. The consequences of this and other drug seeking behaviour of tourists had its impacts on the local health ecosystem.

Aboard the medical expedition vessel, I was surprised at the variety and amount of medicine available to hand. We even had fluids and basic surgical kits to hand. During my time on the expedition, I came across much of what you would expect to see in general practise in the UK. Headaches, backaches, period pain, minor trauma, cold and coughs. However, we treated all children under the age of 10 prophetically for worms where parents did not already ask for medication. There were few incidents of pterygium, extensive abdominal distention and a case of penile elephantiasis.

Objective 2: Understand how the medical needs of the people of the Peruvian Amazon are met and the stakeholders involved compared to the west.

Project Amazonas, our host organisation was a non-governmental project operates the only regular hospital boat in the Peruvian Amazon. A double deck boat able to accommodate 16 volunteers and crew provides medical care for six to eight thousand people every year. The trips are overseen by Peruvian Ministry of Health represented by a doctor and a dentist from peru. Often, american medical faculties take part in organising some of the medical trips.

Basic medical care we delivered from the limited resources available to us was greatly welcomed and was sufficient in most cases. In the rare cases that we could not treat, we advised them to seek treatment in town. Cost of fuel to fund a 6 hour trip canoe to the nearest town of Pebas for most is rarely possible or not an option, where only a field hospital is available. The nearest proper care provision 2 further days boat ride away in the town of Iquitos.

Objective 3: To begin to understand the vast resources provided by nature to allow man to care for himself in a sustainable way and the importance of preserving this knowledge and all the undiscovered secrets of the Amazon.

Journeying into the primary jungle on a few occasion we had the opportunity to acquire valuable local knowledge. Our translator also played the role of a tour guide with much experience previously at the age of 60 years. Having been born in a jungle village, he had grown up gaining precious knowledge from his elders which later allowed him to practise as a shaman. From acquiring water to drink from

vines, ingredients for antiseptic preparations to differentiating what is and is not edible, he parted some of his knowledge with us.

Objective 4: Further my experience of the outdoors as a method relaxation whilst also broadening my comfort zone.

Laid back lifestyle of the peruvian people with their subsistence living makes one question about our western fast-paced lifestyle. Following breakfast we would set out into a new village everyday to the biggest building to setup our clinic. Some days, depending on the size of the village, we would finish by lunch time and sometime later. After the day's hard work, we went to do a multitude of recreational activities from swimming in the river, canoeing with the locals, kayaking, jungle treks, bird watching, fishing and night cruise. On a few nights we had the opportunity to head into town.

Elective Title: Proof of Concept of a Digital Health Solution

Objective 1: Understand the extent to which physical stigmata of medical conditions influence the quality of care and management in the east end, home to the world.

Although a comprehensive history is most crucial to diagnosing and managing a condition, examination findings also play a vital role. A comprehensive examination begins with correct exposure and thorough observation of the patient. Many conditions, particularly in surgical specialties such as orthopaedics, plastics and dermatology as well as dentistry present with typical stigmata visible to the eye. The disease state of such conditions have a tendency to represented these stigmata allowing a clinician plan and execute the appropriate management plan.

London's leading trauma and emergency centre at the Royal London Hospital serves a diverse population from all corners of the world. At the centre of trauma care lies imaging, whether photographic or radiological. Radiological imaging has now been in used for over a century and is very well facilitated with digital access to images at all times. However, photographic imaging of stigmata has rarely been in use expect in novel cases. Due to its diversity conditions that are prevalent or endemic in the local area include diabetes, hypertension, heart disease, tuberculosis and other chronic lung diseases, HIV, oral disease, and cancer which present with visible signs generally later in the disease process.

Objective 2: Explore the advantages and disadvantages of the current system of clinical imaging and our proposed method.

Today, medical photography is being used extensively in the emergency department in cases of trauma, in cosmetic treatments, invasive procedures and dentistry. Fields such as dermatology, podiatry, weight management where progressive analysis is useful also benefit largely from visual aids.

Healthcare professionals are required to document injuries and abnormalities on a daily basis in many specialities. This is more easily and effectively communicated in a photograph. Heavy, expensive nature of clinical photography equipment means that availability is limited both on a daily basis and in emergencies. The solution that busy clinicians have found to this problem is to take quick snaps on their mobile phones 'on the go'. In an emergency trust policies state that a personal device may be used to take images, however this largely disputed and poorly regulated. This pragmatic 'solution'

that doctors are using all the time is really no solution at all. In fact it's a big problem: it's not secure nor compliant with data protection directives.

DocSnap is a simple secure cloud based solution that will enable all health professionals to become experts in clinical photography using their personal devices, as well helping them comply with the law both in storage, transfer and sharing patient data. Patient identifiable information will be encrypted and stored with the images and videos on device or in the cloud. We also hope to integrate into trust electronic patient records (EPR) systems through APIs in the future.

Objective 3: Understand the effects of childhood hip disorders in adolescent life and the indications for early hip replacement.

Developmental dysplasia of the hip, perthes disease, slipped upper femoral epiphysis, juvenile idiopathic arthritis and trauma are the commonest hip disorders seen in childhood. Early recognition through screening or otherwise, disease stage, timely diagnosis and management give patients the best prognosis. However, when the disease is advanced and/or treatment is delayed, the resulting poor prognosis has a significant impact on the patient's development and life. In adolescence, at crucial point in life, these condition can be disabling.

A decision to carry out early surgical intervention takes into account pain, functional limitations, age and radiographics changes. Hip replacements are occasionally performed in in patients in their teens and early twenties, where pain relief and functional improvement are indicative.

Objective 4: To network and learn from many in positions of influence in the process of developing, trialing, securing further funding and marketing this revolutionary digital health solution.

Having heard of the qHealth competition, at the time when I had just started to read around about digital health, I took the opportunity to participate. I was lucky enough to be put in a team of like minded entrepreneurial and technological enthusiasts. Working on our entry, I had the opportunity to work closely with experts in their field both at my university and at the event I attended. We went onto not only win the competition, but also secure the total amount required to take our app to market.

Without the technical expertise to build our application, we spent numerous months on the hunt for the right team who could help us transform our idea into reality. On the journey, I attended many technical conferences, meetups and met with experts in person to further my understanding of the possible routes to market and the resources we required. With a solution addressing such a sensitive problem, where there are many more regulations and laws to be addressed much research was required. Working together as a team we were able to pull our resources together and develop a wireframe for an application.

Looking further ahead, we have been researching possible incubators and opportunities for funding to carry onto develop the app further and gain rapid adoption within the market. Choosing to offer a free service with limited storage and only charge for more storage, our revenue will not sustain us during our initial growth period. To achieve the aggressive growth we hope for we would like to implement an extensive marketing strategy which includes presentations at local trusts, meetings and conferences internationally.

Obstacle that seems to hold us back from gaining further funding is most popular incubators and investors require founders to be present on a full time basis or attend a programme lasting a few months. However, there are a few who provide resources and support but no funding, but they require us to already be in the market and achieved certain goals.