

HACKWEAKEND

Driving real world solutions for real world problems

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HackWeakEnd 2019 Hacksets will focus on :

- A. Experience: Improving the patient experience**
- B. Wellness: promoting wellness and awareness/education**
- C. Delivery & Efficiency: improving healthcare delivery & efficiency**

1. Better post-acute rating and referral system(A,C)

Problem: Hospitals are fragmented and compartmentalized with few processes for tracking patients beyond their walls. At the same time, our Government is financially incentivizing hospitals and primary healthcare centres to reduce hospital readmissions and post-acute cost.

Probable Solution: Provide hospitals a (software) tool to gain visibility into the patient's path after they transfer to a PHC (and beyond). A few structural realities make this especially interesting—hospitals have leverage over PHCs because they supply all the referrals. A hospital could make it mandatory for a PHC to use their patient tracking system in exchange for referrals. Once the system is in place, it would act as a feedback loop similar to other rating platforms like Trustpilot, Lyft or TripAdvisor.

2. Better use of health tracking hardware(B,C)

Problem: Collecting patient health diagnostic data is a manual process and a lack of data makes it difficult for doctors and healthcare workers to turn it into actionable recommendations.

Probable Solution: Bundle health diagnostic hardware together and build the software to generate simple health reports for doctors and healthcare practitioners. Patients should be using devices that specifically track health data relevant to their condition. This data should be seamlessly uploaded to the cloud. Once there, software can analyze it and present trends to doctors, a good addition is if it uses AI. For example, most diabetics take their own blood sugar samples every day, manually. Many of those readings simply vanish. Instead, that data could be communicated back to the patient's physician or stored in the cloud. The bigger idea down the road is to use this data to detect trends and adverse events before they happen. Data about health can be embedded on a chip for people to carry about.

3. Real-time logistics tracking within the Hospital(A, C)

Problem: Health systems struggle with patient logistics inside the hospital, including patient delays, provider staffing errors, and general operational challenges.

Probable Solution: Tracking the exact location of patients and staff within hospital walls. Health systems are complex, multi-building organizations. They could benefit dramatically from technology that helps healthcare workers on the floor get a high-level overview of their staff and patient flow. Technically, this can be accomplished with beacon technology worn on the back of identification badges.

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4. A Cost-Effective Alternative to the 911 - Ambulance (C)

Problem: Ambulances are very binary—there is no middle ground and in Gambia, we do not have many of them. They are expensive yet often not necessary.

Probable Solution: An app that can be an alternative to a 911 phone call. It would offer the ability to triage and categorize the incoming call, with the ability to upload (pic, video, stream), assess the need for assistance and possibly offer a lower level/lower cost response team. An opportunity exists to create an Uber-like app platform of “certified” emergency responders throughout Gambia. These emergency medical teams (EMTs) would receive notifications from 9-1-1 dispatchers regarding an emergency near them.

5. Care Coordination Technology for the Public Sector (B, C)

Problem: Lack of technology in caregiver management throughout the public sector results in huge amounts of wasted resources that accompany a paper-based operation.

Probable Solution: Create a simple process so caregivers can clock in for shifts with a mobile app and reliably receive electronic payment. Government and its agencies are often slow to adopt new technologies. There exists a huge need for specialized tools to help these public programs run more efficiently and at a lower cost. Easy access to medical records and the medical data is accessible to all healthcare providers.

6. Resident Scheduling and Communication Platform (B, C)

Problem: Tracking resident schedules and communication is frequently managed manually with a paper-based system. Chief residents in charge of managing residents, struggle with fulfilling availability requests and keeping schedules up-to-date. Communication among residents is difficult and the system is prone to mistakes.

Probable Solution: A scheduling platform specifically for residents would benefit stressed-out residents and their attending physicians, leading to better patient care. A compliant messaging app to manage scheduling and communication throughout hospitals, which could expand into a doctor to doctor messaging, patient to doctor messaging, nurse scheduling, etc).

7. A tool to manage medication reconciliation(A, B)

Problem: Wrong medication, wrong time, wrong dosage, and noncompliance are just some of the major issues for patients taking multiple medications. The detrimental effects and costs of medication mix-ups in the population is a huge problem.

Probable Solution: Create a platform of trained people that go into the homes of seniors and do medication reconciliation (med rec). However, tools like these leave ample room for error as patients keep taking old drugs and remain responsible for correctly separating their weekly medication. An opportunity exists to build a network of low-cost medication reconciliation specialists.

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8. Build Electronic Visit Verification 2.0 (B,C)

Problem: Medical aid fraud is a big problem in many parts of the country. Caregivers submit timesheets for shifts they didn't work, leaving those needing care alone.

Probable Solution: Electronic Visit Verification (EVV) monitors locations of caregivers which would significantly reduce fraud. It would manage specific reporting requirements, use GPS to track caregivers, automate payroll and optimize staff matching. This would increase the efficiency of healthcare agencies, as well as reduce fraud by providing detailed evidence of services provided.

9. A telehealth platform for integrative medicine (A,B,C)

Problem: People are chronically sick and the medical industry repeatedly fails them by treating the symptom, not the root cause, alongside some patients are very sick and are unable to leave their homes, while others find comfort only in their homes and do not want to visit the hospital for several personal reasons.

Probable Solution: Build an integrative medicine platform to connect integrative medicine doctors with patients across the country using virtual tele-health (video/audio consultations instead of the traditional visit to the doctor's office). Governments, health systems, and patients all realize the financial efficiency and convenience. A more convenient way for consumers to access and increase self-care while potentially reducing office visits and travel time; may also prevent complications and emergency room visits. Deliver healthcare in different forms — reduce visits to building and increase virtual consults. It can also Show patients a flow chart of what patients suffering from the same disease did in terms of physician appointments, drugs, surgeries, etc. Give them a road map based on previous patients.

10. Biosensors and Trackers (A,B,C)

Problem: A lot of times medical problems occur because of late detection or inability to continually monitor patients and their medical problems.

Probable Solution: Technology-enabled sensors to detect any kind of medical issues, activity trackers, monitors, and sensors incorporated into clothing, accessories, and devices that allow consumers and clinicians to easily monitor health.

11. Health Marketplace (A,B,C)

Problem: We know how expensive medical treatment can be for the common man and affordability is a problem.

Probable Solution: Have an online marketplace (like Amazon) which will include products such as healthcare services with costs; ads from providers; and consumers can comment, rate the services and have information on physicians as well.

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12. Disease Prevention, Surveillance and Monitoring (B,C)

Problem: Often times, it is difficult to monitor and survey disease outbreak especially in rural areas, which further leads to complications and widespread outbreak.

Probable Solution: As with the saying, prevention is better than cure, a platform (hardware/software) that can prevent, detect, monitor and notify authorities on disease outbreaks.

13. Health Inertia (A,B,C)

Problem: Many people with chronic conditions fail to take measures and steps needed to live healthier lives. Improving clinical outcomes for these types of patients will mean motivating and engaging them to face personal health challenges and helping them navigate the intricacies of the journey ahead.

Probable Solution: A platform (hardware/software) based on gamification to help them on the recovery and healing process and journey.

14. Issues relating to workforce (C)

Problem: a) Doctors: the current system of postings makes it very difficult for young doctors to develop expertise and to use that expertise in a sensible way. Most senior doctors in the government system are foreigners. They are not qualified to train doctors to be consultants under the West African system (which is a good system). This means that young doctors can't currently get their postgraduate training in Gambia. Instead the MOHSW has to pay other West African countries to provide this training, as well as paying the salary of said doctors during the time they are away from Gambia for this. It would be better value for money to pay a small number of senior consultants to work in Gambia during sabbaticals. The Nigerian system allows this and UK doctors may also be happy to come for this reason. Gambia would benefit from the service of these doctors, from the service of the trainee doctors and would end up with its own senior doctors. The surgeons are ahead of the other specialties on this, so perhaps they have something to teach everyone else.
b) Nurses: the main issue here is retention. This requires adequate pay and incentives (in terms of satisfying career pathway). A focus on quality improvement methodology (look at www.ihl.org for what this means) would help. It would also improve the quality of care across the service and IHI might even be able to help with some funding if a countrywide programme was being started.

Reducing random postings and there being clear fair rules about how time in the provinces is allocated would also be good and help with improving the attitude and engagement of staff.
c) Proper workforce planning is needed - this includes other cadres, such as pharmacists, radiographers, lab techs etc.

Probable Solution: A platform (hardware/software) based to access and solve the need above.

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15. Supplies Inventory Management (C)

Problems & Opportunity:

- a) big bits of medical equipment: like scanners, laboratories etc. There needs to be a needs assessment nationally, so that MOHSW knows what it needs, then when donors come, Gambia can determine the agenda rather than it being imposed from outside. When equipment is given / purchased plans need to be put into place for provision of maintenance / necessary consumables and trained staff so that the equipment can be in effective use for a long period of time.
- b) Small Medical Equipment: this tends to disappear. The best approach would be to have a proper tagging system in use across the health system. Items should be clearly marked as belonging to MOHSW, along with an advertising campaign, so if someone is seen using it in another context the public know it shouldn't be there had what to do about it. There could be RFID tagging which could be further used for tagging.
- c) Drugs and Other Consumables: Good planning, with a robust ordering system and proper budgeting is needed. Clear efficient systems for distribution of these drugs and good management of drugs approaching expiry is important. A narrow formulary which is kept in stock makes a lot of sense (this is current practice to a large extent).

16. Structure Of Health Services (C)

Problem & Probable Solution:

- a) There's a big problem with horizontal v vertical services. Vertical services are disease specific. Patients with several diseases might need to go to more than 1 service and support structures end up being duplicated. Again it means that donors determine priorities instead of MOHSW. Other countries have decided that they are going to integrate services, use the savings from reducing duplication to sell it to founders and this then enables them to provide services that are not obviously funded. Hepatitis B services can easily be integrated into HIV care for instance. TB and HIV also naturally fit together in this way.
- b) Funding: A lot of funding comes from outside The Gambia, eg from GAVI for vaccines and GFATM for HIV, TB and malaria. But patients still have to pay for lots of services and it is not obvious to them what the fees should be. This opens up lots of possibilities for extra payments to be demanded. WHO have been encouraging countries to consider universal health care access (which means free access for government services). There are advantages and disadvantages to both systems. If charges are going to be made, then they should be well advertised, so that patients know what they should be paying and what is irregular. Even where fees are being collected, at present it is easy for the money to disappear. Nigerian hospitals often use banks to collect fees to ensure nothing can go astray. Some system like this, or like the MRC one, where the request doesn't reach the lab or pharmacy if there is no payment recorded, would be good.
- c) Private and NGO services: There are innumerable private pharmacies and many clinics. It is not clear

HackWeakEnd, is a Youth Led, Social-impact, Tech-for-good Initiative focusing on impact and sustainability by bringing people together to HACK (creative problem solving) the WEAK-ENDS (socio-economic problems- we coined the word) affecting our society.



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that they are all properly authorized and have qualified people working for them. There is no clear list of recognized doctors and the public don't know how to recognize qualified people. This is very important to stop people being exploited. The Medical and Dental council and the MOHSW need to act to improve this. One proper regulation is in place, there is also a need for quality control in this sector.

d) Gambia is a small country and it may be that it is not appropriate to provide every specialist service in country. For these procedures, there should be a clear proper system for referral outside the country or for specialists to come in and provide the services. There are doctors in Dakar willing to do this in either direction, but it need proper regulation and coordination, to protect patients from exploitation and to provide access to everyone (not just the rich and connected).

17. Health Records (A,C)

Problem: A huge problem faced by doctors and patients is the fact that patients move from clinic to clinic and do not have any record of what they have received or what is already known. This means that each doctor has to start again and that patients can be given the wrong drugs. It leads to lots of duplication and wastage and also can be dangerous - when a diagnosis which means a drug is not safe is not communicated for instance. The best solution to this would be to have a single countrywide patient held record, which every healthcare worker knew to ask for and to write a summary of tests done, diagnoses made and treatments given. Some other African countries already have this (Malawi) in the form of a patient passport which is a small book every patient carries. Better still in this day and age would be a secure online system, linked to the patients' national ID number, so there's no duplication and which all healthcare professionals could access. There are some free US or EU compliant systems available that do this. Look at PocketMD for one example.