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Healthcare in Honduras

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Healthcare does not exist in a vacuum. It is influenced by the geography of the area where it is provided, the infrastructure available, the politics that impact its funding, and many other factors. The Honduran Health System is no different. This paper will review the healthcare in Honduras and the challenges to its effectiveness. The first area that will be addressed is the geography of Honduras and how this geography has affected the ability of its citizens to access the services provided by the Health System. The second area to be covered will be the infrastructure and training that is available to healthcare providers in Honduras. The third area to be covered will be the history of the country and how it has contributed to the current political situation. Finally, we will focus on the instability and corruption of the Honduran government and the negative impact it has had on the Health System.

After presenting the issues that plague the Honduran Health System, possible solutions will be explored and their relative merits will be evaluated. These solutions will consider the options for access to healthcare services based upon the geography and infrastructure of the urban, rural, and remote regions of the country.

Healthcare in Context

Geography

Located in Central America and sharing borders with Guatemala, El Salvador, and Nicaragua, Honduras has coastline on both the Atlantic and Pacific oceans. Inland from the coasts, much of the country is mountainous with the Central American Cordillera Mountain range cutting through its heart (Figure 1.)



Figure 1A. Map of the region surrounding Honduras.
<https://followthepin.com/where-is-honduras/>



Figure 1B. Map displaying the geography of Honduras.
<https://www.mapsofworld.com/answers/geography/what-are-the-key-facts-of-honduras/>

The vast swathes of the country that are covered in mountains and hills are home to most of the country's population. The mountainous regions near the border with El Salvador in the southeast are where most of the rural population resides, while the northeastern area is sparsely populated with only 9% of the population occupying a region that makes up 45% of the country's landmass (CountryReports, n.d.). Honduras is unique among Central American countries because it has two urban population centers of note. Other Central American countries have urban populations that are almost entirely housed in their capital cities. In Honduras the urban population is split between the capital city of Tegucigalpa and the city of San Pedro Sula, which is the commercial center of the country (*Population Density*, n.d.). A small fraction of the population lives on the Bay Islands off the northern coast of Honduras (*Honduras: Country Data and statistics*, n.d.).

The geography and population distribution of Honduras has greatly impacted their culture and their healthcare system. The isolation of remote and inaccessible mountain villages has led to a large fraction of the Honduran population living far from easy access to the healthcare

services offered in the more urban centers around Tegucigalpa and San Pedro Sula (U.S. Embassy in Honduras, 2022). There is a lack of ambulance services and other methods of transportation from these remote villages to the hospitals and other health centers that prevents the rural population of Honduras from accessing the services that they require to maintain their health. The rural regions do not have general surgery hospitals and any acute trauma that requires surgical treatment necessitates travel to an urban center.

Training and Infrastructure

The geographic conditions that limit access to adequate healthcare services are further exacerbated by the scarcity of trained medical professionals. According to data from the World Health Organization in 2017, there are approximately 5 doctors for every ten thousand Hondurans (*Medical doctors (per 10 000 population)*, n.d.). This is incredibly underwhelming when compared to the surrounding countries of El Salvador with 29 doctors per ten thousand people, Guatemala with 12.41 doctors per ten thousand people, and Nicaragua with 16.65 doctors per ten thousand. Each of the countries that borders Honduras has more than twice as many doctors per capita. This demonstrates the severe lack of trained personnel to provide the health services that the country needs. The scarcity of trained professionals is one of the reasons that healthcare services are only available in the more urbanized parts of Honduras. There are simply not enough doctors to open clinics out in rural regions with low population densities. The doctors must practice where they can provide care to the greatest number of people, and this causes them to congregate in the more developed regions of the country.

Another factor that contributes to the lack of healthcare services in most of the country is the lack of healthcare infrastructure, and infrastructure in general. According to the Global Health Security Index, Honduras is ranked 131 out of 195 on the capacity of their healthcare

centers. They have an index score of only 18.5 out of the 100 points that are possible, although this score is an improvement over the 1.9 that they received in 2019 (GHS Index, 2021). The capacity of healthcare centers is considered to be an indicator of the healthcare infrastructure of a country. Rural communities do not have reliable or easy access to electricity or clean water, which are both necessary for the operation of a medical clinic (Andréu, 2012). The low score for capacity of their healthcare centers and lack of access to the utilities medical clinics need means that doctors must remain in the cities and more developed regions where they have the infrastructure available to support them. A doctor in the rural mountain communities would not have access to the medical resources that are essential for performing their job.

Healthcare infrastructure is not the only area in which Honduras is lacking. Part of the reason that the rural mountain communities struggle to access the healthcare services located in more developed areas is due to the lack of roads and other easy forms of transportation throughout the country. There are few paved roads leading to the mountain communities that are home to around 75% of Honduras 'population. The roads that do exist are often impassable during the rainy season which lasts about 6 months out of the year (Andréu, 2012).

History and Political Situation

Honduras was originally part of the Mayan empire that also included Belize, the Yucatán region of Mexico, and the northern parts of Guatemala. Upon the collapse of the Mayan empire, various groups split off and settled around the mountains of Honduras. These indigenous peoples would eventually be subjugated and unified in a process that began with the arrival of the Spaniards in Central America during the early 16th century. Christopher Columbus made landfall on the Bay Islands in 1502 and claimed both the islands and the mainland for Spain, even though the land had already been occupied by the remnants of the Mayan empire for many

years. Twenty years after Columbus first lay claim to Honduras, the first attempt to settle the land occurred under the leadership of a Spaniard named Gil Gonzáles de Avila. In opposition to Avila, Hernán Cortés, the man who conquered Mexico, also sent an expedition under Cristóbal de Olid to lay claim to the land. However, once Olid established a settlement in Honduras, he betrayed Cortés and set himself up as governor. In response, Cortés sent Francisco de las Casas to deal with the upstart Olid. Olid managed to capture and imprison both Avila *and* Las Casas but was betrayed and killed by his own men. Cortés was then forced to travel to Honduras himself to cement his hold over the land. After Cortés returned to Mexico, Don Pedro de Alvarado arrived in Honduras on behalf of the Spanish crown and established the modern port city of San Pedro Sula, as well as the city of Gracias later on. However, the indigenous peoples of Honduras did not accept Spanish rule without a fight. In 1537, a Lenca chief named Lempira gathered a coalition of two hundred native tribes to expel the Spaniards from their ancestral lands. The revolt was put down after Lempira was assassinated during peace talks. Honduras would be controlled by Spanish interests and used as a mining province for the next two hundred years until the independence of Central America from Spain was declared in 1821 (Kästle, n.d.).

Spain was weakened at the beginning of the 19th century due to the actions of Napoleon Bonaparte. The abdication of the Spanish throne caused unrest in Spain and its Central American colonies, which culminated in all of Spain's Central American provinces declaring their independence in 1821. After gaining its independence from Spain, Honduras was annexed by Mexico for a year and then joined the United Provinces of Central America in 1823. Honduras remained a part of the United Provinces of Central America until the federation collapsed fifteen years later (*The Early Independence Years, 1821-99*, n.d.). After the collapse of the United Provinces of Central America, Honduras was truly independent for the first time in three hundred

years. This independence was not beneficial for the country however, and Honduras suffered for it.

The cities of Tegucigalpa and Comayagua developed a bitter rivalry that stemmed from their competition for the position of the premier mining town and center of industry for the province when it was still under Spanish rule. The rivalry that developed between residents of these towns as they attempted to elevate their respective town above the other persisted long past the period of Spanish rule and created a divide within the fledgling country (*Colonial Honduras*, n.d.). The situation in the newly independent Honduras was only worsened by the political unrest in its neighbors. Guatemala, Nicaragua, and El Salvador also experienced a clash from the same political ideologies that split Honduras; the fight between the liberals and the conservatives. Throughout the rest of the 19th century Honduras experienced an extensive civil war between caudillos that claimed the allegiance of one of these two parties. These caudillos, who were modern day warlords, fought among themselves for control of Honduras and the fighting lasted almost continuously until the beginning of the 20th century (Kelley, 1951).

The 20th century was characterized by the encroachment of US interests upon Honduras with the rise of the banana industry. The Standard Fruit Company established banana plantations in Honduras and other fruit companies soon followed suit (*The Expanded Role of the United States*, n.d.). The fruit industry soon became the core of Honduras 'economy and the fact that it was controlled by foreign interests left the country economically and politically unstable. This instability allowed multiple coups to occur throughout most of the century and military might was still the main requirement for holding political office. In 1981 the Cold War against communism caused the US to intervene in Honduran politics. Nicaragua had fallen under the control of a communist regime and the US required a foothold from which to monitor and

combat the communism that had taken root in Central America (Center for Justice and Accountability, n.d.). The US intervention allowed Honduras to hold its first round of legitimate elections and the country took its first steps toward democracy. Honduras continued to hold democratic elections and the transfer of power became peaceful, without requiring military coups for the next 28 years (*Honduras: A Country and a Coup*, n.d.). All the progress made in those 28 years of the latter part of the twentieth century was undone in 2009 when military forces carried out a coup to oust President Manuel Zelaya. The military aligned itself with multiple business and media interests to seize control of the Honduran government and established itself as the dominant party (Salomón, n.d.).

Government Corruption and the Health System

Since 2009 when the military coup occurred, corruption has continued to plague Honduras and its healthcare system has suffered for it. The Honduran health system consists of the private sector and the public sector. The private sector is relatively small with only 10% of the population availing themselves of its services. It consists of institutions that are independent of the government and offer their services to individuals without governmental management. The remainder of the population is covered by the public sector of the health system. The public sector is divided into two organizations. The Ministry of Health (SS) covers 60% of the population while the Honduran Institute of Social Security (IHSS) covers another 12%. The remaining 18% of the population are Hondurans who have no access to any of these services and receive no healthcare (Carmenate-Milián et al., 2017).

The Ministry of Health is the organization that is responsible for regulation and organization of the various healthcare services of the country. They set national health guidelines, oversee coordination among various healthcare services, and monitor the providers'

quality and efficiency of service. The Ministry of Health also runs the public hospitals throughout the country and provides the general public with the healthcare services that they require (Pan American Health Organization/World Health Organization, 2009).

The IHSS is the organization responsible for collecting funds from employers and the workforce through taxes and then manage the funds to provide healthcare services for the employees who contribute and also purchase a public health insurance policy through them Pan American Health Organization/World Health Organization, 2009). The IHSS is the second largest provider of healthcare services in Honduras. It is responsible for providing 14% of all the hospital beds in the country compared to the Ministry of Health that provides 77% of the hospital beds in the country. The private sector is only responsible for 9% of the total beds (Carmenate-Milián et al., 2017). The IHSS functions similarly to a normal health insurance provider except that they also operate the hospitals where the insurance is used. The money paid by the policyholders is directly responsible for paying for the healthcare services that their policy entitles them to.

The issue that has arisen with the Health System of Honduras, and especially the IHSS, is corruption. The money that is gathered from the populace for the purpose of improving and running the hospitals and other services that fall under their purview is instead used to line the pockets of government officials. The transient and unstable nature of Honduran politics means that it is unlikely that any one regime will last long. The officials in charge of the Health Systems such as the IHSS know this and attempt to gain every benefit that they can from their position of authority while they still hold it. The embezzlement of funds meant for improving healthcare has contributed to the dismal state of the Honduran Health System. The corruption has taken many forms, from lopsided contracts with suppliers that provide kickbacks, to outright theft of funds

through payments to shell corporations belonging to the official who is making the payment (Sabet, 2020). One specific example is from 2011 when officials in the IHSS used front companies to embezzle 57.9 million lempiras (2.4 million US dollars) from the IHSS. The officials made an emergency purchase of a water control system for the Hospital of Specialties in Tegucigalpa and gave the contract to a company that had no physical address. Investigators later concluded that the company was a shell corporation with the purpose of siphoning funds for the officials. The investigators compared the quoted costs to market value and estimated that the shell corporation had overcharged by about 57.9 million lempiras (Castro-Hernández, 2015). Another example of embezzlement of funds from the IHSS occurred in 2013. The financial manager and the manager of supplies and purchases for the IHSS colluded to pay various shell corporations 325 million lempiras (13.3 million US dollars) for goods and services that were never delivered. The two officials then used the funds to buy real estate through real estate companies that were run by their wives (*Wives of Former IHSS Officials Led a Network of Figureheads*, 2014).

When officials know that they could be ousted by a coup at any time, they are incentivized to abuse their power while they still have it. Each administration knows that they will eventually be replaced, and so a culture has been born in which embezzlement is seen as a standard practice for government officials. An unspoken agreement is reached between the various parties that vie for power and nobody is seriously punished for their corruption. After all, if you punish the previous regime for their corruption then it sets a precedent for what the next regime will do to you. According to a study, only one instance of corruption that was prosecuted between 2008 and 2016 resulted in jail time (Association for a More Just Society, 2020).

Medical Volunteerism

Western healthcare professionals have contributed much to Honduran healthcare. Unfortunately, not all their contributions have been entirely positive. Most healthcare workers do not have the freedom to donate vast amounts of their time to medical missions, resulting in most medical brigades operating short-term, on a scale of weeks rather than months or years. Medical teams will provide care to remote and rural communities for a short while and then leave, only for another group to come provide similar care months later. These Western healthcare workers provide free healthcare services that sometimes overlap with the services that the Honduran government already provides. This unintentionally undermines the existing healthcare system and causes many Hondurans in remote and rural communities to rely on these NGOs and volunteers for their healthcare instead of seeking treatment from the existing system. They will sometimes even avoid getting treatment for a medical condition from their national health system in the hope that a medical brigade will arrive and offer the treatment for free (McLennan, 2014).

This isn't to say that medical missions do only harm. They do provide valuable services that may be otherwise inaccessible or unaffordable to remote communities. These medical missions also fill in the gaps that exist in the local healthcare system. They provide services that local clinics do not have the capabilities for such as surgery. The medical brigades also manage to accomplish a lot even in the limited time that they are there, seeing thousands of patients in just a few weeks (McLennan, 2005).

Regional Solutions for Honduran Healthcare

For the purposes of suggesting solutions that are tailored to the specific needs of each community, this paper will divide Honduras into three general regions. The urban region will consist of all the cities and heavily populated areas of the country. The rural region will consist

of the areas of Honduras that are located far from the cities and the healthcare services located there. However, the rural regions do have roads or public transportation that allow year-round travel to the urban centers. The final region will be the remote region, consisting of the communities that are isolated from the more developed sections of the country. They are areas where flooding during the rainy season renders their roads impassable or where the only reliable access to the community is on foot.

Possible Solution for the Urban Region

The urban region of Honduras has healthcare services available and it is where most of the country's healthcare professionals are based. People who live in this region do not struggle with physically accessing the healthcare services and the biggest hurdle that they face is the corruption that increases the cost of health care while decreasing the quality of the services provided (Goodwin, 2021). The best way to improve healthcare in the urban region of Honduras would be to find a way to limit and combat the effects of governmental corruption on the healthcare system.

One possible solution that would help combat corruption in the healthcare system would be the implementation of artificial intelligence, or AI, to monitor government spending and actions related to healthcare. Artificial intelligence can sort through and analyze vast amounts of data more cheaply and quickly than has been possible ever before. One example of successful use of artificial intelligence to combat government corruption in healthcare is available just to the north of Honduras, in Mexico. Mexico uses an AI algorithm to process government contracts with private companies to ensure that they do not misallocate funds or offer contracts that are far above market value (Bîzoi & Bîzoi, 2022). The use of government contracts to funnel funds that were meant for improving healthcare services into the pockets of officials is quite common in

Honduras as explained in previous sections. The inherent instability of the government that stems from its history of military coups contributes to this (Alexandra, 2020).

Artificial intelligence is an unbiased, cheap, and fast way to limit government corruption, but it does have some drawbacks. The biggest drawback to using artificial intelligence is the prerequisite digitization of government records. In order for the artificial intelligence to have access to, and therefore monitor, government contracts, the contracts must be digital (U4, n.d.). Fortunately for Honduras, this prerequisite is already being met with assistance from foreign investors. The Inter-American Development Bank gave 134.7 million US dollars to Honduras in 2019 to assist in digitization of their government processes (Inter-American Development Bank, 2019). The US government has also aided in digitizing Honduras. In 2022, the US Trade and Development Agency provided the funds necessary for Honduras to digitize two of its ports. The increase in commerce this allows between the US and Honduras was used to justify the cost (US Trade and Development Agency, 2022). The increasing digitization of the Honduran government means that the use of artificial intelligence to combat corruption and monitor officials is quickly becoming a reasonable solution. The implementation of AI at the early stages of digitization would set a precedent for unbiased and aboveboard government activities in the healthcare sector that would benefit Hondurans for years to come.

Possible Solutions for the Rural Region

The rural region of Honduras has roads and other transportation options that make travel to the healthcare services in the urban region possible, if not reasonable, for quick and efficient access. The biggest problem that this region faces is the fact that services in the urban region are located too far away to be easily accessed. Traveling across the country on poorly maintained roads may be possible for Hondurans who are healthy and can afford to stop working for the

time required to travel, but it is unreasonable to expect of those who are sick or injured and who need to work continuously to support their families.

A possible solution that would address this issue is the creation of small, local clinics staffed by volunteers with basic training. The volunteers at these clinics would be trained in things such as first aid and proper technique for collecting the samples needed for diagnostic tests. This might include drawing blood and collecting urine or stool samples, or dressing wound with supplies kept on site. The volunteers would assist the patients at the local clinic to the best of their ability and then would travel to the urban region and report to a larger clinic located there once or twice every week to collect the needed supplies. They would submit the health records that they collected from their patients at the local clinic for review by a primary care physician or other trained professional at the larger clinic via an app on their phone. The volunteer would then receive directions about treatment from the larger clinic. These volunteers would be drawn from the local population and would mostly likely consist of middle-aged women who do not otherwise have an assigned role in providing for their communities. They would receive training in useful skills and might be paid a small stipend in order to incentivize the work (Zikhathile & Atagana, 2018). A similar system has been effectively implemented in South Africa to improve healthcare access in rural communities there (Barjis et al., 2013).

Another solution for developing local clinics, besides training volunteers, would be to use nurse practitioners. Training a nurse practitioner is much cheaper than training a primary care physician. In the United States, a nurse practitioner can be completely trained for the same amount of money required for a single year of medical school (American Association of Nurse Practitioners, 2013). Because Honduras has a shortage of physicians, nurse practitioners would serve as a viable alternative. The cheaper cost of training nurse practitioners would allow

Honduras to increase the number of trained professionals that are able to provide basic healthcare services without sinking increased funding into the healthcare system. A primary care physician that requires four years of schooling could be replaced by four nurse practitioners for the same cost. Increasing the total number of healthcare providers in the country would allow more of them to leave the urban region and establish clinics in the rural regions. Even though these nurse practitioners will not be as extensively trained, they would still be completely qualified to provide primary care to those who visit the local clinics located in the rural region. A system of local clinics staffed by nurse practitioners would be able to provide primary care and then refer patients to larger and more capable clinics when necessary. This would increase access to primary care in the rural region of Honduras while decreasing the frequency at which residents in the rural region must commute to the urban region for care (Pericak, 2011).

Besides the establishment of local clinics, mobile clinics could also serve as a solution to increase access to healthcare services. Mobile clinics are medical clinics that are set up in buses, trailers, or are otherwise designed to be transportable. The rural region is characterized by roads that are accessible year-round and this would allow mobile clinics to travel around the region as necessary. A mobile clinic would be able to provide coverage of a much larger area than a stationary local clinic and would serve to decrease the number of providers and amount of equipment needed to cover the rural region of Honduras. The mobile clinics could travel through the region on a schedule so that Hondurans that require care know exactly where the nearest mobile clinic is currently located. Instead of traveling all the way to the urban centers, they could instead just find the nearest location where a mobile clinic is currently set up. Even if the clinic is not currently in their village or community, it will still be much closer than the cities of the urban region (Tulane University, 2023). Mobile clinics would be an easy and cost-effective way to

make limited resources go further and particularly useful for managing chronic health conditions that require regular monitoring and medication refills.

Possible Solutions for the Remote Region

The remote region of Honduras does not have the infrastructure, such as roads, necessary to utilize the same solutions as the rural region. Their inaccessibility for part or all of the year prevents trained healthcare professionals from traveling between any local clinics that might be established and the larger clinics located in the urban region. The lack of access also precludes the use of mobile health clinics. The people in the communities of the remote region cannot travel to the healthcare services offered in the urban region and the locations are too inaccessible for these services to be brought to them.

Because trained healthcare providers cannot physically travel to communities in the remote region, telemedicine would be the best solution. Telemedicine involves the use of electronic communication to connect patients and providers across vast distances with ease. The patient would use a computer setup and specialized diagnostic devices to monitor their vitals and assist the physician in gathering the information needed to provide long-distance care. The communities in the remote region of Honduras do not all have access to the required computers and equipment or the stable internet connection that is required to connect the patient and the doctor. To address this issue, a single computer and set of diagnostic equipment could be provided to each community and housed in a communal building that serves as a clinic. Satellite uplinks from the telemedicine rigs could then be routed to centralized clinics in the urban region. The people of the community would use the telemedicine uplink and have immediate access to a centralized core of trained healthcare providers in the urban region whenever they needed care. This system would only work for chronic conditions and other non-acute health problems. The

providers at the central clinic could help with the management of medications and offer advice but would not be physically present to offer other assistance. The people who live in the remote region suffer from many of the same chronic conditions seen in the US, with the most common being hypertension, arthritis, heart disease, diabetes, high cholesterol, and asthma. The telemedicine uplinks would allow providers in the urban region to monitor those with these conditions and they could then send all of the medications that the community requires in a single shipment (Piette et al., 2012). Even if only providing help with chronic conditions, the telemedicine system would still decrease the need for people to visit clinics in the urban region. The establishment of these telemedicine centers in the remote communities would allow access to basic healthcare services without necessitating travel. A similar but lower tech system has already been implemented with great success in Peru (Martinez et al., 2004).

The remote telemedicine clinics would also serve to increase the efficiency and reach of the providers who are based in the central clinics. Instead of having to travel from community to community, the providers can remain in one place yet reach a multitude of different isolated villages via the telemedicine uplinks. This increases the efficiency with which they can see patients and therefore makes each trained healthcare professional stretch further (Raj & T K, 2021). The telemedicine clinics would not only increase access to healthcare services for those living in the remote region but would also serve to increase the capacity of the Honduran healthcare system without increasing the number of providers.

Improving Medical Volunteerism

Medical missions can reduce some of their negative impacts by partnering with the local healthcare system and by focusing on education. Partnering with local organizations and healthcare providers fosters a greater understanding of what the needs of the communities are

and allows more seamless coordination with services that are already being provided. If medical brigades focus on providing different services than the local healthcare system, they will avoid undermining the services already in place. One organization that does this well is Partners in Health, or PIH. In Mexico, PIH places an emphasis on providing training to residents who want to become community health workers. These community health workers are then able to assist their neighbors in following treatments prescribed by the clinics, and by helping them manage their medications. Partners in Health has also coordinated with the Ministry of Health in Mexico to operate a birthing center that is staffed by local first-year nurses who are supported by an experienced doctor at the nearby hospital run by PIH (Partners in Health, n.d.). This coordination between western and local healthcare workers has allowed PIH to provide high quality care that seamlessly integrates into the preexisting healthcare system.

Focusing on education of local healthcare professionals is also a way in which short-term medical missions can have a positive long-term impact. Instead of providing healthcare services for a short time and then leaving, medical brigades can instead spend that time training local healthcare workers. This will improve the quality of care in the local health system and this change will last long after the medical volunteers have returned home. This training is especially impactful when it comes to surgical missions. New surgical techniques are always being developed and training local surgeons in the most recent techniques can be a way to have a lasting positive impact (McLennan, 2014).

Conclusion

The challenges that the Honduran healthcare system faces are manifold yet interconnected. The instability of the government, and lack of prosecution, incentivizes the officials in charge of the healthcare system to embezzle funds. The lack of funds reduces the

number of physicians that are trained in Honduras, while the ones that are trained remain in the urban centers where they can provide care for the most people. The geographical barriers to access prevents Hondurans living in remote and rural communities from traveling to these urban centers to receive care and the lack of physicians means that these remote communities do not have physicians to operate local clinics.

The solutions to the challenges that Honduras faces can be tailored to each of the individual issues but will also have a ripple effect due to how intertwined the challenges are. By utilizing AI in order to monitor government funds earmarked for healthcare and reduce embezzlement, there will be more money left over to train physicians. By using funds to train nurse practitioners instead of primary care physicians, the number of available providers that can be trained to staff local clinics outside of the urban centers would increase. By installing telemedicine rigs in remote communities, each trained provider could provide care more efficiently and for more people. All of these solutions can be implemented separately, but together their effect would be amplified and could change the face of Honduran healthcare.

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