

Health Systems Resilience: A Systems Analysis



A Case Study of Health Service Provision in Yobe State, Nigeria in the Context of the Boko Haram Insurgency

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HEALTH SYSTEMS RESILIENCE

Health Systems Resilience: A Systems Analysis is a project which seeks to apply a systems dynamics approach to understand, predict and identify mechanisms that influence the resilience of health systems in contexts of adversity. Resilience has emerged as a dominant concept underpinning development assistance and humanitarian support in contexts vulnerable – through conflict or natural disaster – to crisis. A systems dynamic approach, which lends itself to group model building through intensive, participatory consultation with stakeholders and representation and refinement of models using graphical systems tools, offers an effective means of exploring the determinants of systems vulnerability and resilience.

The project is implemented by the Mailman School of Public Health, Columbia University in collaboration with the School of Public Health, University of Western Cape. The work is funded by the UK Department of International Development (DFID) through the ReBUILD program coordinated by the Liverpool School of Tropical Medicine and Queen Margaret University, Edinburgh.

A series of three case studies are planned during the course of the project. The first, a historical analysis, considered measures addressing the disruption of HIV services in Cote d'Ivoire following the disputed presidential election of 2010¹. This second case study focused on circumstances in the health sector in Yobe state related, and in response, to the Boko Haram insurgency beginning around 2011 and continuing to the present. The final case study will focus on more chronic health systems challenges in one district of Eastern Cape province in South Africa.

The case study was completed in collaboration with the Partnership for Reviving Routine Immunization in Northern Nigeria and

Maternal Newborn Child Health (PRRINN-MNCH) programme. PRRINN-MNCH has been operating in Northern Nigeria since 2008 with support from the UK Department of International Development (DFID) and the State Department of the Norwegian Government.

The programme aims to improve maternal, newborn and child health in Northern Nigeria by improving access to maternal and child health, including routine immunization services, in four States: Jigawa, Katsina, Zamfara and Yobe. Of these four states it is the latter that has been most significantly impacted by the Boko Haram insurgency. It was on this basis that Yobe was selected as the geographical focus for the case study. The focus of the analysis was the impact of the insurgency on the health system and the steps taken to respond to presented challenges. PRRINN-MNCH staff assisted in the planning and selection of the case study site and implementation of the entire study exercise.

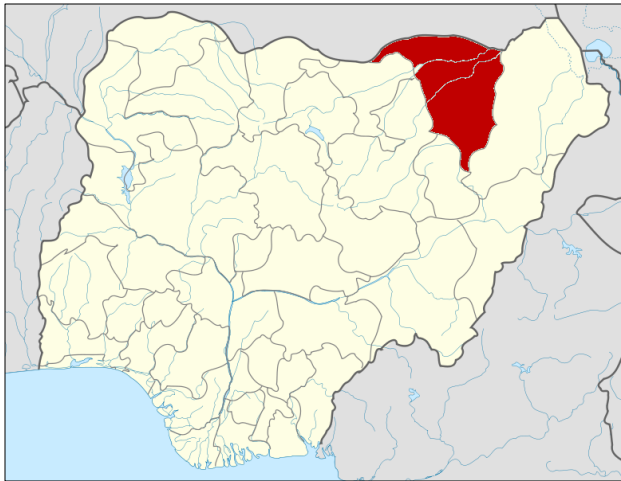
YOBE STATE AND THE BOKO HARAM INSURGENCY

Yobe State has experienced attacks from the militant group popularly known as *Boko Haram* ('against Western education') since 2011. Initially the group targeted police and churches, yet from 2012 the attacks – bombings, military raids and robberies – expanded to target mosques, schools, hospitals, and banks.

The neighbouring states of Borno and Adamawa were similarly affected and a state of emergency was declared in these states in May 2013. The situation created much fear and panic among citizens. People left their homes and migrated to what were seen as safer locations. This significantly disrupted livelihoods as people were displaced from their land and other places of work. Security concerns and travel restrictions imposed by the state severely curtailed opportunities for commerce. As the insurgency evolved, Boko Haram started

¹ Lembani, M, de Pinho, H, Delobelle, P, Zarowsky, C. & Ager, A. (2014) A case study of technical assistance to HIV services in Cote d'Ivoire in the context of civil unrest following the disputed

burning villages and kidnapping community leaders. At the time of writing, Yobe state is under a third consecutive six-month state of emergency. Many organizations have terminated their operations in the state, while those who continued working (such as PRRINN-MNCH) have done so with key activities (such as consultation meetings and trainings) conducted outside the state. This has increased the costs of programme implementation significantly.



Map of Nigeria, showing Yobe State. Source: Wikimedia.org

The health system was majorly affected by these events. Health workers, especially those not indigenous to the state, fled to other states. Indigenous workers were generally reported to have only temporarily abandoned their work places during spikes of insecurity, returning when the situation improved. Some health facilities were directly attacked, with insurgents taking away drugs, hospital equipment, ambulances and other vehicles.

In some instances health workers were abducted, while others were killed by blasts when traveling to or from work. Some hospitals had to be closed for some time until the local situation normalized. Movement for health workers and patients to attend health facilities was a major challenge due to curfews imposed by the security services (the Joint Task Force, JTF). Curfews were regularly declared and significantly restricted movement. When curfews were lifted, delays were frequent because of multiple checkpoints mounted on

the roads. On initial deployment of the JTF, with no established relationship between locals and the largely non-indigenous security forces, harassment was reportedly common, though cooperation grew with greater mutual familiarity.

Other aspects of counter-insurgency response – such as the banning of motorcycles (a favoured means of transport for Boko Haram raids), the prohibition of the growing of any plant up to one meter high (seen to provide cover for insurgents) and the interruption of cellphone service (to restrict contact between insurgents during major anti-insurgency operations) – also contributed to a challenging environment for the functioning of, and access to, health services.

METHODOLOGY

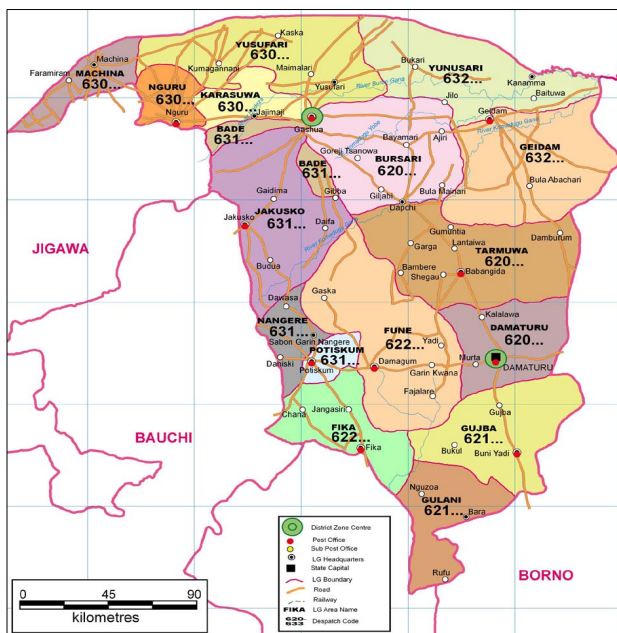
The study was structured according to four distinct phases of activity. The first phase was focused on the development of a scenario definition (defining the bounds of the case study) and subsequent interviews with key informants. The scenario definition was constructed on the basis of preliminary planning discussions with key PRRINN-MNCH staff, including the National Programme Manager, the Deputy National Programme Manager and the Yobe State Team Manager.

This confirmed Yobe as the geographical focus of the study and primary health care provision as the principal service focus of analysis. This also informed a structured interview guide regarding major challenges faced in the course of the insurgency and strategies to address them.

Given logistical constraints on interview coverage and the varied impact of the insurgency in different parts of the state, the scenario definition further focused detailed analysis on three of Yobe's seventeen Local Government Areas (LGAs). These comprised: Damaturu (the location of the state capital, which has been both directly – through attacks – and indirectly – through migration – impacted by the insurgency), Fune (a rural area

directly impacted by the insurgency at varying times) and Nguru (an area that has experienced no direct attacks, but has been indirectly impacted through significant inward migration).

Thirty-nine interviews were conducted across these three LGAs. Interviewees included health managers, local government officials, health facility personnel and patients. In addition, four PRRINN-MNCH staff were formally interviewed: the National Programme Manager, the Deputy National Programme Manager, the Yobe State Team Manager and the Operations Research Coordinator. Thus a total of forty-three interview transcripts were available to inform the second phase of the study.



Map of Yobe State LGAs, Nigeria. Source: Newsrescue.com

This second phase involved preliminary data analysis and planning. Two members of the research team and two PRRINN-MNCH staff based in Yobe served as the core planning team. Each member of the planning team reviewed all transcripts of interviews and then independently identified key themes emerging from them. The members of the planning team then worked together to group themes and consolidate them into defined variables. The planning team then developed an interrelationship diagram (IRD) identifying hat

was suggested – from the data reviewed – to be major causal linkages between these variables. Informed by the IRD the planning group then specified a ‘seed model’ as a starting point for model building at the group model building (GMB) workshop.

Finally the team developed a series of scripts to structure discussion at that workshop. The scripts are a detailed description of the processes followed during GMB sessions (based upon the work of Hovmand² and other colleagues³).



Core planning team members identify causal links

The third phase involved the GMB workshop itself. This was a one-day session for eleven participants, identified by the planning team as representing key perspectives on the functioning of the health systems in Yobe during the insurgency.

This included representatives of the State Ministry of Health, the State Primary Health Care Management Board, and Health Training Institutions (HTI); the Medical Director of Damaturu Specialist Hospital; a local engagement officer who had conducted key

² Hovmand, P.S. *Community Based System Dynamics*. Springer: 2013.

³ Andersen, D.F. and Richardson G.P. (1997). "Scripts for group model building." *System Dynamics Review* 13(2): 107-129.

informant interviews; and four senior staff of PRRINN-MNCH.

Scripts were used to: elicit a shared understanding of key characteristics of the insurgency (using a 'rich picture' exercise); review, confirm, illustrate and elaborate upon the listing of variables identified by the planning team; link these variables, building upon the provided 'seed model', by specifying two preliminary systems models accounting for experience in a specified urban and rural location in the state respectively; and consolidate these two models into a single systems model with the aid of Vensim graphical software.⁴ The GMB session closed with a reflection on the insights prompted by data to facilitate the quantitative refinement of the model.

Phase four of the study involved processes of documentation, refinement and dissemination. A full transcript of GMB discussions was produced, and the data used to elaborate the analysis which follows. HMIS data for particular locations - Damaturu LGA, Gujba LGA (a proxy for Fune LGA, with similar insurgency experience) and Nguru LGA - was extracted and consolidated.



Discussion was prompted by a 'rich picture' exercise

⁴ Vensim is a free software used for developing, analysing, and packaging dynamic feedback models.

STUDY FINDINGS

Fifteen variables were confirmed by GMB participants as key in accounting for health systems functioning during the crisis. These are considered, in turn, below. During the course of modeling, an additional twelve variables were specified as intervening factors clarifying linkages between variables. The linkages identified between all these variables are shown in Figure 1, the systems model developed by participants during the GMB exercise.

Insecurity

Between June 2011 and August 2014 there were numerous documented attacks by Boko Haram within Yobe state resulting in an estimated 1,341 fatalities.⁵ Incidents peaked in October 2012, with over 12 reported attacks and 140 fatalities. There were 252 deaths in Yobe state in the first six months of 2014 alone.⁶ Interviews documented many incidents vividly illustrating this prevailing insecurity: One health facility worker, for example, reported:

"When Dogon Kuka was attacked, people ran away and the health facility was closed for almost three months. One security guard was killed in his house."

Another health worker told of how one day gun shots started when she was in the office and there was no way she could move to her house easily. All the staff lay on the ground, weeping on the bare floor tiles.

Due to such insecurity, many people felt compelled to migrate out of their villages, and health workers left their workstations for safer places. Insecurity also created movement challenges, as people were afraid of being attacked when traveling because insurgents often blocked the roads and attacked people.

⁵ Haken, Nate, and Benjamin Kaufman. "State of Emergency in Nigeria: Balancing Hard Security with Peacebuilding." Fund for Peace. N.p., 29 May 2013. Web.

⁶ "Nigeria Security Tracker." Council on Foreign Relations. Council on Foreign Relations, n.d. Web

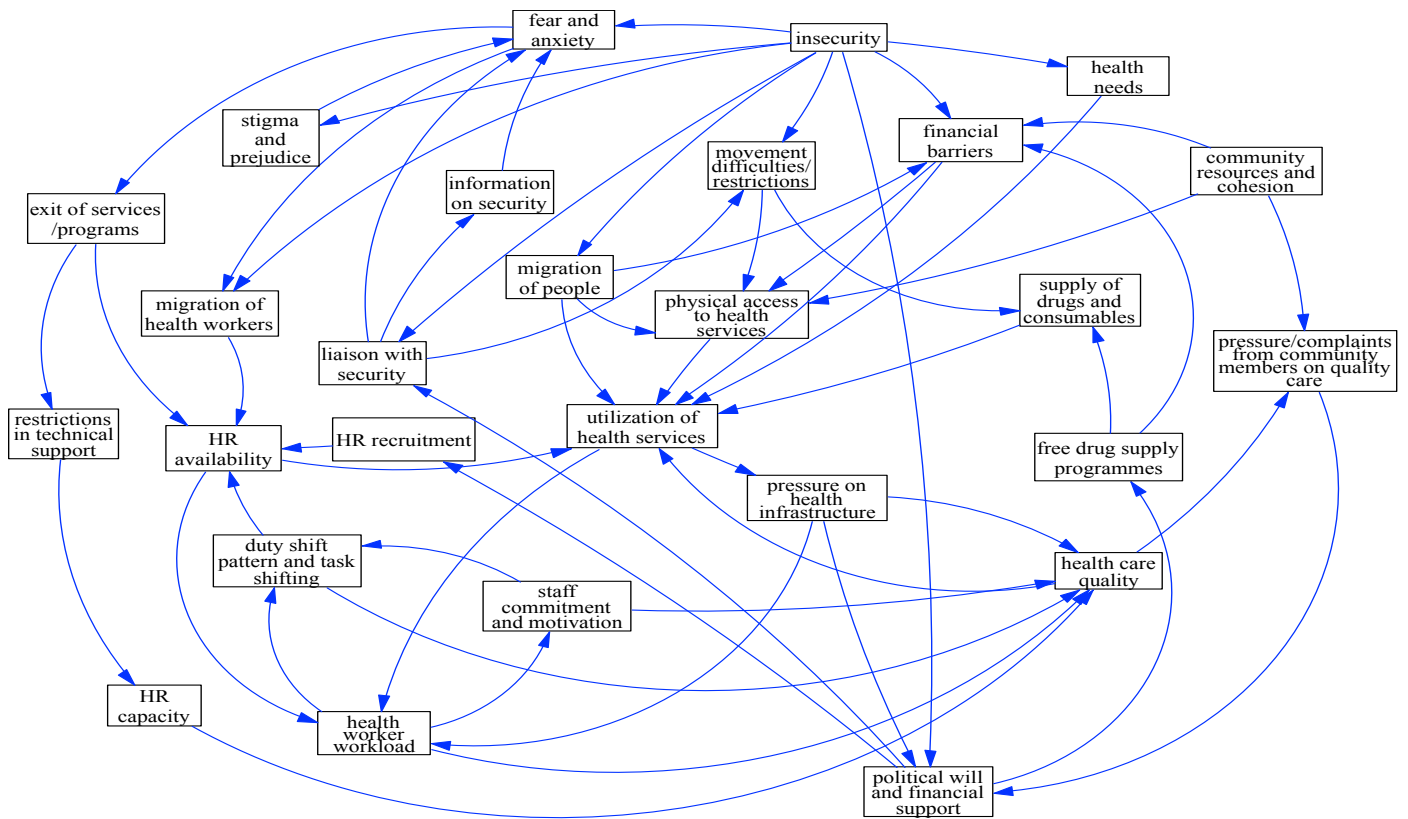


Figure 1: Systems model of factors influencing health utilization and of services quality during the insurgency in Yobe developed through group model building

During the GMB session one participant reported an incident regarding some health workers who were attacked after the prevailing 6.00pm curfew because they had been called to render services at the hospital due to an emergency. Even though they had IDs to allow them travel during curfew hours, the Nigerian police had physically harassed them.

There were a number of reports of the police abusing their power through assaults. This situation was aggravated when the ‘Escobar’⁷ phenomenon was at its peak, since one could not differentiate between the official security forces and criminal gangs because they were all wearing uniforms, carrying guns, and driving HILUX vehicles. Such incidents were reported

to have been at their peak during 2012 and 2013.

Migration of people

As the bombings, abductions and killings became wider and more indiscriminate in their scope, increasing numbers of people relocated to what were perceived to be safer areas. When attacks were concentrated on urban settings, migration was to rural areas. When urban centers such as Damaturu became more secure, attacks shifted to more rural areas, and migration was towards the towns. For example, one of the interviewees in Damaturu reported:

“That time around, the patients have even migrated and left the town because it is our catchment area. Damaturu that was affected by the activities of the insurgents more especially in Gwange area of Damaturu local government.”

⁷ ‘Escobar’ was the nickname of leader of a Damaturu-based criminal gang. They undertook their activities using military uniforms. He was subsequently apprehended and killed by security agents.

A participant of the GMB expressed similar sentiments and stated that in the beginning the attacks were concentrated in Damaturu and people were moving from Damaturu to various places. However the situation changed when Damaturu was heavily secured by armed forces, the insurgents turned to the rural areas, and the migration patterns reversed.

Migration of health workers

Health workers were not spared in the killings and threats. Indigenous workers generally abandoned their workplace temporarily and returned whenever the situation calmed down. However, most non-indigenous workers left permanently. Records gathered from the Yobe state HRIS indicate that the most affected cadres of staff were doctors and nurses/midwives as compared to other staff as presented in Tables 1 and 2.

With the exception of Gujba LGA, Table 1 indicates that the number of health workers in other cadres had increased in 2014 compared to 2010, which is an indication of a higher retention during the crisis.

| Name of LGA | 2010 | 2014 |
|--------------|------|------|
| Gujba LGA | 529 | 292 |
| Damaturu LGA | 468 | 583 |
| Potiskum | 368 | 450 |

Table 1: Number of health workers other than doctors and nurses/midwives in 2010 and 2014 by LGA [Source: Compiled from Yobe state HRIS data]

However, figures in Table 2 indicate a significant decline in the number of doctors and professional nurses/midwives across each of the three LGAs over the same period. For example, the general hospital in Buni Yadi lost all its three doctors it had in 2010 and there was no doctor left at the hospital by June 2014. The general hospital at Potiskum lost about 90% of its doctors over the same period. Only Sani Abatcha State Specialist hospital seemed to have significantly fared better, losing only 30%

of its physicians. 2014 figures are likely to reflect an upward trend from 2013 when the State Governor lifted an embargo on recruitment in recognition of the acute shortages that had arisen (HRIS data is not available for intervening years). Participants in the GMB stated that more doctors are arriving and picking up jobs in hospitals now, hence the increase.

The trend for professional nurses/midwives is similar. For instance, Sani Abatcha Specialist Hospital lost 75% of its professional nurses/midwives while the general hospital in Potiskum lost about 70% of this cadre. Only General Hospital Buni Yadi fared better, losing only about 25% of such staff. Midwives were especially affected because most of them were from other states deployed through the Midwives Service Scheme (MSS) and almost all of them left the state at some point.

| Hospital (LGA) | Dr. | | Nurse/Mvs | |
|---|------|------|-----------|------|
| | 2010 | 2014 | 2010 | 2014 |
| General Hospital Buni Yadi (Gujba) | 3 | 0 | 33 | 25 |
| Sani Abatcha State Specialist Hospital (Damaturu) | 24 | 17 | 107 | 27 |
| General Hospital Potiskum (Potiskum) | 11 | 1 | 86 | 26 |

Table 2: Number of doctors and nurses/midwives in post in 2010 and 2014 [Source: Compiled from Yobe state HRIS data]

Key informants confirmed that during the crisis, most health workers did not want to stay in Yobe state. One participant at the GMB stated:

"In the hostel, a lot of medical doctors left, the National Youth Service Corps (NYSCs) do not come to Yobe at all, not even Damaturu. A lot of non-indigenes left, a lot of indigenes who are outside Yobe couldn't come. But now it has been reversed. There were only four NYSCs who reported initially but now there are sixteen."

The participants reported that more NYSCs were currently coming to take up posts in Yobe state.

Movement challenges/restrictions

The many dangerous roads where insurgents could mount ambushes presented significant challenges regarding movement within the state. However, counter-insurgency measures also led to major travel restrictions. Curfews were sometimes set to begin as early as 4 pm, creating major logistical travel difficulties. At times the JTF blocked roads were considered too dangerous for people to travel on. Diversions, significantly adding to journey times, would generally be provided, but on occasions no alternative routes were available, preventing all travel. Although some categories of health staff were provided with IDs to ease movements, there were still some challenges. One participant noted:

“The ‘Road Pass’ helps most times but still sometimes it wouldn’t because it seems one is exposing himself and you don’t know who else is watching, even the security. It may come across like a particular person thinks he is special and they may follow you and attack you. So at times you may have the pass and may not want to use it.”

Another participant added to this experience stating:

“Sometimes you have to bring your stethoscope out of your car. Some of us have a ‘Road Pass’ to enable us pass the queue but it does not prevent a search. When there is high tension, when you go and meet the security officer, they don’t understand but some of them that understand may agree to search you and let you go.”

Supplies of drugs and consumables

GMB participants confirmed the view emerging from stakeholder interviews that availability of drugs and other consumables at facilities was, in general, not severely disrupted by the insurgency. The State Ministry of Health and facility managers minimized stock outs by

changing deliveries from the usual one-month supply to a three-month supply.

Additionally, facilities were encouraged to order new stocks when they had 50% of the drug stocks remaining. In the context of mass casualty events some short-term drug stock-outs were reported, but restocking was secured swiftly. The decentralized nature of the drug supply chain – with drugs managed at the state – rather than federal level – made it much easier to transport drugs to and from the Damaturu drug store whenever transport routes were secure. Flexibility in local supply routes helped secure supplies when circumstances were volatile.

The GMB participants and key informant interviewees both reported drugs being brought somewhere close to a facility for collection by facility personnel once access was possible. There was some evidence of commercial drug supplies being more severely impacted due to transport difficulties and loss of consumer’s purchasing power. One local drug vendor reported that to get a lorry to take their drugs to Damaturu sometimes took up to two weeks. Even when they got the transport, the price was double because the drivers didn’t want to go to Damaturu due to the insecurity. Another supplier reported:

“I used to sell an average of 30,000 Naira per day but with the insurgency, I could only sell about 10,000 Naira a whole week.”

Physical access to health services

Physical accessibility of health facilities was one of the most important factors influencing patient utilization of health services. Interviewed patients stated that during the critical periods of the insurgency, it was extremely difficult to get to a health facility due to travel restrictions and fear of being attacked.

One patient noted:

“...as you know, we can’t come to hospital easily because of their activitiespeople have suffered a

lot because of the insecurity, even if you are not well and you want to come to the hospital it is a big problem.....if you intend to go to the hospital you are thinking of what is going to happen to you on the way."

Some pregnant women were reported to have died as a result of complications during delivery due to failure or delay in accessing health facility care. One of the participants in the GMB session testified about his close friend whose wife died in labour at home because she could not be taken to the hospital due to travel challenges.

At some point, arrangements were made with the JTF for security personnel to collect patients from their homes and escort them to the health facilities when contacted through a medical emergency telephone number. Unfortunately, this service had later to be discontinued after insurgents feigned illness and then ambushed the military forces coming to attend them. This had resulted in an arrangement where those telephoning the emergency number and providing a description of their vehicle are allowed to use their own cars to access a health facility during curfew hours. The JTF then monitored the passage of the vehicle from a position of cover.

Financial barriers

Movement restrictions have limited people's access to gainful activities, hampering their financial capacities. People could not trade their commodities for fear of attacks. From the early months of the insurgency, farming of certain crops such as maize was banned so that insurgents could not use those fields as cover to launch their attacks. Also, due to curfews and direct attacks, banks were only open for a short period of time and some were completely closed. There were even restrictions on interbank transfers. Even those who had money in their bank accounts could not easily access this money to transact business.

A number of interviewees noted that the financial barriers to service access during the

insurgency were, however, significantly less than they would have been without the introduction in 2009 of a state drug subsidy scheme. This ensures that all pregnant women and children under-five had access to free drugs. All drugs and materials required to treat a medical emergency – such as a shooting or bombing – are also covered. These arrangements, and the separate 'free MNCH' programme operating in some facilities, thus moderated the health impact of the disruption of livelihoods resulting from the insurgency.

Utilization of services

Interviews suggested that the level of security influenced the use of services in a complex manner. If the number of attacks was high in a particular area, the utilization of services was low because patients were afraid to travel to the health facilities.

A medical doctor from one of the most affected areas stated that most patients that came to seek care did so when they were critically ill and required urgent medical attention. Patients who were not severely sick would defer or decline attendance due to insecurity. Mothers who had appointments for routine immunization, for example, often missed their appointments.

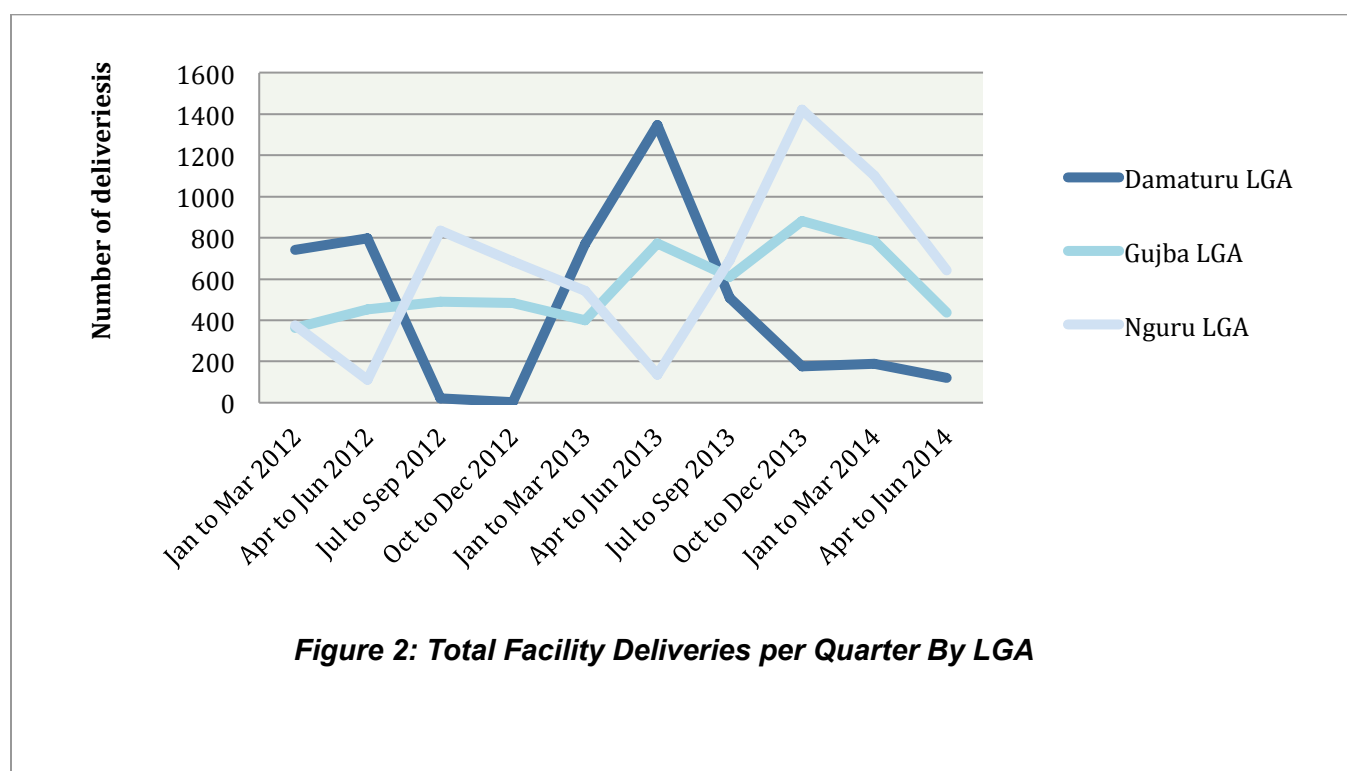
However, if an attack involved large numbers of casualties then health facilities nearby would be filled with patients injured during an attack. Areas that experienced fewer or no attacks reported a general increase in patient attendance because people had migrated to those places.

HMIS data on facility attendance confirmed great fluctuations due to insurgency activities and related counter-insurgency measures. For example, Damaturu has at times been a major focus of attacks, but through counter-insurgency measures has at other times been seen as a relatively safe haven from attacks. Figures 2 and 3 illustrate this pattern of varying patient attendance for the three LGAs for which HMIS data was reviewed.

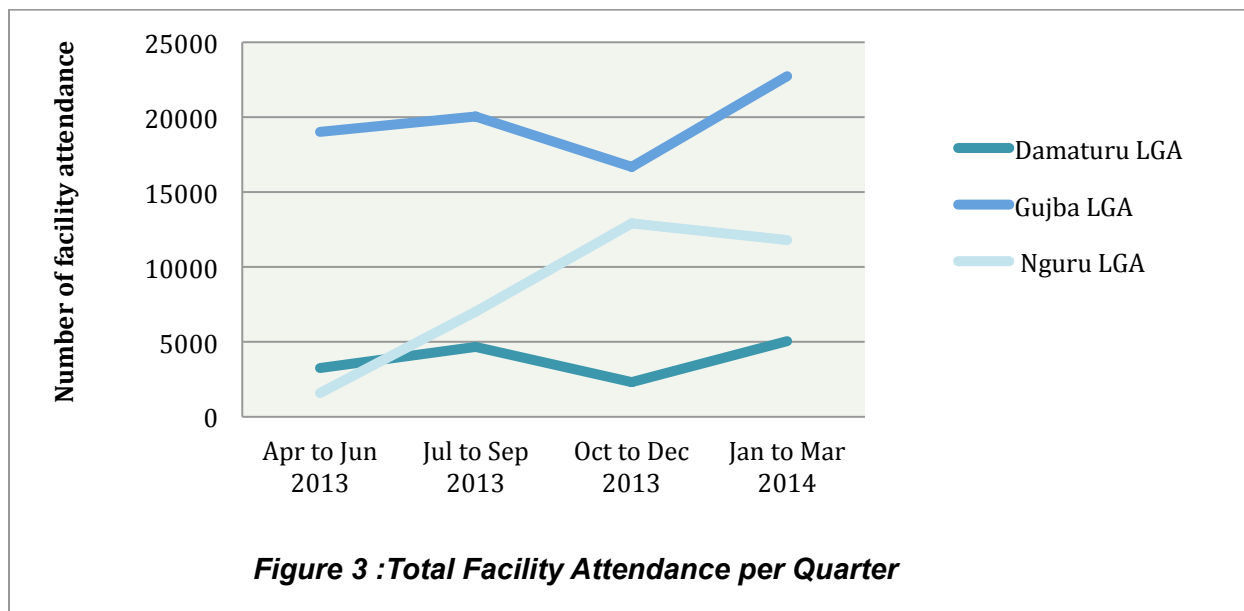
Figure 2 presents trends in total number of facility deliveries per quarter in three LGAs from January 2012 to June 2014. The pattern indicates that whenever there was a decrease in facility deliveries in Damaturu, there was a corresponding increase of facility deliveries in Nguru. For example, during the quarter July to September 2012, the number of facility attended deliveries in Damaturu declined to 21 deliveries from 797 in the previous quarter, while in Nguru the numbers increased to 835 deliveries against 111 deliveries over the same period. By April to June 2013 Damaturu had experienced a sharp increase in facility deliveries while in Nguru the numbers reduced to previous levels. By late 2013 the pattern had reversed again, with deliveries in Damaturu steeply declining and those in Nguru rising again. Attended deliveries in Gujba were relatively stable – with some fluctuation – during this period.

Similarly, Figure 3 shows total recorded facility attendance across LGAs from April 2013 to June 2014. Reporting from facilities was not complete during this period, so reported rates are assumed to be an underestimate of total attendance. However, with comparable reporting rates across the three LGAs comparison of trends across the different settings is likely valid.

This data suggests a marked increase in service utilization in Nguru during the course of 2013 (in line with the increase in attended deliveries during this period). With no reported insurgent attacks in Nguru, this appears to reflect internal migration within the state to an area perceived as safe during a period of major insecurity elsewhere.



Source: Compiled from Nigeria HMIS data



Source: Compiled from Nigeria HMIS data

Health worker workload

As most non-indigenous health workers left Yobe state, fewer health workers were left to attend to patients. For example, as noted earlier, the number of nurses/midwives at the specialist hospital in Damaturu dropped from 107 in 2010 before the insurgency to 27 during the insurgency period in early 2014.

Increased patient numbers at times of inward migration or mass casualty incidents exacerbated the impact of this on workload. For instance, through November and December 2011, Damaturu experienced a number of intense attacks where over 100 people were killed, each resulting in many casualties requiring urgent treatment. With increased workload the quality of services was compromised because the few available staff could not effectively attend to all the patients. Interviews documented reports of patient deaths in the hospital attributed to delays in treatment due to inadequate staffing levels. One nurse noted:

"I am a nurse by profession, so I have restrictions, I am not supposed to be clerking patients, but when they meet me, I have to step

out to do the function of a medical officer and also nursing work, which as a human being is demoralizing (demotivating). The pressure on me will definitely undermine efficiency."

Pressure on health infrastructure

Increased utilization of services at facilities also created pressure on health infrastructure. Bed space was frequently inadequate when patient attendance increased beyond planned health facility capacity. Mortuary capacity was reported to have frequently been inadequate for the demand following mass casualty incidents. Hospitals had to ask the environmental department to assist in clearing away the dead bodies. Pressure on health infrastructure was so severe that it prompted the state governor to intervene to release funds to construct more mortuaries and extend hospital wards.

Liaison with security services

Liaison with security forces was key during the crisis to enable essential movement of health workers during curfew hours. Doctors were sometimes called to go to the

hospital and help with emergencies but due to curfews they would be restricted in their movement. The Ministry of Health made arrangements with the JTF to allow health workers to go to work during curfew hours through prior arrangement with local security forces.

This was subsequently facilitated by the provision of identity cards to show to the security personnel when crossing checkpoints. However, health workers reported sometimes being reluctant to show IDs for fear that this exposed their identity to potential insurgents who on occasions targeted killings of government personnel.

Community members also liaised with security forces whenever they needed to transport a sick person to the hospital or, more generally, if they wanted to report information about insurgents in their community. However, those seen talking to security forces were considered a direct target of insurgents, with one participant in the GMB session claiming:

"If they see you with the JTF number in your cellphone or you are talking to a security officer, you are dead."

State officials would also regularly liaise with security forces to seek to reduce curfew hours to enable citizens to move around more freely and go about their business.

Duty shift patterns and task shifting

The restrictions in movement due to curfews created challenges in the duty shift of health workers who were scheduled to travel to work at restricted times. To resolve this challenge, the Hospitals Management Board convened senior physicians and nurses and made a formal change to the health worker duty shifts. Instead of three eight-hour shifts, two twelve-hour shifts

were established. This ensured continuity of staffing at facilities in a manner achievable with curfew restrictions.

Other less formal adjustments to working practices were also reported. In the context of the crisis, health workers were reported to have assumed duties for which they were not fully trained and licensed – a form of informal task-shifting. Such flexibility in role allocations was widely perceived as a necessity in the context of the prevailing crisis, and a move that has demonstrated the significant capability of less senior cadres.

Financial support

As a result of the crisis the health sector required additional financial support to address the increased demand for health services because of casualties. As noted earlier, the State government was already funding free drug programmes for specific groups before the insurgency, and this arrangement extended to covering the costs of those attending for emergency intervention following insurgent attacks.

Given State responsibilities for funding contributions to the JTF security operation, Yobe state budgets for all sectors – including health – were put under severe pressure. Longer term development projects (e.g. health facility construction) were postponed, but generally finance for the health sector was robustly supported. In 2013 the health sector absorbed 97.3% of its allocated budget, which represented a budgetary allocation double of that allocated for the health sector in 2011 when the crisis had just begun (and of which only 60% had ultimately been disbursed).

Political will

Stakeholders attributed financial support to the political will exhibited by the State

Governor. His visits to hospitals and other facilities in the aftermath of major attacks were clearly appreciated. One participant at the GBM session noted

“Actually, the renovation to some extent was triggered by the insurgency. The Governor was not even happy about the capacity of the infrastructure and that is why he declared a State of emergency on the health sector. I remember when the Governor had been around more than ten times which is unprecedented. He comes at will, without being announced just to see everything that he needs to see and for some years back sometimes it is hard to see the Governor.”

Additionally the state provided security personnel in the cities and also facilitated removal of some of the roadblocks to support movement. More specifically to the health sector, on appreciating the loss of capacity in the health workforce with the loss of non-indigenous staff, the state sanctioned the lifting of an established embargo on employment to the health sector. Further, the state provided incentives to health workers such as offering furnished houses and ensuring regular and on-time salary payment, which was generally secured despite all the challenges with the banking system.

Community resources/cohesion

Community support was regarded as a key factor that helped community members to cope during the crisis. This involved providing spiritual, emotional, and social support to each other. Most of the interviewees mentioned that they survived

Key linkages and drivers

Figure 1 shows how these different factors were seen to relate to each other in the consolidated systems model developed by participants at the GMB session. For

by faith and through prayers, indicating that religion played a major role in holding the people together, giving them hope to go on and endure the crisis and its suffering. Community members organized transport for those who needed to access health facility services, and provided shelter to those who had abandoned their homes due to insecurity.

Community members were also a source of information regarding the insurgents. They would alert the health workers not to conduct activities, especially immunization campaigns, whenever the insurgents were operating within, or close by, their local area. Many interviewees and GMB participants shared examples of such sharing of information, and how trust between communities and the JTF was gradually established. One participant recounted:

“A small boy who came from a family of 10 people was the only child remaining with his mother. He had seen soldiers kill his father and his other family members and he was bitter. Unfortunately these were insurgents but disguised as security personnel. One day the child asked his mother for 50 Naira to buy some sweets but instead he took that money to the security personnel and asked them to sell him a gun, which one of the soldiers had in his hands. When asked why, he replied that he wanted to kill all the soldiers in his area. The soldiers then took the child to the mother who explained what had happened. It was only then that the soldiers realized that the insurgents had been disguising themselves as if they were security personnel and were going around killing people.”

example, as a result of health worker migration, there was reduced availability of health workers hence leading to increased health worker workload, which decreased staff commitment and motivation and in turn negatively affected the quality of care. As quality of health care declined,

pressure/complaints from community members increased, which created political will to act on the situation. Due to increased political will, there was recruitment of staff, which increased availability of health workers thereby reducing health worker workload.

The systems model clearly identifies insecurity as the major driver of threat to service utilization and quality. Two major drivers of response to such threat which were identified were political will, and community resources and cohesion. Both of these factors are discussed above, and are essentially external to the health system, but supporting functions within it. A third major driver of response to the challenges created by insecurity was identified as an important construct in the course of model building: health worker commitment and motivation. This factor, internal to the health system (but linked to demands on workers from outside the system) was seen to have contributed significantly to service access and quality.

Interviews and discussion generally indicated that commitment was generally high among the health workers remaining in post through the insurgency. Health workers reported encountering many challenges but this was generally reported to have not deterred them from providing services to the patients, although they worked under fear. Most of the facility in-charge persons reported that they used to encourage and motivate their staff to ensure their availability at the facility and this helped the health facilities to cope during the crisis period. One facility in-charge reported:

“Since I am in-charge of the facility, I don’t think there was any time I did not come to work and I always organized my staff to come to work.”

Patients who were interviewed backed up these assertions. They also reported on the level of commitment with which the health workers operated as stated by one patient:

“Thank God the truth is that the health workers are trying their best to provide quality services.”

Another patient reported,

“The quality of service is good always and we find the health workers there...before the insurgency the number of health workers were more than now but they are trying, even now.”

Although there were aspects of good performance in some facilities, a few health workers reported of some cases of patients that came and could not be fully attended to due to limited availability of staff and of the capacity to perform certain procedures. Some patients were reported to have ended up dying right at the health facility due to the limited attention they got from health workers.

DISCUSSION

The central goal of the Health Systems Resilience project is to understand, in systems terms, what characterizes health systems resilience in the contexts of crisis. This involves understanding both what constitutes the greatest threats to the operation of health provision in times of crisis, and also what represents effective response to address such threats.

In the context of Yobe State health services during the Boko Haram insurgency, it is clear that prevailing insecurity has been the major driver of threats to health service utilization and quality. Figure 4 is a refined systems model reflecting analysis of quantitative and qualitative data by the modelling team subsequent to the GMB session.

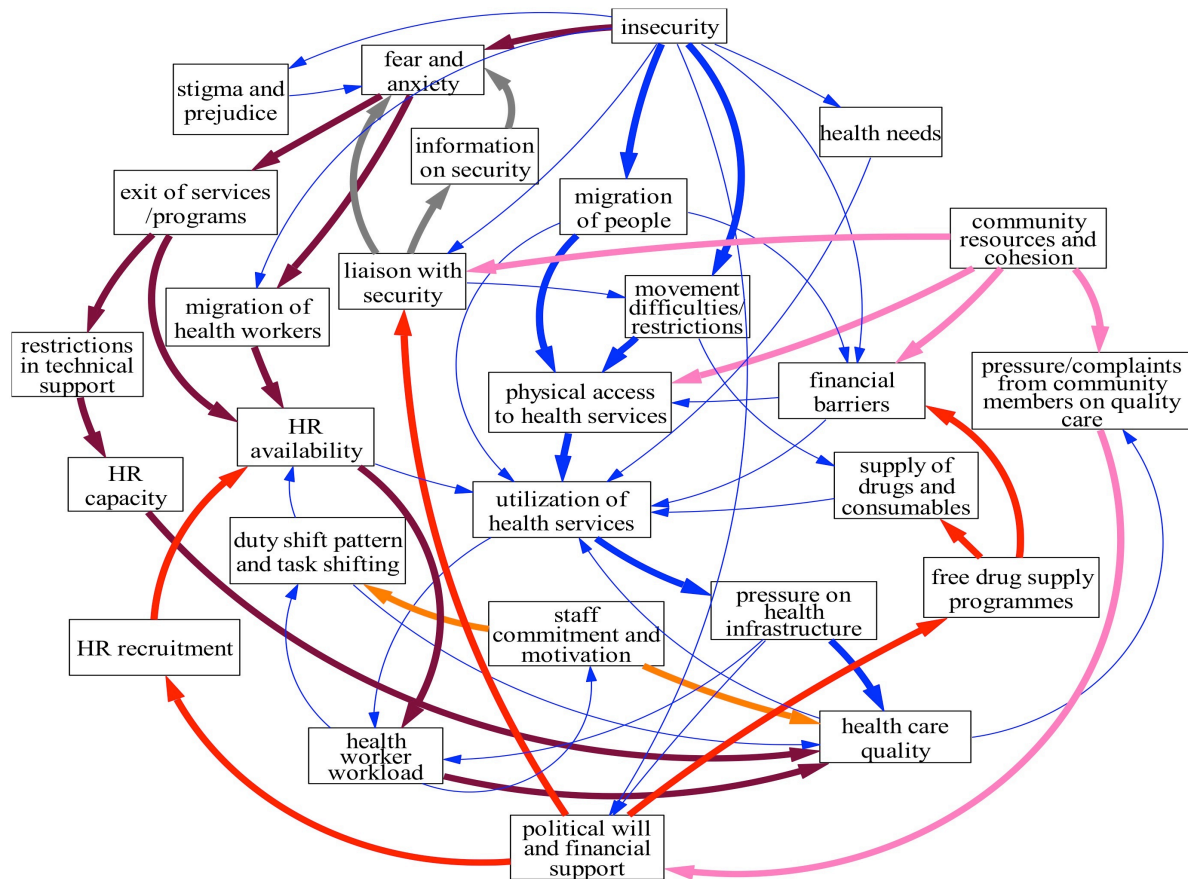


Figure 4: Systems model developed by stakeholders in Yobe and refined to show key pathways of threat and response

The blue and the purple pathways highlighted indicate the two major routes by which insecurity impacted service utilization and quality. The former pathway shows the influence on health service utilization and quality principally through restricting access to health services, either directly through transport difficulties or indirectly as a result of population displacement. The latter pathway shows the impact of insecurity through depletion of the human resources available to the health system, reflecting loss of personnel and loss of technical assistance to support personnel.

Without any actions in response to these threats, health service utilization and

quality would have been severely reduced. However, three major sources of response are identified in the systems analysis. First, political will on the part of State Government and other parties reinforced a number of pathways (marked in red in Figure 4) ameliorating systems impacts of insecurity. These included direct attempts to normalize conditions through liaison with the JTF, efforts to bolster human resources capability (through lifting the recruitment moratorium and ensuring prompt remuneration for health workers), and pre-existing commitments to free-drug supply. While the former two pathways were responsive to the impacts of the crisis, the latter was a pathway that was widely

seen as pre-emptive of greater threats to health service provision through the insurgency (a true basis of systems resilience).

Community resources and cohesion was identified as another source of pathways of influence mitigating the impacts of the crisis (shown in pink in Figure 4). The community was drawn together over time to liaise with the security services, which reduced fear and anxiety and their negative impacts. Communities pooled resources (knowledge, transport and finance) to enable physical and financial access to health facilities for those in need. Communities were also seen to have played a key role in mobilizing political will, though concerted advocacy in relation to the fragility of health provision in the wake of the insurgency.

The other key pathways promoting systems resilience in the context of the ongoing crisis stem from staff commitment and motivation (shown in orange in Figure 4). Although this is difficult to objectively quantify, interviews and discussion repeatedly noted the strong commitment of indigenous health workers and its protective influence. This operated through an acceptance of a challenging shift pattern that accommodated to the prevailing curfew and taking on additional responsibilities through informal task-shifting, as well as more direct influence on quality of care.

Two other areas of Figure 4 warrant discussion. The flow of information from and to security services (shown in grey) was a core dynamic underpinning health systems response to the insurgency. This flow was considered to be very restricted on initial deployment of the JTF, when a lack of community awareness amongst a security force largely drawn from out-of-state created significant tensions. However, as awareness increased, so did trust and information flow, which was crucial to the

passage of health personnel, patients and commodities. Coordination between the State Ministry of Health and security forces enabled health workers to be cleared faster at check-points after identifying themselves with special IDs.

The JTF also provided security escorts to patients in emergencies, before insurgents hijacked the arrangement. In addition to such formal mechanisms, community health workers reported tremendous coordination with community members who warned health workers when it was not safe for them to visit specific communities, for example, for immunization activities.

Finally, the supply of drugs and consumables and financial barriers and their linkage to travel and utilization are not emphasized as major pathways in Figure 4 as interviews and GMB discussion confirmed that these had not been significant variables during the course of the insurgency. However, as noted earlier in this discussion, this may be seen as evidence of true resilience in the context of the Yobe health system: the prevailing decentralized 'push' drug supply approach – supported by good state storage capacity in Damaturu – and the free drug supply policies introduced before the crisis both served to protect key functional capacities of the system.

LESSONS LEARNT

The final session of the GMB exercise focused on identification of lessons learned from the crisis that could inform those in other contexts facing similar challenges.

Principal amongst the lessons identified by participants was the importance for people to *understand the security situation* through liaison with security forces. This was seen as crucial to ensure that decisions regarding movements were always well

informed. Some suggested that it is necessary for organizations to have security protocols and guidelines in place in advance in order to manage such situations.

Ensuring adequate human resource availability was another key lesson. This was seen to be best secured by (a) employing indigenous health workers to minimize migration during times of crisis (b) providing secure accommodation and regular salary payment and (c) increasing in-house training of health workers, to reduce dependence on external resources vulnerable during periods of instability.

Another lesson included the need to *secure uninterrupted funding to the health sector*. This had been considered a significant risk within the state due to pressures on public finances with the insurgency and deployment of security services. Political will in support of the health sector – and the community advocacy for it to be retained – was seen as crucial in this regard.

Increasing supply of drugs and consumables in order to overcome travel difficulties and restrictions was regarded as a major logistical lesson that had generally been managed well within the state. Health facilities receiving three-months drug supplies instead of the regular one-month supply appeared to have minimized drug stock outs. Other lessons identified by participants included:

- *focusing implementation on a few critical services* that are achievable rather than doing everything with little impact
- *focusing on the primary health care package* and bringing the services closer to the communities for ease of access
- *involving communities and traditional leaders and letting people's voice be*

heard in order to fully utilize the social, moral, and religious resources available by such means

- *developing a culture of good and effective* communication at all levels
- *identify new methods of delivering services* (for example, there had been some innovation in delivery mechanisms for maternal and child services in response to the logistical and security constraints imposed by the insurgency)

NEXT STEPS

As noted earlier, this is one of three case studies planned with the Health Systems Resilience project. Findings across the three settings are to be compared to identify potentially common systems characteristics of resilience. For example, findings in the current study regarding the value of flexibility in drug supplies and informal task-shifting reinforce findings in a previous case study focused on HIV service delivery in Cote d'Ivoire's disputed Presidential election of 2010.

Such commonalities are to be considered at a multi-country, multi-stakeholder meeting to be held following the Health Systems Global meeting in Cape Town in October 2014. A synthesis report is planned for the first quarter of 2015

KEY POINTS

- Yobe State has faced severe disruption of its health service as a result of the Boko Haram insurgency
- Population migration and transport restrictions have severely impacted access to health provision
- The human resource for health capability of the state has been severely diminished through the outward migration of (especially non-indigenous) health workers and the suspension of programmes providing external technical assistance
- The political will of the Yobe State government to strengthen health provision – through lifting a moratorium on recruitment and providing incentives for retention and support of staff – has supported a recovery of health systems functioning
- Policies of free-drug provision and decentralized drug supply appear to have been protective of the operation of the health system
- Community resources and cohesion have been significant assets in combatting the impacts of the insurgency on service utilization and quality
- Staff commitment and motivation – particularly amongst staff indigenous to the state – has protected health care quality and enabled flexibility of human resource deployment
- Systems modelling provided a mechanism to enable stakeholders to articulate a vivid picture of the interplay of key factors seen to influence response to the crisis
- The methodology adopted appears promising for consolidating insights from multiple stakeholders regarding factors supporting – or undermining – health systems resilience

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