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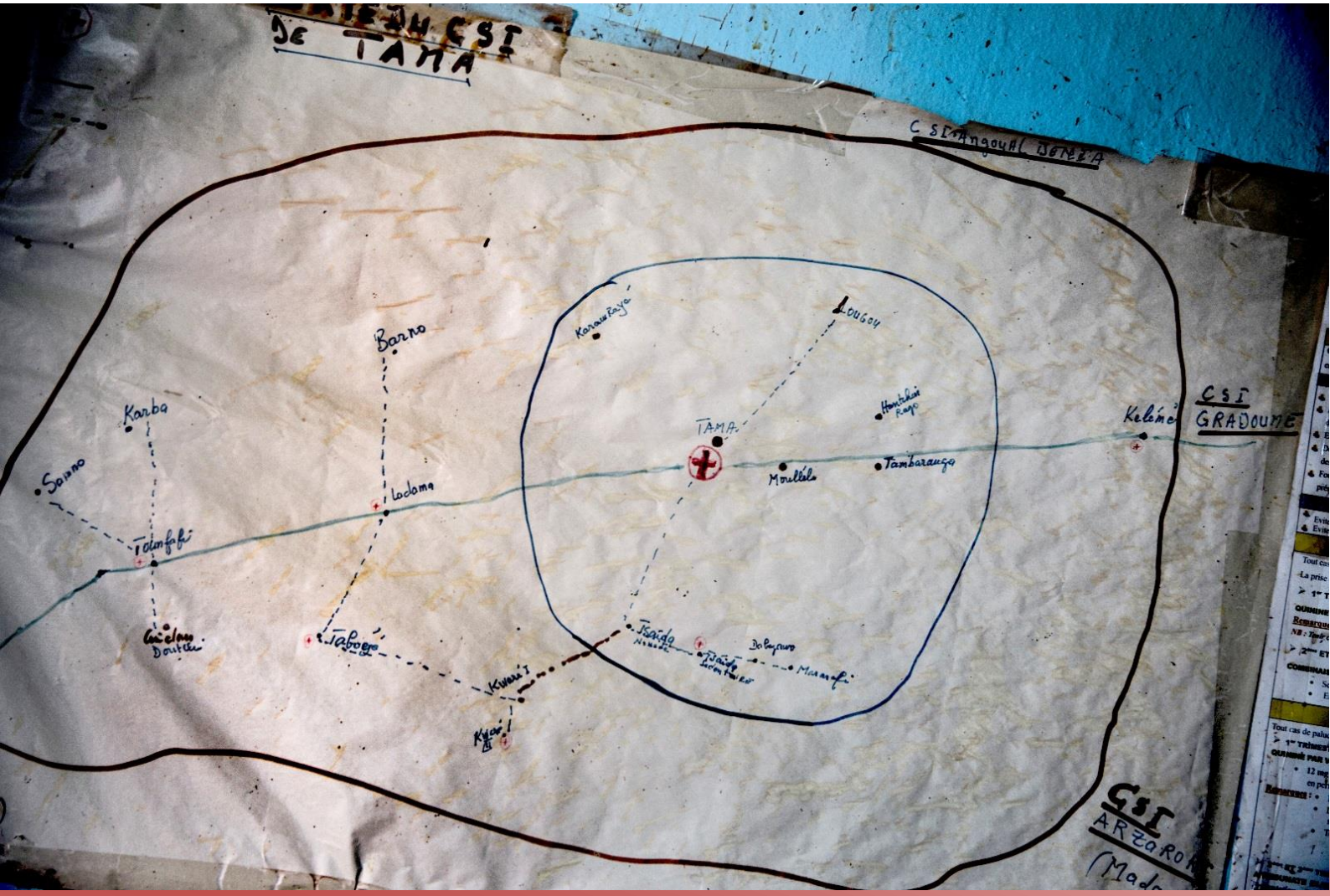

"Strengths in unity":

A REAL TIME EVALUATION OF AN MSF COLLABORATIVE APPROACH TO A MENINGITIS OUTBREAK IN NIGER 2016

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This publication was produced at the request of programme managers for Niger in OCB, OCBA, OCG and OCP. It was prepared independently by ALYSON FROUD

DISCLAIMER

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Front Cover Photo by Juan Carlos Tomasi / MSF

Vaccination activities in Niger

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ACRONYMS

AS	Aire de Santé (Health area)
CSI	Centre de Santé Integré (Health Centre)
DSRE	Direction de la Surveillance et la Riposte aux Epidemies (National surveillance and Epidemic response Directorate)
DRSP	Direction Regionale de la Sante Publique (Regional Health Authority)
MSF	Médecins Sans Frontières
HNN	Hôpital National de Niamey
ISIS	Islamic terrorist group
MSP	Ministere de Santé Publique (Ministry of Public Health)
MDO	Maladies à Déclaration Obligatoire (Notifiable Diseases)
CFR	Case Fatality Rate
CSE	Centre Surveillance Epidémiologique
CSF	Cerebrospinal Fluid
ICG	International Coordinating Group (vaccine provision for epidemic meningitis)
MnC	Meningitidis Neissseria Serogroup C
MnA	Meningitidis Neissseria Serogroup A
MnW	Meningitidis Neissseria Serogroup W
OCHA	Office for the Coordination of Humanitarian Affairs(UN)
EPREP	Emergency Preparedness
OCB	Operational Centre Brussels
OCBA	Operational Centre Barcelona
OCG	Operational Centre Geneva
OCP	Operational Centre Paris
SMC	Seasonal Malaria Chemo prophylaxsis
SPIS	Service Programmation et d'Information Sanitaire
SNIS	Système Nationale d'Information Sanitaire
RDT	Rapid Diagnostic Test
RTE	Real Time Evaluation
RUTF	Ready to Use Therapeutic Food
UN	United Nations
WHO	World Health Organisation.

EXECUTIVE SUMMARY

This evaluation was commissioned by MSF OCB with the agreement and support of OCBA, OCP and OCG. The initial intention had been to undertake a post evaluation of the collective MSF response to a large Meningitis C epidemic in Niger in 2015. However, a number of factors combined to make the execution of a real time evaluation of MSF meningitis activities in Niger in 2016 more realistic.

2015 saw the first large scale Meningitis C outbreak in Africa since 1979. It was caused by a unique strain of Neisseria Meningitidis C. There had been a worldwide shortage of C containing vaccines in 2015 and this was expected to continue into 2016. As a result in 2015 little reactive vaccination had been carried out in the Nigerien population making them potentially vulnerable to meningitis in 2016 given that they had little conferred immunity.

The findings are based on two field visits to Niger, analysis of relevant documents (reports, records, emails), interviews with a cross section of key people involved in the meningitis response in 2015 and 2016 and participant observation of ongoing events in real time.

To use a more cohesive, collaborative approach was the ambition for 2016 from the different OCs and this was informally agreed at the end of 2015. Basically the 8 regions of Niger were divided between the four operational centres and it was agreed there would be collaboration and communication related to epidemiological data and laboratory activities. In addition, there would be one spokesperson who would represent MSF to all external actors – mainly the government and UN bodies. This position passed between three of the four HOM informally depending on their workload and other commitments.

Whilst geographical division made practical sense, there was a marked difference in the extent to which the different areas were affected and hence the different OCs were involved in meningitis activities. The comparatively low level of meningitis related activities this year hardly challenged the combined resources of the four MSF operational centres – for example OCP had minimal input as there were few cases in their regions of responsibility and the other sections all had manageable workloads.

The most obvious failing in regards to collaboration was the non sharing of EPREP stock amounts and vaccination cold chain capacity. Even treatment kits although similar, were not standardised across the sections. If regional backup support had been necessary (as was the case in 2015) standardisation is important to avoid confusion and a clear idea of available resources greatly assists emergency response.

Practically, the concept of an MSF meningitis committee was a good one and worked well, bringing all OCs together on a regular basis with Epicentre and allowing some level of discussion and collaboration. The absence of staff directly involved in managing the meningitis outbreak, e.g. emergency coordinators, potentially had the effect of reducing the immediacy and medical relevance of a number of the meetings. A recommendation to add case management to the agenda that initially mainly focused on epidemiology and vaccination strategies was implemented between the first and the second field visit. The meningitis committee could have perhaps started earlier and been used as a forum during the preparatory phase to better harmonise the MSF approaches to the meningitis outbreak.

Epicentre was playing a significant role in coordinating and incorporating the epidemiological and laboratory data from MSF and public institutions and produced a weekly epidemiological bulletin.

The introduction of an inter-sectionally agreed line-list for medical data is a very positive achievement for MSF, meaning that this much larger set of data coming from all sections can be analysed. Unfortunately for this outbreak the approved line list arrived after data had already started to be collected by the different sections meaning it had to be re-entered into the new line list creating more work.

Laboratory results – that should help guide epidemic management – were still being shared very late with partners and MSF never formally received any results of the Pastorex tests undertaken in the regions even though MSF supplied the test kits. Ministry of Health systems set up to manage the transportation of CSF samples to the national reference laboratory were not respected by government employees and despite MSF offering to help this did not really improve.

Vaccination activities were generally informed by epidemiological data and the time limit for effective vaccination was generally respected MSF supported campaigns. Lack of reliable population data given at central level and the Ministry of Health decision to limit the security stock and waste factor combined to 10% meant that in most cases population figures were underestimated and the vaccine stock was not enough. Due to redefined and more sensitive alert and epidemic thresholds proposed by WHO in 2014 (but officially available in 2015) epidemic "pockets" were identified at

sub district level and vaccinated in an attempt to contain the number of cases.

It is not clear whether the vaccination strategy employed in 2016 to "extinguish" small epidemic "pockets" at sub district level had any real impact on the progress of the outbreak as there are potentially many other variables that could have affected the disease progression. Certainly the number of cases is very much reduced when compared to 2015.

At least two of the sections had Cetriaxone injection in two different formats – IM and IM/IV with no clear written protocols on how these would be used differently in different contexts. Given that using the IM preparation mistakenly by the IV route could potentially be fatal and given the need for standardisation of activities during high volume episodes such as epidemics this is an important oversight.

The level of planning for the clinical management of both ambulatory and hospitalised cases varied by section but was generally sidelined in favour of vaccination activities. However, somewhat fortuitously the number of cases began to drop by week 10 so planning to effectively manage an increase in cases ceased to be a priority.

The MSF advocacy strategy in 2016 took into account the specific political context in country (ongoing national and presidential elections) but had the clear objective of keeping the meningitis (and measles) outbreaks as the central point of discussion with the Ministry of Health and other actors. Maintaining a positive, non overtly critical relationship with the Health Ministry and offering assistance and support where possible and necessary kept lines of communication open.

A number of recommendations were made following the first field evaluation visit that related directly to emergency preparedness and MSF resources. The following recommendations are addressed to all operational centres.

⇒ **Recommendation 1**: Where more than one MSF operating centre is responding to a medical emergency within a given country common EPREP planning and shared management of emergency stocks and resources should be the norm. This is the most efficient and effective use of MSF resources.

⇒ **Recommendation 2**: Careful consideration and clear written protocols that are contextually relevant are pre requisites to the use of **both** forms of parenteral Ceftriaxone (IM and IM/IV) given the real risk – particularly in epidemic/emergency situations- of inadvertently giving the IM preparation by the IV route with potentially fatal consequences.

⇒ **Recommendation 3**: When conducting mass vaccination campaigns during a meningitis epidemic a minimum security stock of vaccines (including the wastage component) should not fall below 25% even in times of global shortage and 100% vaccination coverage should be the objective.

PROJECT BACKGROUND

Niger – demography

Niger is a landlocked country with a surface area of 1,267 million kms$^{2.}$ It has seven international borders – with Algeria and Libya to the north, Chad to the east, Mali and Burkina Faso to the west and Benin and Nigeria to the south. This geographical position has meant over the past years the country is facing increasing insecurity on its borders from various external security threats – violent extremism (Boko Haram) from Northeastern Nigeria, conflict and Islamic militancy in Northern Mali and growing Islamic extremism and terrorism (ISIS) on its border with Libya.

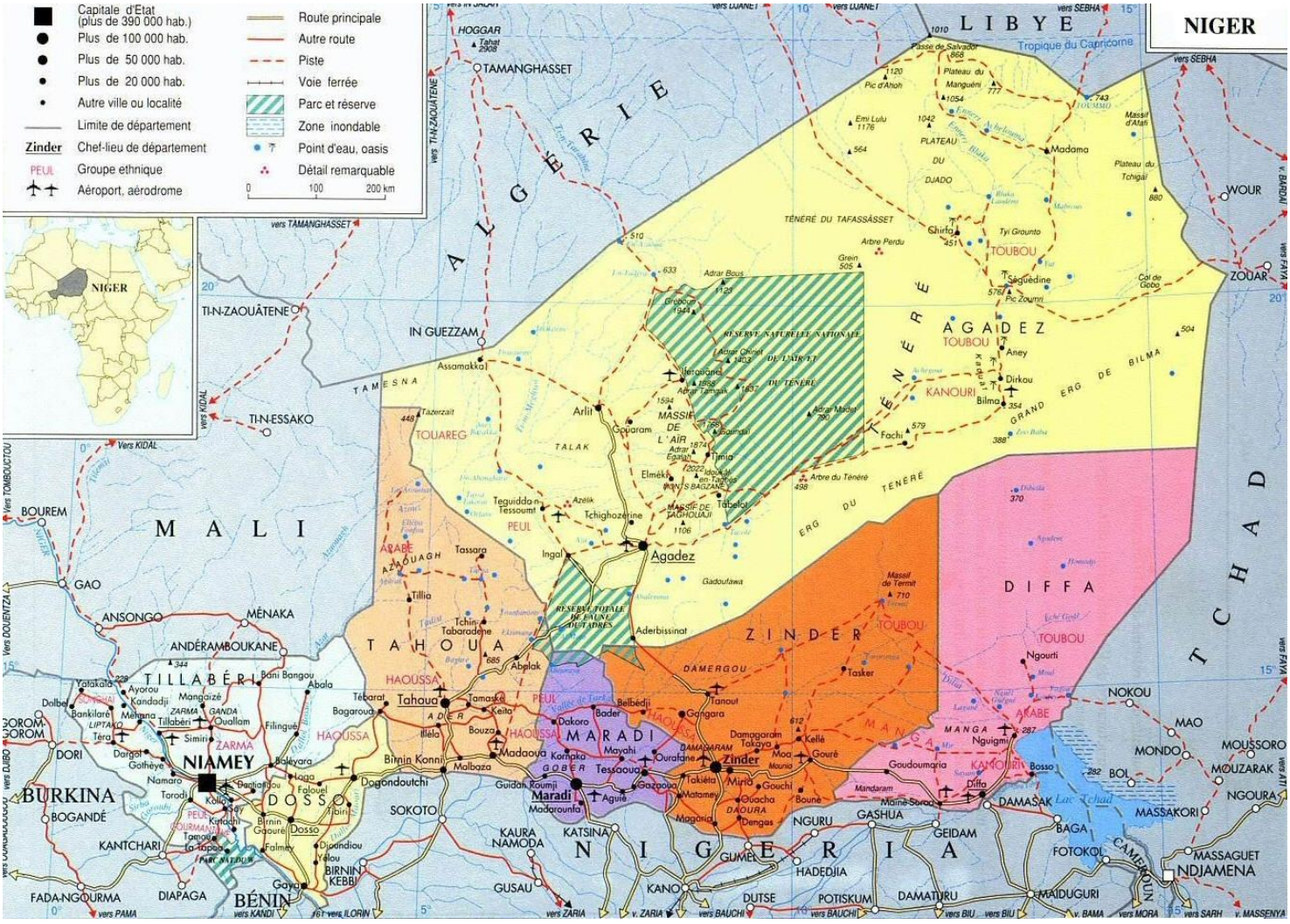
The population in 2015 was estimated to be 18,045,729 with an estimated annual growth rate 3.25%.[1]

Nearly 50% of the population are aged between 0-14 years.

The United Nations[2] ranked Niger as the least developed country in the world in 2014 due to multiple factors such as food insecurity, lack of industry, high population growth, a weak educational sector and few prospects for work outside subsistence farming and herding.

The country has some of the world's largest uranium deposits but despite this, the government relies heavily on foreign donor resources for a large portion of its fiscal budget. The economy in recent years has been further negatively impacted by terrorist activity and kidnappings within the country and on its borders.

As Niger lies within the sub –Saharan region it is extremely hot and dry with a long dry season and a short rainy season; four- fifths of the country is desert and the southern one- fifth is savanna suitable for livestock and limited agriculture. One of Niger's major problems are the perennial droughts that lead to major food insecurity for the population.



[1] CIA World Fact Book 2016

[2] Human Development Report UNDP 2014

Niger- health structure

The health structure in Niger follows the administrative division of the country – regional health authorities DRSP (Direction Régionale de la Santé Publique) managed by a regional director and within each of the eight regions a varying number of health districts headed by a MCD (Médecin Chef de District).

Each region theoretically should have a regional referral hospital and each district its own district hospital.

Each district further comprises a number of AS (Aire de Santé) a defined area that generally encompasses a number of villages/small towns whose primary healthcare needs are met in the health centre CSI (Centre de Santé Integré) and health posts CS (Case de Santé)

Between 2010-15 certain health structure reforms were implemented by the MSP (Ministere de Santé Publique) [3]probably the most significant being that the number of health districts was increased with the stated objective to increase quality and access to healthcare in districts with high population concentrations.

Administratively the new districts have been created but little or no resources have been made available to improve the access to care as can be seen in Table 2 below where there are only 36 district hospitals in 72 health districts.

Structure of the Health System and Epidemiological Surveillance in Niger 2014. Source: Annuaire des Statistiques Sanitaire du Niger SNIS 2014		
Central Level	Ministerial Level (MSP) and General Secretariat National reference hospitals. CERMES – national reference laboratory DSRE (Direction de la Surveillance et de la Réponse aux Epidémie) –responsible for epidemiological surveillance and epidemic response and within this directorate is based SNIS (Système National d'Information Sanitaire) that correlates all regional reports and produces the MDO (Maladies à Déclaration Obligatoire)epidemiological weekly bulletin	3 national level reference hospitals – HNN. La Mordée (University) Cure (Paediatric).
Regional Level	DRSP - 8 regions each with a regional health department headed by a regional director. CHR (Centre Hospitalier Regional) should have a lab equipped to do Pastorex RDT, gram stain and culture of all CSF specimens SPIS (Service de la Programmation et de l'Information Sanitaire) responsible for compilation, interpretation and flow of epi data from districts in region to national level.	Only 6 of the 8 have regional hospitals.
Peripheral Level	72 health districts. A total of 889 health centres (CSI) and 2523 health posts(CS) District Hospital with lab capable of doing Pastorex RDT CSE (Centre de Surveillance Epidemiologique) at district level responsible for compilation, interpretation and flow of data from CSIs in district to regional level	Only 36 of 72 districts have a district hospital

[3] Plan de Développement Sanitaire 2011-2015 MSP Secrétariat General République de Niger.

Niger and Epidemiological Surveillance

The Ministry of Health (MSP) in Niger is thought to have a health information system that functions reasonably well compared to other countries on the continent[4]. Although in Niger the structure is in place for the timely and accurate reporting of diseases of epidemic importance there are a number of factors that severely reduce its effectiveness.

Accurate reporting starts at the clinical level where clinicians need to be trained to correctly use a clinical case definition to identify a suspect case and laboratory technicians need to have the tools (often rapid diagnostic tests RDT) and knowledge to identify the causative agent. After this the information about the case needs to recorded and transmitted in a timely way to the next level i.e. CSI > District CSE > Regional SPIS > National SNIS.

This all has to happen within a seven day period in Niger for this information to be recorded and reported on the weekly Notifiable Diseases Bulletin (MDO). Lack of training, lack of supplies, lack of motivation, lack of an effective feedback loop, lack of transportation and long distances to travel all adversely affect quality, accuracy and timeliness of this reporting.

MSF in Niger

MSF has been working intermittently in Niger since 1985 mainly responding punctually to emergencies.

In this extremely poor country many factors coalesce to produce some of the highest childhood acute malnutrition rates in the world and so in 2001 MSF established a more permanent presence to start treating children with acute malnutrition. In 2005 the programmes expanded dramatically with the widespread introduction of Ready to Use Therapeutic Food (RUTF) enabling thousands of children to be treated as outpatients in the community for acute malnutrition.

While the focus of the MSF programmes in Niger had remained the treatment of acute malnutrition, over the years other related components have been added- mainly maternal/child health activities through support to local hospitals and health centres.

In 2013 all four operating centres of MSF working in Niger started a large seasonal malaria chemoprevention programme (SMC) for children under five to reduce the malaria incidence in these children during the rainy season.

To give some idea of the scale of MSF involvement in Niger in 2014: four Operational Centres were working in the country (OCP, OCB, OCBA and OCG) and MSF carried out 508,300 outpatient consultations and treated 185,100 patients for malaria and 85,700 patients with acute malnutrition.

The total annual budget for operations was €23.5 million and 1866 staff were employed.[5]

In addition to the regular programme activities MSF has continued to assist the Nigerien Ministry of Health in the management of numerous epidemics of cholera, measles, malaria and meningitis in the past ten years.

Meningitis

Bacterial meningitis (subsequently referred to simply as meningitis) is a major public health problem in the 'Meningitis Belt', a region in Sub Saharan Africa extending from Senegal to Ethiopia with an estimated population of 400 million people.

Meningitis, mainly caused by Neisseria Meningitidis but also by Streptococcus Pneumoniae and Haemophilus Influenzae Type B, is a contagious disease transmitted from person to person by respiratory droplets.

Incidence rates of meningitis in the Sub Saharan region are some of the highest in the world and show a marked seasonal increase during the dry season from December to July each year. There are recurrent large epidemics periodically, though unpredictably, every 2-10 years.

Asymptomatic pharyngeal carriage of the meningococcus bacteria is a notable feature of the disease and the most recent studies show that this can vary between 3%-30% of the population across countries and seasons.[6] These people

[4] Serogroup C in the Meningitis Belt: Facing the Challenge report of meeting held in Geneva October 2015 WHO
[5] MSF.org International Activity Reports Niger 2004-2014.
[6] Meningococcal carriage in the African meningitis belt Trotter CL& Greenwood BM Lancet Infectious Diseases 2007;7:797-803

are referred to as healthy carriers and play an important role in the transmission of the disease.

A number of factors are thought to influence the spread of the meningococcus: the virulence of a specific serogroup, the alteration of an individual's nasopharyngeal mucosa because of climatic changes (i.e. hot and dry, cold, seasonal winds) or viral infection, a level of immune deficiency and also overcrowding (transmission is increased in poor socio economic conditions, densely populated urban areas and refugee camps)[7].

In endemic countries such as Niger during epidemics meningococcal meningitis is typically a disease of children over 6 months of age (progressive loss of passive immunity from maternal antibodies at birth) adolescents and young adults. The disease is less common in those over the age of 30 with 80-90% of cases occurring in those below this age.

The incubation period before disease onset is 2-10 days with a median of 3-4 days. Clinical features include high fever, severe headache, photophobia, neck stiffness, nausea and vomiting and purpura (generalized or localized) and in severe cases coma, seizures and septic shock (Purpura Fulminans).

In children under one year diagnosis is more difficult with varying clinical manifestations but a bulging fontanelle that is a late sign of disease denotes a poor prognosis.

Treatment in all cases is currently Ceftriaxone by injection with adjuvant therapies.[8]

The mortality rate is about 10% even with appropriate treatment, and 10-15% of survivors' experience long-term neurological sequelae.

There are twelve currently identified serogroups of meningococcal meningitis, the most commonly known being A, B, C, W135, Y, X. and all but the Y serogroup have been the cause of large outbreak/epidemics.

Meningitis in Niger 2003-2015 Source: African Meningitis Carriage Consortium

Year	2003	2006	2009	2010	2011	2015
Main Causative organism	A	X	A	W135	W135	C
No. of cases	8000	4185 51% of 1139 confirmed cases were due to NmX	13499	2908	1214	8537

As can be seen in the table above Niger has sustained a significant disease burden due to meningitis over the past 12 years and during this time, four different meningococcal serogroups have been identified as the principle causative organism. Niger is the only country yet identified that has had a significant meningitis outbreak due to NmX (a dubious accolade as there is currently no vaccine developed to combat it.)

In the recent past meningococcus serogroup A was the principle organism causing large epidemics in the meningitis belt and the main strategy used was reactive vaccination using polysaccharide vaccines that only offered short term immunity (+/- 3 years).

However, in 2010 a new conjugate vaccine MenAfriVac (active against NmA) wasintroduced into countries in the meningitis belt with the hope of eliminating epidemics due to this serogroup.

The population of Niger (target group 1-29 years) was vaccinated with the MenAfriVac vaccine in 2010-11.

Conjugate vaccines- unlike polysaccharide vaccines – have an impact on pharyngeal carriage and can induce long term immunity (up to 10 years) thus significantly improving herd immunity.

The 2015 meningitis C epidemic in Niger

Epidemics caused by NmC are infrequent in the African meningitis belt – the last occurred in Burkina Faso in 1979. However, in 2013 and 2014 small scale outbreaks due to a new strain of NmC occurred in northwestern Nigeria along

[7] Management of Epidemic Meningococcal Meningitis MSF 2008

[8] Managing Meningitis Epidemics in Africa revised 2015 WHO

the border with Niger. 856 and 333 suspect cases of meningitis respectively were identified and treated by MSF in these two years.

Samples of CSF (cerebrospinal fluid) taken during these outbreaks and sent to the WHO meningitis reference and research laboratory in Oslo Sweden showed, on subsequent sequencing a bacterium that had not been identified anywhere else in the world.

This same meningococcal C bacterium went on to cause much larger epidemics in both northern Nigeria and Niger in 2015.

An important and defining factor during this epidemic in 2015 was the worldwide shortage of C-containing vaccines. This would affect both the management of the epidemic globally and the vaccination strategy employed with the vaccines available.

The epidemic in Niger was said to have started later in the dry season with the first cases identified in Dosso Region in February.

It seems that perhaps the surveillance for meningitis had become less vigilant given the introduction of the MenAfriVax conjugate vaccine against NmA in Niger in 2010-11 and the subsequent dramatic drop in reported cases[9].

It appears that the Nigerien Ministry of Health no longer had updated outbreak preparedness plans for meningitis, surveillance systems were not in place, health staff had not been trained or refreshed on meningitis, stocks and supplies were not prepositioned in the regions and many items essential for managing a meningitis outbreak were not available. Essential data necessary to manage the epidemic was often late and incomplete and the close link necessary between laboratory data and surveillance figures was weak. 33.5% of specimens sent to the national reference laboratory CERMES could not be linked to the surveillance data base due to the absence or non application of a unique identifier system nationwide.[10]

Only 33% of the CSF samples taken and tested were positive for Neisseria Meningitidis – it is not clear whether this was due to a poorly defined and poorly understood clinical case definition, poor quality specimens or sub optimal testing. 75% of specimens positive for Neisseria Meningitidis were due to MnC and 12% to NmW[11].

However, the initial classification of the main causative organism by CERMES and the MSP was that it was serogroup MnW and it took some weeks before positive tests were found to be mainly due to MnC.

What is noticeable when reading various reports (updates, sitreps, meeting minutes and presentations) from various sources (MSF, Epicentre, WHO, MSP and CERMES) is the lack of congruity of data between the different sources. This is particularly obvious when looking at laboratory data.

Officially 8537 cases of meningitis were reported between epidemiological week 1 and week 26 of 2015 with 573 deaths i.e. CFR (case fatality rate) of 6.7% The total number of cases reported peaked at week 19 and three regions of the country reported 91% of the total recorded cases - Niamey (capital city), Dosso Region and Tillabery Region.

The distribution of cases by sex was slightly weighed in favour of males with 52% of reported cases and the age group most affected both in terms of cases and deaths reported was 2-14 years with 55% of the total cases and a CFR of 8.2%.[12]

In Niamey 5646 cases were reported that amounts to a global attack rate of 504/100000 population. In Niamey 2eme arrondissement, the attack rate was even higher at 874/100000 population. The city was in epidemic between weeks 16-22 with a rapid rise in the number of cases reported.

The Ministry of Health initially insisted that all patients were treated as inpatients but this quickly overwhelmed the ill prepared health facilities in the city and in week 13 MSF gained access to the isolation Centre (prepared for Ebola response) in Lazaret District and converted it into a meningitis treatment centre. By week 19 the MSP accepted that patients making a good clinical recovery could continue their 5- day treatment as an ambulatory case in one of 23 health centres supported by MSF throughout the city.[13]

MSF took the leading role in the treatment of patients with suspect meningitis – 84% of the total caseload in Niamey

[9] Dramatic fall in cases of Meningitis A in three West African nations after new vaccine introduction Science Daily 9/6/2011

[10] Serogroup C in the Meningitis belt: Facing the challenges Geneva 15+16/10/15 MSF internal report.

[11] Atelier de revue de la situation epidemiologique et de la reponse aux epidemies de meningite en Afrique 2-4 Decembre 2015 Niamey.

[12] Rapport de la gestion de l'epidemie de meningite de 2015 au Niger MSP/DSRP 2015

[13] Description d'une epidemie de meningite a meningocoques Niamey Niger 2015 Epicentre + MSF OCB,OCBA and OCG.

were cared for in a MSF health facility or MSF supported health facilities.

It is worth mentioning here that certain anomalies occurred during this epidemic in some part due to the lack of vaccines available to protect the population and the fear that this engendered but also related to the poor management of the epidemic towards the population by the government – a general lack of clear, timely communication amongst other issues.

Fake or expired vaccines were found to be circulating within the country and were being bought and used by the population.

Due to the very low number of CSF specimens taken from suspect cases (22% in Niamey) and the low number that were positive (40% in Niamey) and given the high number of cases, the apparent success of treatment and the low mortality rate it is quite possible that many people who did not have meningitis were treated as suspect cases.

The MOH did make five requests to the ICG (International Coordinating Group) for vaccines and generally received less than they had requested due to the worldwide shortage. As a result, the target group for vaccination was limited to 2-14 years of age.

It is questionable whether the vaccination undertaken had any real impact on the evolution of the epidemic as in many cases vaccination activities took place well after the epidemic threshold had been crossed i.e. Niamey District 2[14]

MSF OCP supported vaccination activities in Dosso region but generally withdrew from these activities when it became clear that the way the vaccines were being used was politically determined rather than based on epidemiological data.

In conclusion MSF played a very important role in the meningitis epidemic in 2015 but the relationship between the Ministry of Health and MSF was at times strained as MSF pushed to respond more quickly to the growing epidemic and MOH struggled to retain control.

The epidemic classically started to wane when the rains began and the last cases seen in Niamey were in week 25 (15-21 June 2015)

In order to examine more closely the epidemic, identify lessons learned and areas that needed improvement meetings were convened by the World Health Organisation (WHO) with major partners and held in Geneva and Niamey in October and December 2015.

It was concluded that the risk of a further epidemic of NmC in Niger during the dry season 2016 was high.

This conclusion took into consideration the following factors:

1. There has been a rapid sub regional expansion – the outbreak originally detected in Sokoto and Kebbi States in Nigeria in 2013/14 has spread rapidly in both Nigeria and Niger in 2015 resulting in the largest NmC meningitis epidemic to date.
2. This current strain of Neisseria Meningitidis C is recognised as being particularly virulent.
3. The lack of immunity to NmC – the last epidemics due to this serogroup were in 1970s and very few vaccination campaigns using a C-containing vaccine have been conducted in recent years leading to low population immunity.

Due to limited Meningitis C vaccine availability worldwide in 2015 very low numbers of the population were vaccinated.

Alert and epidemic thresholds for meningitis were reviewed and new more sensitive thresholds were recommended in 2014 (although the official WHO documents are dated 2015):

In populations over 30,000 an alert threshold of 3/100,000/week and an epidemic threshold of 10/100,000/week. It was also recommended that surveillance should be conducted in populations of less than 100,000 (sub district/district level) to allow for prompt detection of local increases.

A 5- day course of parenteral Ceftriaxone was recommended as the only treatment option (7 days 100mgs/kg for babies < 2 months). All children under 2 years with meningitis should be transferred to an inpatient unit to continue treatment.

[14] Epidemiology of NmC epidemic Niamey 2015 Powerpoint Presentation Matt Coldiron Epicentre.

Purpose and scope of the evaluation

A number of challenges and problems had been noted in the way MSF operational sections in Niger had responded to the meningitis epidemic in 2015. Some lessons from the 2015 response had been captured, but a more in-depth evaluation could not be organised in time. When, at the beginning of 2016, all OCs were getting ready again to respond, it was decided to evaluate the 2016 intervention in real-time.

The overall objective was to evaluate the joint-MSF response in terms of its appropriateness, timeliness, effectiveness and coordination. The evaluation provided direct recommendations for the ongoing response and documented lessons for informing future outbreak responses.

The evaluation questions were focusing on appropriateness, timeliness and effectiveness of the response of the four MSF operational centres as well as the coordination amongst themselves and with external partners.

EVALUATION PROCESS, METHODS & LIMITATIONS

A real time evaluation (RTE) – as with any other evaluation – is intended to construct knowledge. It is most effective at the early stages in response to a humanitarian emergency when it is possible to have the greatest influence on operations[15]. The evaluator/s act as "a stranger who sees more" because of their distance from the day to day activities.

The primary audience for this RTE was the MSF staff – at field and headquarters level. The main purpose was to provide feedback to the operational staff in real time.

A RTE needs to be planned and managed in a far more disciplined and rigorous way than normal humanitarian evaluations – with a focus on gaining as much information possible in a short time frame.

MSF originally wanted to undertake an ex-post evaluation of last year's activities in the meningitis epidemic but with time constraints and the new meningitis 'season' arriving it was decided to convert the proposed evaluation into a RTE. The main purpose of this evaluation was to assess the intersectional response to the ongoing meningitis outbreak and identify potential areas for improvement.

Three main methods were used whilst conducting this evaluation. During a real -time evaluation these are the simplest and most effective methods to get relevant and timely information.

- Key informant interviews as a core methodology used in humanitarian evaluation

  Interviews were held either in person or by Skype /telephone with the main managers responsible for Niger programme activities at headquarters level for each of the four operational sections involved prior to the field visit.

  Some additional interviews were held in Brussels to gain background information on the challenges of working in the 2015 Meningitis epidemic in Niamey.

  Interviews were held in Niamey with the medical coordinators and head of missions from all four operational sections. This proved quite a challenge given their workload and more time was spent with some interviewees than others. Interviews were also conducted with expatriate emergency coordinators responsible for meningitis in MSF OCB, OCBA and OCG.

  Some interviews were held with other major actors outside MSF.

  The full list of interviewees can be found in Annex 2.

- Participant observation

  This technique means that the evaluator is identified as someone working with and for MSF but not actually involved in the meningitis response and theoretically able to have a more objective albeit emic perspective of the situation.

  This technique was used in two ways in Niamey - attendance at key meetings – both external and internal – as a participant observer – to witness the interaction, engagement and knowledge base of the people present.

  Field visits served the same purpose but in a broader context enabling more practical aspects of operations to be observed i.e. management of care components, stock and storage facilities, vaccination activities etc.

- Document and data review

  This was firstly undertaken prior to the first visit to Niamey to understand the epidemic in 2015, the level of MSF involvement and the problems and challenges encountered.

  A communal Dropbox was set up on the internet and all programme managers and specialists from the participating operational centres were invited to add relevant documents.

  An ongoing review of weekly sitreps, meeting minutes, epidemiological data and other relevant documents was undertaken in order to remain up to date on all activities related to the ongoing epidemic.

  Triangulation of information obtained was undertaken in most cases and involved asking the same question to a number of different people, by cross checking with written information on the same subject or by visually

[15] Real-time evaluations of humanitarian action – An ALNAP Guide (Pilot Version) J Cosgrave, B Ramalingam,T Beck 2009

verifying such as in stocks, case management etc.

Limitations and challenges.

- The first field visit was cut short by three days due to an airline strike.

A number of potential limitations were identified in the inception report:

- There will be one 'evaluator' to work with all of the four operational sections.
- The terms of reference had more than twenty evaluation questions that needed to be prioritised at the beginning of the visit and it was envisaged that the most important issues could be identified together with members of the MSF meningitis committee soon after arrival. This unfortunately did not happen due to the airline strike.
- Whilst coordination offices for all 4 sections are found in Niamey the field of operation/ areas of responsibility for meningitis response /project sites for each section are some distance from the capital. (8-10 hours by road)
- There are potential security constraints to be factored into any travel arrangements and possible travel restrictions that may well be heightened during the post election phase.
- There is a balance to be made by the 'evaluator' between remaining flexible to changing needs and circumstances and ensuring that triangulation of findings can occur so that at least some valid conclusions can be drawn from the visit.

During the real time evaluation process of this emergency intervention – a meningitis outbreak – it became clear that it would have been advantageous to have the first field visit undertaken during the preliminary phase of epidemic preparedness in order to support a robust and collaborative emergency outbreak preparedness strategy.

Evaluation process

An inception report was written and presented to the programme managers in all four operational centres that outlined the aim and objectives of the first field visit. The finalized document was also sent to all HOM/Medical coordinators in Niamey so they were aware of the purpose of the evaluation.

At the end of the first field visit oral feedback was given in the Meningitis Committee meeting before leaving Niamey and followed within two days by a short written report in English to all desks, head of mission and medical coordinators.(see Annex 3)

The coordination teams in Niamey generally responded favourably to this feedback and attempts were made to put at least some of the recommendations into practice.

The second field visit coincided with a general reduction in all activities related to meningitis (with the exception of OCB who were still defining their exit strategy) due to the falling number of cases and the completion of vaccination campaigns.

A meeting was held during the second visit with medical coordinators from all sections (except OCP who did not send a representative) to discuss the recommendations.

At the time of writing the report (mid May 2016) the total number of meningitis cases reported in 2016 is less than 20% of the cases reported in 2015.

FINDINGS

The findings below are presented following the thematic questions in the terms of reference. They include all information collected during the first (4 – 17 March) and second field visit (25 April – 4 May) as well as ongoing contact maintained with the teams in Niger and at headquarters level through reports and emails sent in the intervening periods.

Description of the intervention including emergency preparedness.

The basis for collaboration between the different OCs (operational centres) of MSF for this years (2016) meningitis intervention was set out informally at the end of 2015.

Basically the 8 regions of Niger were divided between the four OCs and it was agreed there would be collaboration and communication related to epidemiological data and laboratory activities. In addition, it was agreed there would be one spokesperson who would represent MSF to all external actors – mainly the government and UN bodies.

MSF OC regions of intervention Meningitis response 2016

OCB	OCP	OCBA	OCG
Niamey	Maradi	Tahoua	Zinder
Dosso	Agavez	Diffa	Tillabery

(Although the minutes of an interdesk meeting Niger in Brussels on 4/3/16 has OCP as responsible for Dosso as well as the two regions above)

Whilst this division makes practical sense it meant that the potential area of intervention of MSF was huge and the possibility of evaluating the different sections activities at field level would not be possible.

Distances to travel to the different regions are long and there are possible security constraints.

In fact, during the first field visit it became apparent that the way the epidemic was evolving there was a marked difference in the extent to which the different OCs were involved in meningitis activities.

By coincidence during this first visit most cases were being reported in Niamey so a visit was possible with OCB to health centres and the referral hospital to look at case management.

Vaccination activities were minimal as the ICG request for vaccines although approved had not yet been delivered and the small quantity of vaccines left over from last years epidemic (88,220 doses[16])was being used to undertake small campaigns of which only OCBA was involved in Tahoua Region and at the end of the first field visit OCB in Loga Sub district in Dosso Region.

The visit straddled epidemiological weeks 9-11 and occurred during the period between the first and second rounds of the presidential and general elections in Niger.

It was, as a result, a period of inertia and ambiguity. It was also complicated by a concurrent epidemic of measles at national level.

There was no Minister of Health in post at this time – this position was being fulfilled in the interim by the Prime Minister.

The highest level of interlocutor within the Ministry of Public Health with whom MSF could communicate was the General Secretary – a political post more likely to want to contain any potential fallout from meningitis rather than declare an epidemic.

The department for surveillance and epidemic response within the MSP (MOH) - that generally has responsibility nationally for emergency health response -was holding weekly meetings to discuss the ongoing epidemics of both measles and meningitis.

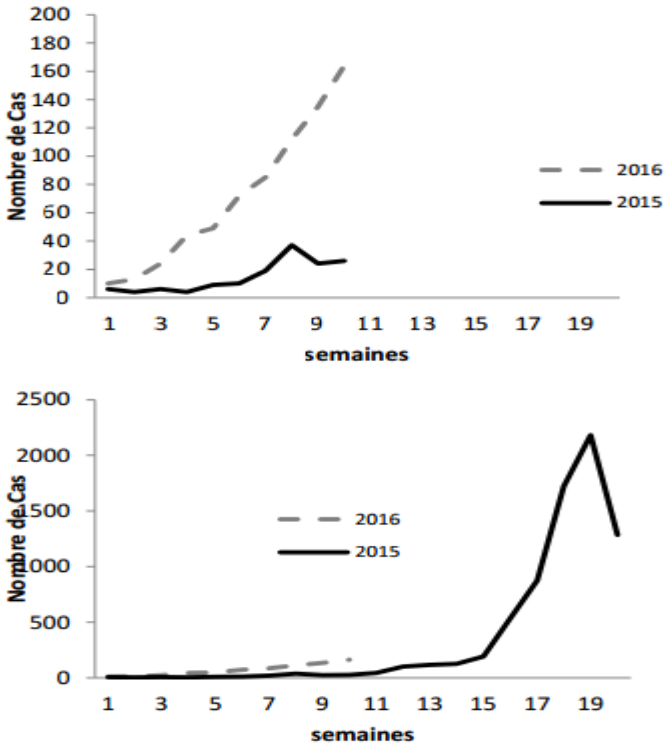
The meetings were lengthy, based on epidemiological data that was 10 days old, much discussion took place and little

[16] Rapport de la gestion de l'epidemie de meningite de 2015 au Niger DSRE Niger

or no action or planning resulted.

It can be seen from the graphs below that since the beginning of 2016 suspect cases of meningitis had increased steadily and far more rapidly than at the same time period in 2015.

Figure 1 : Evolution hebdomadaire comparative des cas suspect de méningite au Niger 2015-2016 (Notez les différentes échelles)



Note the different scale between the two graphs.

The four major players and responders to diseases of epidemic importance in Niger were present at these meetings- MSP, MSF, UNICEF and WHO.

The Ministry of Public Health (MSP) – and within it the department of surveillance and epidemic response – is chronically weak, disorganised and ineffective.

Their ability to plan effective, timely strategies in response to a medical emergency such as an epidemic is very limited.

Their financial resources seem to be extremely limited with less than 50% of the estimated budget available to respond to Meningitis in 2016.[17]

Communication towards their staff, the population and their partners is often poor and sometimes non existent.

Despite MSF having cordial relationships with key interlocutors within the MSP they undertook major decisions about epidemic management unilaterally without informing or consulting any of the major partners.(e.g. ICG vaccine request, meningitis vaccination in Niamey Health District Two in March 2016)

During this first visit the WHO and UNICEF offices in Niger appeared to take a largely passive role in response to the ongoing epidemics of both meningitis and measles and seemed reluctant to become involved.

MSF Coordination.

In late 2015 OCB started a process to improve the level of collaboration and coordination amongst MSF operating

[17] Plan national de preparation et de reponse aux epidemies de meningite 2015-2016 MSP Niger Janvier 2016.

sections in Niger to provide a more coherent, rationale and united approach to meningitis activities for 2016.[18]

No written documentation has been found that covers all areas that were apparently discussed and agreed. However, in general it seems that various strategies were operationalised as a result.

A common MSF spokesperson for all sections towards the MSP and other partners.

Working with Epicentre to collate and share epidemiological data including using the same line-list format.

Although it was proposed by OCB to move towards a common EPREP stock (for other scenarios as well as meningitis) this process appears to have stalled and was never implemented.

Two positions – a laboratory technician and a GIS mapping officer – were added to the 2016 meningitis response by OCP and OCG respectively. The post of GIS mapping officer was proposed by the emergency coordinator for OCB in February 2016, validated by the head of mission and desk OCB and requested from MSF in Geneva.

From the terms of reference for the laboratory technician it is not clear that this was proposed an intersectional position but the head of mission OCP proposed this and after acceptance by the other sections and apparent sharing of costs by all sections the laboratory technician did work to support OCB and OCG in strengthening laboratory activities in their regions of operation.

The terms of reference for the GIS mapping officer do refer specifically to intersectional support but mainly in the context of a proposed study to be supported by OCG of chemo-prophylaxis during a meningitis outbreak.

In 2016 all four operating centres could be seen to be voicing their concerns, opinions and requests at central level through one informally elected HOM who acts as the MSF spokesperson. This position passed between three of the four HOM informally depending on their workload and other commitments.

MSF Meningitis Committee meetings were held weekly with a prompt and well written meeting minutes being circulated for amendment and approval. The meetings were chaired by the HOM focal point/spokesperson for meningitis and were generally attended by all four sections each week. However those staff directly involved in managing the meningitis outbreak (emergency coordinators from OCB, OCBA and OCG) were not considered as committee members and attended infrequently and the medical coordinators – mainly due to other priorities and workload- attended sporadically.[19] On March 16th it was decided to change the role of this meeting to include measles (with the approval of all members) so it became the Epidemic Committee.

Epicentre was playing a significant role in coordinating and incorporating the epidemiological data from MSF and MSP sources and laboratory data from CERMES and producing a weekly epidemiological bulletin.

The incorporation of two data sets was agreed in order to have a more up to date and relevant picture of the evolution of the epidemic - data obtained by MSF in the current week at regional level (but not yet officially sanctioned and appearing in the MDO) combined with MSP data, added to the MSF epidemiological bulletin and discussed at the meeting.

One observation during the first field visit in March was that this discussion along with any details of ongoing or proposed vaccination activities took up the majority of the meeting time and there was no specific agenda item for case management that is an important element of epidemic control. In general issues to be raised at the CNGE meeting on the following day were discussed and agreed and this worked well. On the second visit the recommendation to add case management to the agenda had been taken up and it was generally agreed this was a positive addition (see case management below for more details)

MSF Advocacy Strategy

As the first field visit took place during the period between the two rounds of the presidential and general elections it was clear that no major political decisions regarding the declaration of an epidemic would be forthcoming.

The decision was made to undertake a strategy that would keep the meningitis (and measles) epidemics at the "front and centre" of MSP and UN agencies agenda.

Given that a vaccine request had already been submitted to ICG, that the number of cases of meningitis was still within

[18] Various emails Head of Mission OCB Niger between November 2015 – January 2016.

[19] Email communication with Xavier Trompette HOM OCB

manageable limits and the government had clearly expressed a policy of no tolerance for dissent it seemed a reasonable strategy at this time.

The MSF chosen approach involved regular attendance at all relevant meetings, raising issues of concern at the highest possible level in the MSP, asking pertinent questions and offering assistance where this was applicable.

It is relevant to note here that independent of the Niger advocacy strategy a representative of MSF OCBA based in Senegal spoke privately to a UN representative during a regional Lake Chad basin meeting and asked about the meningitis situation in Niger. Apparently the UN was unaware of the meningitis outbreak and must have subsequently brought it up at a meeting where WHO was present once back in Niger. To further increase awareness in the UN and INGO/NGO community the MSF spokesperson gave a presentation on the current situation of measles and meningitis cases in Niger at the Humanitarian Country Team meeting hosted by OCHA on the 7th March highlighting the lack of sufficient coordinated response. This drew a furious response from the WHO representative Dr Pana who obviously felt 'attacked' but in general all others present appreciated the update and donors expressed a willingness to potentially fund a response. Interestingly – and almost certainly as a result- WHO called a meeting to discuss meningitis and measles later the same week!

In fact no real changes were made to the advocacy strategy- a relatively good collaboration had been maintained with MOH at central level, the number of cases started to decline nationally after the first field visit and a vaccination strategy discussed and agreed between all major partners was being implemented so no change in strategy was deemed necessary.

MSF Response.

As mentioned above the evolution of the meningitis outbreak meant that some operational sections were more actively involved in meningitis activities than others.

During the epidemiological weeks 9-11 the majority of suspect cases of meningitis was occurring in four regions:

Niamey, Tillabery, Dosso and Tahoua. This can be seen in the table below.

Number of cases and deaths by region from meningitis - epidemiological week 10 2016 Niger.

Region	Population	Cases	Attack Rate	Deaths	CFR %
Agadez	543846	14	2.6	0	0
Diffa	683870	0	0	0	0
Maradi	3,794,379	6	0.2	1	16.7
Dosso	2,206,739	42	1.9	5	11.9
Niamey	1,131,882	40	3.5	1	2.5
Tahoua	3,821,986	24	0.6	0	0
Tillabery	2,992,139	35	1.2	3	8.6
Zinder	4,076,544	3	0.1	0	0
Total	19,251,385	164	0.8	10	6.1

Source: MDO MSP from Epicentre/MSF Bulletin Meningite Hebdomadaire No.8 22/3/2016

In general epidemic response starts in the pre- epidemic phase when preparations are made to react to a possible outbreak. This phase involves updating EPREP plans and checking stocks and supplies, increasing surveillance activities, prepositioning of treatment and diagnostic kits and training staff. Staff training usually involves both MSP and MSF staff and both clinical staff and those working in the laboratory. According to the type of health facility and competence of staff training on executing a lumbar puncture and correct collection CSF specimens for diagnosis and confirmation of causative organism may also be relevant.

In general all operational sections had undertaken some level of preparation for the epidemic season. An emphasis was

put on collecting weekly surveillance data in their regions of responsibility, treatment and diagnostic kits had been prepositioned (mainly in existing project sites to be dispatched as and when necessary) and in some cases a refresher training was given to MSF and MSP staff. A more detailed discussion of the MSF response and its different components is undertaken in the following sections.

MSF Resources.

EPREP Plans.

EPREP plans varied considerably – in format, content and detail.

- OCP and OCBA had elaborated specific detailed meningitis plans for 2016.
- OCG had a plan divided into two parts- structural issues and scenarios for five different emergencies including meningitis and this section did not appear to have been updated since the epidemic in 2015.
- OCB also had a multi scenario plan that had been updated post epidemic 2015 and contained a detailed plan for meningitis intervention.

More importantly how well did the written plans translate into practice that was shared within project sites and at CMT level? This is not possible to say with great certitude as it would have involved visiting all areas of intervention but globally the more detailed plans were practical and clear.

EPREP Stocks

For practical purposes an EPREP plan concerning an epidemic scenario will contain a calculation of how many cases (simple and complicated) can be treated/ how many vaccinations can be completed (based on a context specific attack rate) within a given time frame at the beginning of an emergency intervention[20].

The time frame is normally related to the amount of weeks it takes to calculate, send off and receive an emergency international order to continue activities.

It proved difficult to have an overview of **all** the different sections EPREP stock for meningitis – this is their treatment, laboratory support and vaccination capacity (not including vaccines) to start an intervention.

Kits

All the MSF sections had made up treatment kits and although broadly similar there were variations from one section to another – what type of kit, for how many cases and what they contained.

These differences may be in part explained by the lack of an up to date reference guide. The MSF guideline "Management of Meningococcal Meningitis" 2008 is outdated as it does not contain relevant information about a 5-day Ceftriaxone treatment nor changes in the treatment of complicated meningitis.

The new draft MSF guideline only became available to be sent to field teams as of March 8th 2016.

All sections appeared to have kits for laboratory testing, lumbar puncture, Pastorex RDT and transport medium but in what quantity and whether they had the necessary accessories (water bath and centrifuge) and in what quantities were difficult to find out.

Regular monthly intersectional medical coordination meetings are held in Niamey where it would be possible to have an agenda item on meningitis kits – to agree a standard composition for all kits to be used across all sections.

In an emergency situation such as an epidemic - standardisation – even across different operational sections of MSF- is the safe, efficient and rationale way of providing these resources.

It seems from the discussion that intersectional medical meetings *had* been held prior to the "meningitis season" to discuss the various aspects of emergency preparedness but its not clear what the results/outputs of these meetings had been and how this contributed to a more cohesive intersectional approach as there is no tangible evidence of what was discussed.

[20] PocketGuide Emergency Preparedness:the Spirit and the Toolkit OCB January 2016

Human Resources.

Three of the four operational sections had expatriate teams in place specifically for meningitis. The size and composition of the teams varied but given the volume of meningitis activities at the time of the visit it was appropriate. All sections also had a list of potential national staff – many of whom had worked in last years epidemic – who could be called upon should the need arise.

OCB could also call on national staff being laid off when the project at Guidan Roumdji closed at the end of March. Although there were theoretically enough national staff resources to call on in the event of scaling up activities those operational sections with increasing involvement in meningitis activities (particularly in regions where they had no existing project site) required specific international staff support i.e. OCG could have benefitted from an experienced medical/paramedical profile to support the competent but non medical emergency coordinator with medical issues. OCB needed general medical/paramedical and logistic support to scale up activities in both vaccination and case management for Dosso and Niamey.

Epidemiological Surveillance.

A mixture of both passive and active surveillance was being carried out during the time of the first evaluation visit.

In regions where the greatest number of cases were being reported (i.e. Niamey) daily visits were being made to CSIs to collect data on cases reported.

In regions where smaller amounts of cases or no cases were being reported passive surveillance by collecting data at CSE level in the district was being undertaken. Joint assessments had being carried out with MSP staff if cases were being reported in a new AS (aire de santé) or district.

A common line-list had been recently approved by all four sections for general use but because this was late in happening previously recorded data had to be re-entered into the new line-list. This created a lot of work for sections who worked in regions reporting a lot of cases. It also had a knock-on effect on the epidemiological bulletin being produced by the Epicentre epidemiologist as he could only identify AS in alert or epidemic phase if he had the weekly data on time. The intersectional mapping project had just started during the first field visit and was encountering some difficulties with redrawn administrative boundaries in some regions. It would have been more useful if this important resource could have been started earlier to have the maps ready for the beginning of the meningitis season.

During the second visit it seems that the challenge to have timely data from all sections to produce a weekly bulletin continued. In the actual context this may have seemed slightly less important to the MSF staff responsible within the different sections given the ongoing reduction in cases from one epidemiological week to the next. However, the reality is that the *timely* analysis of data is essential if it is to be used effectively for epidemic management.

The Epicentre epidemiologist responsible for the production of the epidemiological bulletin also had to maintain links with CERMES and the intersectional mapping project and it appears at times he was overwhelmed by the workload.[21]

At the time of the second visit two of the three sections involved in meningitis were actively reducing their activities and although continuing weekly surveillance it was reverting to passive surveillance.

At the time of writing this report MSF combined epidemiological data for 2016 meningitis cases in Niger was not available and so it is not possible to say whether the number of cases ever reached outbreak level in any location (officially defined as an attack rate of a minimum of 100 cases/100,000 population)

The mapping project, although slow to start (delayed arrival and administrative difficulties), was able to produce large good quality maps that were used to support meningitis (and measles) related activities. Although the health districts and health facility locations are accurate the precision of village location in the different AS cannot be considered to be 100% accurate.[22] OCG and OCB were the main beneficiaries requesting maps of their areas of intervention. These maps are a valuable resource that can be used in different health interventions with the proviso that they are regularly updated.

[21] Personal communication with 3 MSF staff.

[22] Personal communication with Erwan Rogard GIS officer OCG

Laboratory Support.

MSF OCP had sent to Niger a qualified and experienced laboratory technician to assess, train, supply and supervise key regional laboratories with the aim to improve CSF specimen analysis and the quality of samples sent to CERMES (and eventually to the reference laboratory in Oslo).

This involved a significant amount of work and had started in Maradi region (OCP region of responsibility for meningitis and where their main project is based) despite there being very few cases at that time. It would have been more useful and appropriate to have started this support in the regions with the most cases.

Regular feedback was given to Madame Fati of CERMES on what training and donations had been undertaken and completed by a short written report so she could follow up with the laboratories concerned. Visits were being made in Niamey and Dosso regions to support OCB and the laboratory technician was open to requests for support from OCG and OCBA. Despite having undertaken an intersectional role the laboratory technician had no overview of laboratory supplies and equipment held by all sections that would have enabled him to use these resources (particularly those with a short shelf life like Pastorex) as efficiently as possible. This may have been because his support role was not clearly understood by all sections.

Given the potential workload and the size of the regions some additional support to these activities would be useful. OCG had a laboratory technician on the meningitis team who might have worked with the intersectional laboratory technician to share the workload.

Following the recommendations made after the first visit the intersectional laboratory technician felt that communication and coordination relating to laboratory issues within MSF and his role had become easier and this was generally agreed at the medical coordination meeting at the beginning of the second field evaluation visit. The liaison with the national reference laboratory was good and he had a better overview of each sections laboratory stocks and activities.

Despite the hard work, enthusiasm and resources expended in training, supplying and supervising laboratories in MSP health facilities very little has improved in terms of laboratories functioning effectively and supplying reliable and timely results. This remains an internal problem that would be impossible for MSF to "fix". Despite donating RDT kits (Pastorex) it has proved impossible to have the results of any of these tests undertaken in the regions supported by MSF. When asked why this lack of collaboration was occurring the deputy director the CERMES laboratory replied "*people do not want to work*" and added that CERMES has equal difficulty in obtaining these results for their database. All regional hospitals should be capable of doing gram stain and culture as a minimum "*but it's easier and less work for them to send it to CERMES for PCR analysis*" She also stated that this inefficiency had been discussed with the Directorate of Laboratory at MSP level but no improvement had been noted.

Vaccination Strategy.

All sections had agreed that they would not participate in any vaccination campaigns unless they were included at the planning stage where they can agree the strategy and plan to ensure a good outcome. This was particularly important as the MSP seemed to have a very poor record in planning and executing effective vaccination campaigns. Their approach seemed to be very hasty, with little or no preparation of the population and in some cases not enough vaccines to cover the target population [23] When working with partners who will fund the activity they generally try to have as many teams as possible and make the campaign last as long as possible to gain the maximum monetary benefit from it[24]. In addition MSP staff claim it is only possible to vaccinate a maximum of 300/day in urban settings and 150/day in rural settings! These poor practices appear to have been accepted by UN agencies working with MSP over the years and are therefore ingrained and difficult to change.

Very little vaccination had been undertaken at the time of the first evaluation visit as there were only the remnants of the vaccination stocks from 2015. OCBA had vaccinated in Tahoua and OCB was concluding their first vaccination campaign in Loga subdistrict in Dosso. Both of these campaigns had been done with no reserve stock or wastage component factored as there were not enough vaccines available. This is a risky strategy as population figures are generally known to be inaccurate, with the possible consequence of low vaccination coverage and a dissatisfied population.

[23] MSP vaccination campaign Niamey District 2 4-6th March 2016. Personal communication with the Majors of 3 Health Centres

[24] General verbal feedback from all MSF sections involved in vaccination activities in Niger

OCB was planning a vaccination coverage survey to be undertaken in Loga subdistrict. Whilst this resource intensive exercise may provide useful data for advocacy purposes it could have been useful to discuss this at the meningitis committee meeting to get some feedback on what benefits its implementation could have at this stage in both the outbreak and vaccination activities. Possibilities for intersectional collaboration may have also been missed particularly as the OCB epidemiologist who had developed the coverage survey protocol had unfortunately to leave Niger for emergency personal reasons before beginning the fieldwork.

Vaccines supplied by ICG finally arrived in-country on 17/3. The amount sent had been calculated with a 20% reserve and a 10% wastage rate calculated at ICG level (MSF standard is 25% reserve and 15% wastage). This lower level of security stock is an unfortunate consequence of the worldwide shortage of C-containing vaccines. Unfortunately it seems that the MSP did not respect the ICG security stock calculation and factored only 10% as reserve and wastage factor combined when calculating vaccine requirements. This was possibly so that they could use the total vaccine stock received more widely than they had indicated in their ICG vaccine request.

Once vaccination started the lack of an adequate security stock of vaccines was obvious and was due to quite different population figures being given by MSP officials at national and local level. With the exception of the OCBA vaccination at Fararat (Tahoua Region) where there seemed to have been an administrative overestimation of population figures leading to a coverage rate of 85.5% **all** the other MSF vaccination campaigns were working with under estimated population figures given at national level. The results achieved in these campaigns looks good (always >90% administrative coverage) because the population denominator used was not accurate.

- OCG carried out 2 vaccination campaigns in Tillabery.
- OCB carried out 4 vaccination campaigns in Dosso.
- OCBA carried out 4 vaccination campaigns in Tahoua.

The majority of these vaccination campaigns were carried out in the period between the first and second evaluation visits.

The day the ICG requested vaccines arrived in country (17/3) a meeting was held with the major actors and the vaccine stock distributed according to the current epidemiological data. Some differences were noted in the strategy between the different operational sections when it came to finalising the micro-plan with their MSP colleagues in the different regions. The vaccination coverage target mentioned in reports varied between 90-100%. MSF standard is 100% and this should be the objective.

The average number of people to be vaccinated per team per day varied considerably also given that all MSF sections worked with MSP teams. The range was from 150-600 people a day and this figure has a potential impact on the number of teams required and the length of the campaign. All campaigns were conducted in a rural setting (with the possible exception of Galmi). It proved impossible to calculate the average cost per vaccination and compare it between sections as each section calculated the vaccination budget differently.

The table below was compiled by the Head of Mission OCB and shows the total meningitis vaccination activities undertaken in 2016 by the three operation centres – OCB, OCBA and OCG.

Region	District	Aire de santé	Target Population (2-29 years)	Total estimated populations by age group.			Administrative Coverage rate.
				2-14 ans	15-29 ans	Total Vaccinated	
Tahoua	Konni	Galmi	30 743	20 613	8 368	29 686	96%
Tahoua	Konni	Kawara	14 541	-	-	13 238	91%
Tahoua	Konni	Gunfara	11 994	-	-	11 856	99%
Tahoua	Konni	Sabonga	11 381	-	-	12 932	113%
Tahoua	Keita	Fararat	17 196	10 020	4 688	14 708	85%

Dosso	Loga	Toullou Maïmassa	6 676	4 774	2 047	6 821	102%
Dosso	Dosso	Saboudey	16 508	12300	5618	17918	109%
Dosso	Gaya	Tanda	15 802	11 737	5 576	17 313	109%
Dosso	Dogondoutchi	Dan Kassari	23 640	14 868	8 778	25 767	109%
Tillabéri	Kollo 3&5	Koutoukale, Tagabati , Boudon, Karma, Libore Tanko Bangou, Libore Bangou Banda	66 405	47 931	15 355	63 286	95%
Tillabéri	Tera	Bangoutera	22 724	15 696	5 785	21 481	95%
						235 006	

MSF OCB, OCBA and OCG Meningitis Vaccination Activities Niger 2016.

Case Management

This is one of the fundamental pillars of epidemic management. Due to the scarcity of C-containing vaccines worldwide it was considered to be of primary importance in 2016 in a meningitis outbreak. MOH had accepted that ambulatory care would be implemented during a meningitis outbreak in 2016 and had theoretically prepositioned Ceftriaxone injection at CSI level in the regions. In practice however this had not happened in many areas and the renewable supplies (syringes , needles) necessary to administer it were not available.

Ambulatory treatment means that following diagnosis and initiation of treatment the patient should be observed for at least 24 hours to assess response to treatment and clinical evolution. If clinical signs have improved and the patient feels well they may be discharged if they agree to return daily to complete 5 days of treatment. This treatment should generally be by the intramuscular route (quicker, easier, safer). A register should be maintained with the patients' whereabouts, contact details and treatment information recorded and a system of follow up put into place for possible defaulters.

Due to the governments reluctance to communicate to the population about the meningitis outbreak and give clear health information messages people were not sure where to take sick relatives (this is particularly relevant in Niamey and region capitals where there was more choice of health providers). Treatment was not being given for free although the government announced that this was the case in a press release on March 3rd [25]. Drugs were given for free *once* a diagnosis had been made, but a patient consultation fee was still being charged. In Niamey some patients treated as outpatients were asked to pay for an IV catheter (boosting CSI cost recovery) and were treated via the IV route- a practice that the MSF team were trying to change as it is neither practical or safe to allow a patient to go home with a peripheral IV catheter in place[26].

During the first evaluation visit when the number of cases was still manageable within government health structures a number of questions about case management remained unanswered. All operational sections were in the preliminary phase of supporting case management in CSIs and at a referral hospital. The most important issue is the quality of care. The word 'isolation' was being used by some MSF staff when they talked about hospitalisation of patients with meningitis. This practice should be discouraged as meningitis patients do NOT need to be isolated and the idea of isolation can provoke fear and misunderstanding in medical personnel as well as the general population.

Case management does not only involve the medical management of a patient but all aspects of the patient's environment whether they are an inpatient or an outpatient. This implies MSF standards for water, hygiene, infection control, waste management, staff patient ratios, stock control and nutrition are put into place effectively at the start up (or as soon after as possible) of MSF supported medical activities.

The donation of kits implies that patients *are* being treated for meningitis or we suspect that very soon patients *will be*

[25] Point de Presse de Dr Idrissa Maiga Mahamadou SG MSP sur la situation de la meningite au Niger 03/03/2016

[26] Personal communication Dr. Ernest OCB and also observed by evaluator.

being treated for meningitis. A treatment kit should be given with a basic level of training and support AND follow up supervisory and resupply visits. This generally occurs as a combined visit: collection of epidemiological data and follow up of clinical care of patients.

While in many countries these duties are generally combined in a small medical team that can carry out both activities effectively, in Niger due to the existence of basic epidemiology qualification and it seems the ready availability of epidemiologists, particularly in Niamey, this combined role was split into two separate teams that is **not** the most efficient use of time or resources. This was how OCB was operating in Niamey and Dosso regions.

Training support materials such as written clinical case definitions and treatment guidelines should be as clear and simple as possible. During an emergency health staff generally do not have the time to read many pages of a complicated treatment protocol. This is particularly relevant at health centre level where there are less staff and potentially many more patients. OCG distributed a 13 page protocol with a strong paediatric bias at health centre level. While the quality of this written protocol is good it is not suitable for distribution at health centre level for the following reasons:

- In general MSF recommends[27] that all suspect meningitis cases in infants less than two months are referred to hospital and all children who seriously sick, have convulsions or are in coma should similarly be referred.
- The protocol suggests the use of an alternative cephalosporin Cefotaxime for infants less than two months that is not available at health centre level nor is it part of the national, WHO or MSF protocol for the treatment of epidemic meningococcal meningitis.
- The protocol is too long, too complicated and refers to equipment and supplies that are not found at health centre level in Niger.

Before distributing this type of protocol it is always useful to submit it for peer review (and possible approval at headquarters level) where particular biases and other errors can be redressed before it is put into circulation. This could have been discussed during an intersectional medical coordinators meeting or in the early stages of the MSF meningitis committee. In general this protocol should have been restricted to referral hospital use only (after certain amendments) and a simpler protocol used for health centre level.

Ceftriaxone injection was found in two different formats – IV/IM and IM only with a solvent containing lidocaine.

OCB and OCG had both preparations – OCB ordered the IM preparation during the 2015 epidemic but did not use it[28] and this was the remaining stock. The risk of theses two preparations mistakenly being used interchangeably is high in an emergency if special precautions are not taken to avoid this.

MSF written protocols seen by the evaluator did contain clear warnings about the danger of mistaking one preparation for another, but this alone is not a sufficiently robust strategy to prevent this from happening.

Use of the IM format for IV use in error could result in death. The only advantage to the IM only preparation is that due to the lidocaine component it is less painful as an intramuscular injection.

Although the National Hospital in Niamey was treating meningitis patients there was virtually no knowledge about what was happening there. As a tertiary referral centre the hospital although managed by MSP has a certain degree of autonomy and access for MSF has historically been difficult. It appears that they were sending all CSF samples to CERMES for testing even though they have a fully equipped laboratory. Between January 4th and March 27th they sent 259 CSF samples to CERMES for PCR analysis. 43 samples were positive for NmC. 1 was positive for NmX, 2 samples were indeterminate and 10 were positive for Sp.[29] Only 21% of the samples sent were positive for any type of meningitis. This is a high negative rate. Were all these suspect cases treated for meningitis and recorded as cases that later appeared on the MDO?

During the second evaluation visit it was clear that the number of meningitis cases was falling. The clinical management of large numbers of meningitis patients – both ambulatory and inpatient care – was highly unlikely in 2016. MSF planning for the clinical management of ambulatory patients had not advanced beyond the preliminary stages and it was not possible to see what were the challenges of undertaking this type of care for large numbers of patients. As the 5- day Ceftriaxone regime (7 days for infants <2 months) was introduced by WHO in 2015 there is no practical experience or lessons learned from past epidemics. In the 2015 epidemic ambulatory care was only permitted by MSP when inpatient

[27] Management of epidemic meningococcal meningitis 2016 MSF

[28] Communication by email with Petra Alders

[29] CERMES Resultats d'examens de LCR (bacteriologie et/ou PCR) 4/1-27/3 2016

facilities became overwhelmed and there is very little documentation about the challenges it presented.

OCB did a simple analysis on cases treated in Niamey last year[30] including defaulters rates from hospital and health centre level for patients following a 5-day Ceftriaxone regime. It is interesting to note that adherence to the full 5-day regime seemed far better when patients were treated at health centre level. More detailed analysis would need to be done to ascertain why this may be.

[30] OCB Annual Report Niger 2015 adherence to 5 dose parenteral Ceftriaxone (Cell 3)

CONCLUSION

The 2016 response to meningitis in Niger has been a known scenario of four different operational sections of MSF responding to an outbreak. The agreement to learn from this response jointly and in real-time through this evaluation indicates a growing interest to improve this type of response.

Good ambitions, but practical shortcomings on collaboration

The ambition for 2016 from the different OCs was to **use a more cohesive, collaborative approach.** In part this process, initiated by OCB at the end of 2015, was successful.

The comparatively low level of meningitis related activities this year hardly challenged the combined resources of the four MSF operational centres – for example OCP had minimal input as there were few cases in their regions of responsibility and the other sections all had manageable workloads.

Attempts at closer collaboration and coordination between the MSF OCs can be seen to have been reasonably successful but with two caveats:

- The need for closer collaboration was not really put to the test as the volume of work did not require more than one section to work in any region this year (as was the case last year when three sections OCB, OCG and OCBA all worked in Niamey)
- The success of collaboration and coordination between the different MSF sections in Niger this year is as much due to the personalities of the individuals concerned with meningitis activities in the different sections as it is to any formal planning and organisation. In general, those concerned showed an openness, a willingness to share and discuss, to collaborate and to learn.

Practically, the concept of an MSF meningitis committee was a good one, bringing all OCs together on a regular basis with Epicentre and allowing some level of discussion and collaboration. The absence of staff directly involved in managing the meningitis outbreak, e.g. emergency coordinators, potentially had the effect of reducing the immediacy and medical relevance of a number of the meetings.

In practice the meningitis committee could have perhaps started earlier and been used as a forum during the preparatory phase to better harmonise the MSF approach to the meningitis outbreak.

Intersection support roles - the laboratory technician and GIS mapping officer – were very positive initiatives and had the potential to boost the response through additional specialist support. Both specialists worked effectively and collaboratively across the sections although whether this was by accident or design is not fully clear from their terms of reference. Their role and availability- if it was to offer intersectional support- needed to be better communicated to all operational sections at the beginning of the epidemic.

The most obvious failing in regards to collaboration was the non sharing of EPREP stock amounts and vaccination cold chain capacity. Even treatment kits although similar, were not standardised across the sections. If regional backup support had been necessary (as was the case in 2015) standardisation is important to avoid confusion and a clear idea of available resources greatly assists emergency response.

Standardisation in Meningitis preparedness and response ensures safety, efficiency and rationality

All sections had undertaken varying degrees of preparedness for the meningitis season. However it is not possible to generalise across the four MSF sections and state that they were all equally prepared to respond decisively to an abrupt increase in meningitis cases in their region of responsibility.

Informal supportive communication had and was, clearly taking place between these staff in the different operational sections. However the opportunity to formalise and standardise various elements of the emergency preparedness for meningitis had been lost as they were now clearly in the response phase.

Without suggesting that all OCs should mount an identical response to the meningitis outbreak, in an emergency situation such as an epidemic – standardisation- particularly across various MSF sections operating within the same country is the safe, efficient and rationale way of delivering these needed resources. In Niger in 2016 this applies to kits, treatment protocols, drugs and medical supplies and case management strategies.

A small break-through in intersectional data collection

The introduction of an inter-sectionally agreed line-list is a very positive achievement for MSF, meaning that this much larger set of data coming from all sections can be analysed. Unfortunately for this outbreak the approved line list arrived after data had already started to be collected by the different sections meaning it had to be re-entered into the new line list creating more work.

Sharing and analysis of epidemiological data across the four sections was greatly assisted by Epicentre and the epidemiologist assigned to this task. At times it proved difficult to get the necessary data in a timely way from each section in order to complete a weekly epidemiological bulletin. Discussion of this data took up the majority of the time at the weekly meningitis committee when other activities – case management/ laboratory issues/mapping could have been afforded more time.

Outside of MSF the weekly epidemic management meeting held by the MSP had limited value- data discussed was at least 10 days old and actionable decisions were very rarely taken. It seemed to be a forum where partners brought their questions and only rarely got answers.

Strong efforts but no power for MSF to affect outcomes on essential laboratory support

Despite the energy and professionalism of the laboratory technicians sent to the field by OCP and their support to improve laboratory functioning in the regions where three of the sections worked it is difficult to quantify what has been the positive impact of this initiative.

This is because they have been working entirely within the MSP system with government employees and despite giving training, support, supervision and supplies they have no power to affect the outcome.

Having donated Pastorex kits and laboratory supplies it still proved impossible by the official route to have the results of these tests from the regions were MSF was working.

Laboratory results – that should help guide epidemic management – were still being shared very late with partners and MSF never formally received any results of the Pastorex tests undertaken in the regions even though MSF supplied the test kits. MSP systems set up to manage the transportation of CSF samples to the national reference laboratory were not respected by government employees and despite MSF offering to help this did not really improve.

Active MSF participation in vaccination – but effectiveness of strategy unclear

A small amount of vaccines left over from 2015 were used to vaccinate prior to the arrival of the ICG request for 2016. MSF participated actively in vaccination activities where they could discuss and agree the micro plan with the local health authorities.

Vaccination activities were generally informed by epidemiological data and the time limit for effective vaccination was respected (with the possible exception of OCB Dan Kasseri) in MSF supported campaigns. Lack of reliable population data given at central level and the MSP decision to limit the security stock and waste factor to 10% meant that in most cases population figures were underestimated and the vaccine stock was not enough.

Due to redefined and more sensitive alert and epidemic thresholds introduced by WHO in 2015 epidemic "pockets" were identified at sub district level and vaccinated in an attempt to contain the number of cases.

It is not clear whether the vaccination strategy employed in 2016 to "extinguish" small epidemic "pockets" at sub district level had any real impact on the progress of the outbreak as there are potentially many other variables that could have affected the disease progression. Certainly the number of cases is very much reduced when compared to 2015.

Case management: some oversight on standardisation and safety

At least two of the sections had Cetriaxone injection in two different formats – IM and IM/IV with no clear written protocols on how these would be used differently in different contexts. Given that using the IM preparation mistakenly by the IV route could potentially be fatal and given the need for standardisation of activities during high volume episodes such as epidemics this is an important oversight.

The level of planning for the clinical management of both ambulatory and hospitalised cases varied by section but was generally sidelined in favour of vaccination activities. However, somewhat fortuitously the number of cases began to drop by week 10 so planning to effectively manage an increase in cases ceased to be a priority.

Nevertheless, given the new treatment protocol of 5 days of parenteral Ceftriaxone introduced in 2015 it would have been useful to have been able to document the challenges this presents in both inpatient and ambulatory care.

A pragmatic advocacy strategy

2016 being the year of presidential and general elections in Niger there was very little political will to act decisively in the face of a meningitis outbreak – certainly after the poor management of last years epidemic remained fresh in the memory of the population.

The MSF advocacy strategy took into account this specific context but had the clear objective of keeping the meningitis (and measles) outbreaks as the central point of discussion with the MSP and other actors. Maintaining a positive, non overtly critical relationship with the MSP and offering assistance and support where possible and necessary kept lines of communication open.

Given that the number of meningitis cases started to decline nationally by week 10 this level of clear and open communication continued without the need for change.

RECOMMENDATIONS

A number of recommendations were made following the first field evaluation visit that related directly to emergency preparedness and MSF resources. (see annex 3)

The following recommendations are addressed to all MSF operational centres:

⇒ **Recommendation 1**: Where more than one MSF operating centre is responding to a medical emergency within a given country common EPREP planning and shared management of emergency stocks and resources should be the norm. This is the most efficient and effective use of MSF resources.

⇒ **Recommendation 2**: Careful consideration and clear written protocols that are contextually relevant are pre requisites to the use of **both** forms of parenteral Ceftriaxone (IM and IM/IV) given the real risk – particularly in epidemic/emergency situations- of inadvertently giving the IM preparation by the IV route with potentially fatal consequences.

⇒ **Recommendation 3**: When conducting mass vaccination campaigns during a meningitis epidemic a minimum security stock of vaccines (including the wastage component) should not fall below 25% even in times of global shortage and 100% vaccination coverage should be the objective.

ANNEXES

ANNEX I: TERMS OF REFERENCE

Stockholm Evaluation Unit

Subject/Mission **Intersectional evaluation of MSF intervention during the Meningitis epidemic in Niger (real-time)**
Evaluation Sponsor/ Owner Bart Janssens (DirOP OCB)
Evaluation Focal Point Petra Alders (OCB) -
Primary Stakeholders/ Medical officers for Niger, OCB, OCBA, OCG and Evaluation Communication OCP (?) Group
Starting Date Feb/March 2016
Time period to be evaluated March – June 2016
Duration 3 months

Terms of Reference CONTEXT AND BACKGROUND

In 2015 four MSF operational centres were involved in the response to a large Meningitis outbreak in Niger. At the beginning of 2016 all OCs are getting ready again to respond. Some main lessons from the 2015 response have been captured, but a more in-depth evaluation could not be organised in time. It is therefore proposed that the response in 2016 will be evaluated in real-time.

In 2015 the situation was as follows: in March, an epidemic of *N. Meningitidis* type C was declared in Dosso region and mass vaccination campaign was carried out by OCP. By week twelve, Niamey had experienced a significant increase in the number of meningitis cases reported, originating mainly from municipality 2, where the epidemic threshold was crossed the same week. According to the national reference laboratory (CERMES)[1], the outbreak in Niamey was, at the time, due to *N. Meningitidis* serogroup W135. This information was contradicted by the same laboratory in the following weeks when positive results were declared to be mainly due to *N. Meningitidis* type C.

By week 18, the MoH declared Niamey in epidemic as the 5 municipalities of the capital had exceeded the emergency threshold. Two treatment centers were appointed by the Ministry of Public Health to be in charge of managing the cases: Niamey National Hospital and the site of Lazaret. OCB started supporting Lazaret treatment center on week 13. OCG joined this effort by focusing on the diagnosis and treatment of children under ten years old. Eventually, three MSF sections (OCB, OCBA and OCG) were involved in the early detection of cases at community level and in the referral of severe cases to the two treatment centers.

On May 10th, the MoH started a vaccination campaign for children between 2 and 15 years old in Niamey (with the Men.C polysaccharide vaccine). Schools were targeted by the campaign, with a goal of vaccinating 160,000 children to achieve citywide vaccination coverage around 35% in this age group.

[1] CERMES : Centre de Recherche Médicale et Sanitaire

On June 5th, the MoH closed down the treatment centre of Lazaret.

REASON FOR EVALUATION / RATIONALE

(1) To evaluate the intersectional response in this potential outbreak in real-time and (2) identify immediate

recommendations for improvement as well as (3) list the main lessons learned from 2015 intervention on eprep, surveillance, clinical care, intersectional organization, vaccination

OVERALL OBJECTIVE and PURPOSE

The overall objective is to evaluate the joint-MSF response in terms of its appropriateness, timeliness, effectiveness and coordination. The perception of the MoH will be sought and recommendations on specific issues are requested. The evaluation will provide direct recommendations in order to further improve the ongoing response and document lessons (from the 2015 and 2016 intervention) for informing future outbreak responses.

SPECIFIC OBJECTIVES / Evaluation questions

1) How appropriate is the MSF response?

1. a) Do the different OCs intervene with enough resources to cover the needs?
2. b) How appropriate is the e-prep plan made by the different Ocs and jointly?
3. c) How appropriate is MSFs choice and plan in terms of a vaccination strategy?(if any,seeing the lack of vaccines in worldwide)
4. d) What objectives have been defined for advocacy around the Niger meningitis?

2) How timely is **MSFs response to the Meningitis outbreak in Niger in early 2016?**

. a) Were / are preventive measures in time?

. b) Are we intervening on time? In Dosso, in Niamey, in other regions, according to the • • • •

. c) Which factors delay or slow down the response, for surveillance and early detection in the first place and for clinical care and/or vaccination in the second place?

. d) What lessons did the OCs identify in terms of timeliness from the 2015 intervention

type of intervention.

Surveillance

Early detection

Clinical care.

Vaccination (and coordination)

3) How effective is the MSF response?

. a) How appropriate are the treatment protocols used at the treatment center, at primary health care level? What was the rationale behind and was it adapted to the available epidemiological data? What adaptations were made since the 2015 response?

. b) How are processes working around LAB testing within MSF and in coordination with others?

. c) How effective are the decentralization strategies and the ambulatory treatment in terms of .....

. d) What are the advocacy objectives defined by the different OCs around the Niger Meningitis situation and to what extend are they being achieved? What has been achieved in terms of advocacy since 2015?

4) How did coordination work between MSF OCs and external partners during this response?

. a) How does MSF coordinate the intervention with the MoH?

. b) How does MSF coordinate between OC's and between the sections on the field? E.g. Division of tasks? Information channel?

If applicable: how does the request for vaccines to ICG work?

5) **Perception of the MoH in regards to MSFs role in the response?**

a) What are the main difficulties perceived by MoH regarding Meningitis preparedness and response? What is the

potential MSF added value? Would be possible to set up an official collaboration based on that gaps (surveillance, training, stocks, HHRR, etc.) for future interventions.

6) What are the lessons that have been learned from 2015 and how are they being applied in 2016?

EXPECTED RESULTS

- Rapid debriefing, possibly workshop with stakeholders during field stay and communication of first findings and recommendations.

- Evaluation report answering the questions above, maximum 30 pages; including strengths and weaknesses of the operation, and

Global recommendations based on the findings and **specific recommendations:** a) regarding EPP Meningitis at Country / Region level? b) related to possible follow-up to be made in terms of advocacy?

c) on the decision-making process to ensure to make the right call regarding vaccination in a Meningitis epidemic?

d) on the need for MSF to invest in LAB capacity and lobby MoH to guarantee quality & independence of LAB Results in the future (double sampling, etc.)

TOOLS AND METHODOLOGY PROPOSED

Possibly consider two field visits:

- one at the early stage (Feb) to analyse the set up and functioning of OCs (2 – 3 weeks)
- one towards the end of the response to capitalise the lessons learned

1. Review and analysis of project documents, reports, relevant guidelines and tools, routine project data
2. Semi-structured interviews (and focus groups where relevant) with key-team members at HQ and field levels, key-authorities, medical counterparts, representatives from affected communities, patients.
3. Observation at different intervention sites, during key meetings

PRACTICAL IMPLEMENTATION OF THE EVALUATION

Number of evaluators	**2**
Timing of the evaluation	**February – June 2016**
Required amount of time (Days);	
For preparation (Days)	**10 days**
For field visits (Days)	**15 days + 10 days (2nd visit)**
For interviews HQ (Days)	**10 days**
For writing up report (Days)	**15 days**
Total time required (Days)	**50 – 60 days (per Evaluator)**

Notes: to clarify whether 2 field visits make sense? Total number of consultant days will be 100 – 120.

PROFILE /REQUIREMENTS: EVALUATOR(S)

Epidemiology, epidemic response experience, previous operational experience in emergency response

Ideally one person MSF experienced, one external Language requirements: English and French(Fluent) Evaluation competencies

ANNEX II: LIST OF INTERVIEWEES

Xavier	Trompette	Head of Mission OCB
Tessy Fautsch		Emergency Meningitis Coordinator Niamey OCB
Dr Jerome	Mastaki Kambale	Medical Epidemiologist OCB
Dr	Ernest	Medical doctor Case Management OCB
Dr Felix	Kouassi	Head of Mission OCP
Dr	Idrissa Comparaore	Medical Coordinator OCP
Carlos	Tiemeni	OCP/Intersection Laboratory Technician
Dr Nicole	Mubuto	Medical coordinator OCG
Karl Jose	Nawezi	Head of Mission OCG
Augustin	Ngoyi	Emergency Field Coordinator Meningitis OCG
Celine	Motta	Deputy Medical Coordinator OCG
Erwan	Rogard	GIS Officer OCG
Dr Jeff	Mutumbo	Medical Coordinator OCBA
Elmounzer	Ag Jiddou	Head of Mission OCBA
Adolphe	Masudi	Field Coordinator EMUSA OCBA
Dr Steve	Avoce	Medical Doctor EMUSA OCBA
Fati	Sidikou	Deputy Director CERMES
Dr Innocent	Nzeyimana	Epidemics and Emergency Response Focal Point WHO Niger
Dieudonne	Bamouni	Head of Office OCHA Niger
Halidou	Salou	Epidemiologist Epicentre Niger (intersection support)
Matthew	Coldiron	Epidemiologist Epicentre Paris
Dr Pauline	Lechevalier	Vaccination Advisor OCP
Axelle de la	Motte	Desk Officer Niger OCP
Petra	Alders	Medical Department OCB
Richard	Veerman	Operations Coordinator OCB
Catherine	Bauchy	Deputy Vaccination Advisor OCB
William	Etienne	Medical Deputy Operations Coordinator OCB
Luis	Encinas	Desk Manager Niger OCBA
Miriam Alia	Prieto	Vaccination, Infection Control and Nursing Care Advisor OCBA
Coralie	Lechelle	Assistant responsible programmes Cell 3 Niger OCG
Dr Michel	Quere	Medical Referrant Cell 3 Niger OCG
Dr Jean Claude	Djoumessi	Medical Coordinator and emergency coordinator OCB
Perrine		Nurse Vaccination OCB
Noriko		Pharmacist OCB
Elsa	Meyer	Nurse vaccination and case management OCB
Dr Lenn		Medical Doctor OCB
Dr	Aline	OCB epidemiologist

ANNEX III: INTERIM REPORT

RTE of MSF activities during meningitis season Niger 2016 First feedback points after field visit carried out 4-17 March 2016

1. Introduction

No visits made outside Niamey – time and distance constraints plus no major MSF meningitis activities (i.e. vaccination/ case management) ongoing during my time in Niger. My visit occurred during the 'inertia phase" between the two rounds of the general elections – second round due on 20/3.

This meant effectively no major decisions were being taken about formulating a coherent government strategy in response to this seasons meningitis outbreak.

No minister of health in post (Prime Minister acting in this role/ highest authority as interlocutor for MSF was the General Secretary– a political position so more likely to want to contain the potential political fallout meningitis may cause) Situation complicated by a concurrent Measles epidemic.

Main conclusions and discussion points are highlighted in bold in the chapters below.

2. Main findings and conclusions

MoH (MSP+DSRE)

Chronically weak, disorganised and ineffective. Poor response capacity/timeliness. Lack of coordination and organisation. Communication towards population, MoH staff and partners poor or non existent. They have less than 50% of estimated budget required to respond to this year's outbreak.

How appropriate is the MSF response?

Appropriate means suitable and correct and this is difficult to generalise over the 4 sections who all currently have different levels of involvement in meningitis response. At time of writing most reported cases are in Niamey and Dosso (both OCB regions of response) Then Tillaberi (OCG) and Tahoua (OCBA).

The other 4 regions have so far reported a small number of cases. OCB has done vaccination in Loga, is doing active surveillance in NDS2 and other DS in Niamey plus kit distribution in CSIs and support to La Poudriere Hospital. Regular supervision of case management has only just started. OCBA has done vaccination in Tahoua plus ? some case management and OCG will do vaccination in Tillaberi and has done some treatment kit distribution but as yet no case management. Apart from ongoing surveillance and laboratory support activities OCP is currently the least involved in meningitis activities.

Resources.

EPREP plans

All very different format – some very basic/minimal, others very detailed (one not updated since last year) No joint plan found. *What should it contain?*

• *Objective events that provoke /require support from the backup regional section? Pooling of resources/common stocks?*

EPREP stocks.

What is currently available in stock in Niger (plus outstanding orders) for each section? Still waiting for up to date lists from 3 out of 4 sections.

• *Basically what level of vaccination activity can they support and how many simple cases/complicated cases/paediatric cases can they treat with the stock they have now?*

Vaccination i.e. cold chain capacity + auto block/dilution syringes/needles/gloves/security boxes/vaccination cards etc. Case Management i.e. number of simple ambulatory cases that can be treated (Ceftriaxone+ renewable supplies/other meds PLUS, number of complicated inpatient cases that can be treated (Ceftriaxone plus supporting therapies and medical equipment/ renewable supplies needed to assure quality care)

Treatment kits available in all sections however quite some differences in contents- why not standardise? Kit distribution also demands a level of follow up supervision/support and potential resupply- this is not being done by all

sections currently.

Human Resources

All have list of national staff who worked in meningitis last year. OCB can potentially use Guidam staff when project closes end of March.

• 3 out of 4 sections have expat teams in place working exclusively in meningitis response. Reinforcement of these teams is recommended for vaccination and case management in OCB and OCG.

Not enough discussion with OCBA to make any comment.

Epidemiological Surveillance.

A mixture of passive surveillance and active surveillance being carried out. Some sections (usually where there is a larger number of reported cases) are doing active surveillance at CSI level. In regions /districts with currently no or low reported cases passive surveillance through CSE at district level is done. Joint assessment being carried out with MoH if new cases reported in a DS/AS

- *Once cases reported in an AS important to increase surveillance in surrounding AS and possibly adjoining DS.*
- *Combining these surveillance visits with support/supervision and restocking of CSIs.*

Common line list finally approved and put into place by all sections -----late! Has consequences for sections with +++ cases to transfer data to this new line list. Not all sections have an epidemiologist to work on this.

Halidou (Epicentre) can only identify AS in alert or epidemic phase if he has this data weekly and in time. (linked to previous comment)

Intersection GIS mapping could have started earlier so maps were ready or near ready before the meningitis season began.

Laboratory Support (Carlos OCP) Carlos (+ Benjamin before him) seem to be doing a good job in terms of training, support and supplying missing items in order to ensure labs (CHR and others) can test CSF and send samples to CERMES. He has supported Maradi and Niamey and will do Dosso next. He should provide some FU to those labs already trained. This is a big job and he hasn't yet discussed possible support requests with OCBA/OCG. EOM 31/3. Feedback to Fati CERMES – requested to write a short report on activities and donations so she can FU.

Can he stay on longer to provide the necessary support and supervision? (Until end of intervention)

Depending on his future workload would it be possible to provide him with support? OCG has national staff labtech in meningitis team- could they not work together?

He should be aware of all sections lab resources related to meningitis separately/jointly so he can

advise on how this should be deployed and what needs to be ordered/reordered/swapped/shared?

Vaccination strategy.

All sections agree will not vaccinate unless they can plan and agree strategy and prepare adequately to ensure a good outcome. Have been vaccinating so far (Tahoua and Dosso) using last years' remnant stock of vaccines. This did not include any reserve stock or wastage calculations. Risk of not having enough vaccines and /or lower than acceptable coverage.

For vaccines delivered by ICG on 17/3 MSF together with UNICEF, ICG/WHO representative and MoH were calculating where to use the vaccines being delivered based on current epidemiological data and last years' vaccination coverage. ICG sent vaccines with 20% reserve and 10% waste factor. It seems that zero waste factor was being calculated into the use of these vaccines and MoH would keep ?10%/?20% in general reserve that is NOT the intended purpose of these calculations.

It is not advised to start vaccination activities until the full amount of vaccines has been delivered to the DS/AS and this with a calculated percentage of reserve and wastage factor per vaccination campaign.

OCB doing a VC survey post Loga vaccination. Why is this not being discussed intersectionally and a joint decision made on what is the best strategy and what is possible?

Case Management. Strategy this year by MoH to treat simple cases at CSI level. Ceftriaxone injection available but

renewable supplies often not/ ceftriaxone supplies sent to regions but not distributed to all districts/AS (anecdotal information on this) Due to total lack of HP messages to the population people do not know where and when to go with their sick relatives (this is obviously more relevant in Niamey and regional capitals)

Are all hospital admissions relevant? i.e. complicated cases.

This seems important to know in HNN- to which no section currently has access (OCP talked about maybe trying to get access)

All sections have generally identified a first hospital for referral of complicated cases.....what is next step if this becomes overcrowded (tents are not always possible) Currently only information we have on case management is the outcome on line list. Assessment of quality of care for both simple and complicated cases is in the early stages in some sections and not yet started in others.

Training, supervision, support and supply/resupply will start when? (objective criteria used/caseload?)

Ceftriaxone injection is available in two formats (IM/IV and IM with solvent containing lidocaine) – how many sections have both? Complications of ensuring IM format is not used for IV use – risks V. benefits of having 2 formats?

Neonatal treatment protocol (< 2 months) one section has an alternative to ceftriaxone (cefotaxime) why? Free meningitis treatment is not really happening (only once the patient is diagnosed – drugs are free) However certain CSIs in Niamey supported by MSF patients pay for IV catheter (cost recovery) and have outpatient IV treatment (not appropriate and trying to change this)

• *OCBA has a good modular training package on all key aspects of meningitis that can easily adapted and used by all sections.*

Advocacy Strategy.

• *Lesson learnt from last year – one spokesperson for all sections that is working well and appreciated by partners.*

The current strategy to keep the meningitis outbreak "front and centre" of government/MoH/UN consciousness (attendance at all relevant meetings /raising issues of concern at highest possible level in MoH /giving clear messages about MSF involvement) during this election inertia phase. Following the

second round of elections and depending on outbreak evolution if the government don't start to take a more responsible position and actively manage the outbreak/epidemic may need to rethink strategy?

MSF coordination. Are we applying the lessons learned last year? Haven't seen any coherent documentation on the major issues to be resolved from last year.

Between the different sections communication seems to be going OK for the moment The Meningitis Committee has a role to play in this but 75% of time is taken up with epi surveillance presentation. Vaccination is also discussed when relevant.

There is a need for a case management component in the agenda.

There is a need to capitalise more on experience/problems identified in regions and where there are commonalities identified feed this back for resolution at CNGE. e.g. specimen collection and transport

Differing levels of commitment to the committee? With external partners Everyone I met outside MSF mentioned "the MSF press release from Dakar" and saw it as having no positive influence on the situation. The WHO representative ranted about it in two meetings I attended. Suffice it to say WHO Niger office is doing very little of practical value except giving the MoH an inappropriate donation of emergency medical and surgical kits accompanied by lots of publicity. UNICEF have been marginally better -having seen for themselves the poor quality vaccination done in Niamey DS2 and giving this as feedback at CNGE. Both are slow to react.

Perception of MoH in regards to MSF role in the response. Not sure why MoH seems so reluctant to let MSF take on more responsibility concerning meningitis. Fear of the same type of problems developing as last year? Sovereignty/national pride?? I think its clear for everyone (government /MoH /UN bodies) that MSF is the only medical actor in country with the resources and expertise capable of implementing an effective response to meningitis in partnership with MoH.

3. Recommendations General recommendations for all MSF Sections.

• Sharing of resources in country rather than each section boosting its own resources from individual requests to desks. Human resources- Each section has a list of potentially available national staff and possibly expat staff who may be able to be deployed between sections.

Stocks and Supplies - Having a global view of what case management and cold chain supplies are available to be used /shared between sections (items with short expiry date (e.g. Ceftriaxone, Pastorex kits) items in short supply in one section that could be lent/donated by another section. Specialist positions- lab technician /epidemiologist who could be shared between sections- lab technician having global overview of tests, transport medium and supplies to ensure efficient and effective use of these resources and epidemiologists working together to plan and implement VC surveys once intersectional planning on this has been decided.

Training materials and supports- OCBA have a very comprehensive and clear training package that can be adapted to meet the training needs of all sections.

Ensure that all treatment protocols, kit contents, specimen collection, storage and transport protocols are coherent across all sections.

Treatment protocols should be clear and simple ie IM treatment for outpatient care and IV treatment for inpatient care.

All vaccines supplied by MoH should have a percentage of buffer stock and waste factor included to comply with international and MSF standards.

It is suggested that case management should be included as an agenda point for the weekly MSF meningitis committee.

Last – but not least – can objective criteria be defined that will identify more clearly when intersectional support becomes necessary? This may become important in the coming weeks specifically for case management – both inpatient and outpatient care.

Recommendations by Section.

OCB.

Strengthen active surveillance teams for Niamey and Dosso.

Strengthen case management support in Niamey and Dosso.

OCG

Ensure that treatment protocols are in line with WHO recommendations.

Strengthen current meningitis team with experienced doctor /nurse who is able to support the coordinator by concentrating on medical issues.

Support the set up of a base in Tillaberi region to work closely with regional health authorities.

Consider releasing the lab technician in the meningitis team to support Carlos in strengthening lab support and supervision regionally for all sections.

OCP

Continue to support the intersectional role of the lab technician so there is a good overview of laboratory strengths and weaknesses at regional level. Explore the possibility of the lab technician currently working with OCG meningitis team working together with Carlos to strengthen intersectional lab support.

Explore the possibility of access to information and collaboration with National Hospital Niamey where MSF has currently no information on meningitis activities.

OCBA

All vaccines needed for a vaccination strategy should be available in the location before starting vaccination.

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