SUDAN: MENINGITIS OUTBREAK

5 May, 2000

appeal no. 07/99
Situation Report No. 4 (Final)
period covered: March 1- November 30, 1999

The meningitis epidemic in Sudan in 1999 was particularly dangerous, with more than 30,000 people having contracted the disease, resulting in over 2,000 deaths. Before the epidemic could spiral out of control, a timely and intense treatment and prevention operation was initiated, resulting in a total of 12.8 million doses distributed in the country by various agencies. Prior to the revised Appeal at the end of April, more than 200,000 vials of oily chloramphenicol had been procured, allowing treatment for a minimum of 30,000 patients.

The Federation and the Sudanese Red Crescent (SRC) played a central role in the response and treatment operation. An unspent balance of CHF 134,660 remains available, and these funds have been transferred to a new project to respond to the current meningitis outbreak in Sudan (please see the separate Information Bulletin issued on 5 May, 2000). Related to this, the Federation is well positioned as a result of efforts which also focused on preparing for future outbreaks, supported with a further 30,000 vials of oily chloramphenicol obtained by the authorities in May, 1999 in order to maintain a stock at five strategically located treatment facilities.

The Context

Sudan is in the so-called 'African meningitis-belt', an area stretching from Ethiopia in the east to Senegal, Gambia, Guinea-Bisseau in the west (*see Annex 1*). The countries in this belt experience outbreaks of meningitis in cycles of every 8-12 years. In Sudan, the last major epidemic occurred in 1988-89 with more than 45,000 people having been affected. The death toll during that occurrence was more than 7,500.

The latest outbreak of meningitis started in North Darfur state during the month of December 1998 and within two months spread to 12 other States along the main road and rail transport routes. It soon affected adjacent states, with a total of 17 altogether which came under epidemic surveillance (*Annex 2*). The outbreak reached its peak between the end of April and the beginning of May, 1999. Some states in the north (River Nile, Northern), not typically within the meningitis belt, also reached an epidemic threshold. The number of cases started to decrease in June, and by the third week of the month the epidemic was under control. After monitoring the trend of the disease for four consecutive weeks,

the task force declared on 18 July, 1999 that the epidemic was over. A total of 33,080 persons, mainly children and young adults, had contracted the disease, and 2,375 lost their lives.

The Appeal

As the number of meningitis cases in North Darfur state was much higher than the previous years, WHO was prompted to organise an assessment mission for the state on 15-16 January 1999, conducted jointly by the Federal Ministry of Health (FMOH) and the partner agencies (WHO, UNICEF, MSF and the Federation and the Sudanese Red Crescent). A national task force to contain the epidemic was formed, and an appeal was launched for a total of US $5.6 million to immunise a population of 7.6 million and to treat a total of 28,000 cases.

The Federation initially issued an Information Bulletin to focus attention on the situation, and the Spanish Red Cross responded rapidly with a donation of 150,000 doses of vaccines and other medical supplies. The Federation's Appeal 07/99 was subsequently launched on 1 March, seeking CHF 998,000. With good donor support, the appeal was fully covered, enabling the procurement of 1.79 million doses of vaccines and other necessary medical supplies. Due to the rising trend of the epidemic during April, a further 0.9 million doses of vaccines were required to meet the needs and the appeal was revised accordingly in May. Thus, a total of CHF 1,497,000 was sought to vaccinate approximately 2.5 million people (aged between 2-30 years) and to assist the MoH in the states with treatment facilities.

Red Cross/Red Crescent action

The Operation •

The Federation and Sudanese Red Crescent Society (SRC) operation started in March based on a three month plan of intervention, and was later extended until 31 October, 1999. The main objective of the operation was to minimise the impact of the epidemic by organising a vaccination campaign for the potentially high risk population, providing treatment facilities in hospitals and health centres, and by making people aware of the disease and of preventive measures. The programme also looked into an appropriate preparedness plan for the future.

The epidemic intervention was coordinated by the national task force, headed by the FMOH and including the WHO, UNICEF, MSF and Federation and SRC as partner agencies serving also as leading members of the International Coordination Group (ICG). The Federation and SRC responded rapidly to the Government's appeal for support to contain the epidemic in North Darfur state. Once the epidemic spread to different states, the Federation and SRC were assigned to initiate action in seven states (Gezira, White Nile, Sennar, Gedaref, Kassala, Red Sea and Blue Nile) located mainly in the eastern region of the country. At a later stage River Nile and Northern state were also included in the programme.

The programme established the following objectives :

- Procurement of vaccines and organising vaccination campaign.
- Procurement of antibiotics (Oily chloramphenicol).
- Public health information.
- Training.
- Preparedness plan for the future.

Related to case management and surveillance, the Federation and SRC played a supportive role to the MoH in the states by providing medical supplies and information.

Procurement of vaccines and organising the vaccination campaign

The needs were assessed and vaccines and necessary medical supplies were efficiently procured without delay. Autodestruct (AD) syringes distributed with the vaccines were considered most suited for vaccination - single use and disposable, with an automatic lock devise to prevent further use. The distribution was made in accordance with the task force's central plan. SRC branches were involved in

organising vaccination campaign, and on many occasions trained volunteers were involved in actual vaccination. The two tables below summarise the Federation and SRC vaccine distribution and coverage.

Table1. FEDERATION/SRC DISTRIBUTION OF VACCINES

STATE	ITEM					
	Vaccine (no of doses)	**Vaccine** (no of doses)	**Vaccine** (no of doses)	**Disp. Syringe** (1ml)	**AD Syringe** (0.5ml)	**AD Syringe** (0.5ml)
N. Darfur	150,000			150,000		
Gezira	x	350,000	400,000	x	300,000	400,000
White Nile	x	300,000	50,000	x	250,000	50,000
Sennar	x	150,000	100,000	x	50,000	100,000
Gedaref	x	260,000	100,000	x	200,000	100,000
Kassala	x	350,000	0	x	300,000	0
Blue Nile	x	80,000	20,000	x	50,000	20,000
Red Sea	x	300,000	0	x	278,000	0
River Nile	x	x	100,000	x	0	100,000
Northern	x	x	50,000	x	0	50,000
Upper Nile	x	x	50,000	x	0	50,000
Total	**150,000**	**1,790,000**	**870,000**	**150,000**	**1,428,000**	**870,000**
Procured	150,000	1,790,000	900,000	150,000	1,530,000	900,000
In stock	**0**	**0**	**28,750***	**0**	**102,000**	**28,750**

Notes:

- North Darfur distribution was made when the outbreak started in the state in December.
- A total of 2,840,000 doses of vaccines were procured and distributed during the operation (including N. Darfur distribution).
- With the revised appeal, launched in 7 May 1999, 900,000 doses of vaccines were procured of which 870,000 doses were distributed
- The above table does not include the distribution data for gloves, safety boxes, 20ml syringes for preparing vaccines and needles. These items have distributed along with vaccines and AD syringes (see Table 2).

* 1,250 doses of vaccines were allocated to SRCS HQ clinic for use of the staff.

Procurement of antibiotics (Oily Chloramphenicol)

Chloramphenicol injection in oil suspension proved to be a key component in treating the epidemic. The drug is for single dose intra muscular use and can be administered by trained medical assistants at peripheral level as compared to conventional Penicillin and water soluble Chloramphenicol injection which require intravenous administration for about a week. The Federation and SRC procured a quantity of the antibiotic sufficient to treat 1,000 patients in the states.

The drug itself was new in the country and the necessary information (scientific literature) was not made available to the doctors while distributing the drug; hence, there was some reluctance by the medical community at the start of the operation to use this drug as the treatment of choice. At a later stage, an information sheet on Oily Chloramphenicol and scientific literature on the usefulness of the drug were distributed and workshops were organised by the task force. With a few exceptions, the use of the drug improved in most places. The table below shows Chloramphenicol distribution in the states by the Federation and SRC.

Table 2. DISTRIBUTION OF OILY CHLORAMPHENICOL & OTHER MEDICAL SUPPLIES

STATE	ITEM					
	Oily Chloramphenicol (no of vials)		**Syringe 10ml**	**Syringe 20ml**	**Gloves**	**Safety box**
	Federartion/ SRC	Other sources				
Gezira	16,200	6,600	7,600	2,920	2,000	2,800
White Nile	9,600	4,000	4,000	1,800	2,000	2,400
Sennar	5,300	1,200	1,200	0	4,000	0
Gedaref	9,940		4,500	2,000	2,000	2,000
Kassala	6,000		3,000	1,920	2,000	2,000

Blue Nile	4,000	1,200	2,000	400	2,000	400
Red Sea	4,800		2,200	400	2,000	800
River Nile	2,000		2,000		0	0
Northern	0	600		250	0	0
Upper Nile	600				0	0
Total	**58,440**		**26,500**	**9,690**	**16,000**	**10,400**
Procured	60,000		27,600	13,000	20,000	10,412
In stock	**1,560**		**1,100**	**3,310**	**4,000**	**12**

Note:

- With the alarming trend of the epidemic in April-May, further distribution of chloramphenicol has been indicated in the section 'other sources' (WHO, UNICEF and MSF).

Public health information

SRC volunteers were engaged in health information campaigns in the states (focusing on the effectiveness of vaccinations and preventive measures). The branches have used various means to disseminate information, including public gatherings, radio, television and posters. At the initial stage during the intervention in N. Darfur, the Federation and SRC prepared posters and leaflets (60,000 altogether) which were distributed in different states during the operation. At a later stage, more posters and leaflets (60,000) were prepared by the task force, and were distributed in the states.

Training

Training was conducted during the intervention, particularly in El Fasher of N. Darfur where a training workshop was organised for the volunteers engaged in vaccination campaign.

The Federation's Delegation and SRC health staff held a three-day workshop in Khartoum on 20-22 March, 1999 for the branch Directors and health coordinators in the operational states. The role of the Federation and SRC, the vaccination campaign, monitoring, reporting and coordination with the State Ministry of Health (SMOH) were discussed.

Further training in state branches was organised during the second week of May. Sixteen SRC trainers from Kassala, Gedaref and Red Sea attended the workshop held in Kassala and 18 trainers from Sennar, Gezira, Blue Nile and White Nile states attended in Gezira. The training was conducted by SRC health staff, supported by a Federation delegate.

Preparedness plan for the future

In view of the cyclical nature of meningitis epidemics in Sudan, it is essential that preparedness campaigns take place. In order to respond more efficiently in the future, a grassroots prevention training programme was designed and has been implemented in the seven states where the SRC has a major presence.

A three-level response network was designed: Level 1 (HQ executive); Level 2 (state branch); and level 3 (provincial), and a committee for the highest level was formed. The SRC nominated one staff from their health department to function as coordinator for the response network. The workshop for the higher levels (1 & 2) was conducted on 21-23 July. Epidemic preparedness workshops (levels 2 and 3) took place in seven states (Gezira, Sinnar, Gedaref, Kassala, White Nile, Blue Nile, Red Sea) in the months of September and October.

As part of the preparatory response, a resource pack containing a manual for volunteers, sample posters and leaflets and a short video on meningitis intervention were prepared and distributed to the major actors.

The Delegation

The programme started in North Darfur state and was assisted by one health delegate already assigned to another mission in the country. Since the first appeal in March, two health delegates, including a medical doctor, were assigned to the programme. The delegates started to function during the end of

March and the beginning of April, with one of them having the role of liaising with the task force and FMOH. The other delegate was involved with monitoring the intervention in the field.

Participation of ONS
The SRC, with its network of branches in the states, implemented the programme. From the beginning, good coordination was maintained between the delegates and the SRC staff. The SRC Health Department designated two staff to work with the two delegates. The logistics of the programme, particularly mobilising the vaccines and other medical supplies from the central store to the states, was looked after by the Federation logistics officer and SRC staff. The SRC radio control room played an important role in the co-ordination of logistics.

Analysis of the Operation
The Federation and SRC operation was based on the joint assessment carried out on 15-16 January, 1999. The needs were calculated on the predicted scenarios were revised in April by the ICG after reassessing the epidemic situation.

It appears that there was a time lag between the assessment in January and the launching of the appeal in March. The operation was carried out by the delegation and SRC staff during February-March; however, the resources, material (vaccine and other medical supplies) and human (two health delegates) were not operational until the end of March.

Despite operational constraints, nearly 3 million doses of vaccines were procured and hundreds of volunteers were engaged in the vaccination campaign. In order to control the epidemic more efficiently, the operation required improved monitoring and interpretation of information into effective action. Close monitoring of the progress of the epidemic in the affected areas and accordingly determining strategies for action were perhaps not adequate - an area that needs further evaluation.

Epidemic management is a highly technical operation, and the initial phase of the intervention lacked the needed level of technical inputs.

External relations - Government/UN/NGOs/Media

The task force involving the FMOH and other agencies (namely WHO, UNICEF, MSF, the Federation and SRC, CARE, Kuwait Aid, Islamic Relief) was formed soon after the epidemic was declared. Regular updates of the situation and decisions on intervention priorities were effectively made by this coordinating body. Also, sub-committees designated by the task force looked into specific areas such as surveillance, vaccine distribution, health information and, at a later stage, evaluation of the operation. The Federation and SRC played an active role in these sub-committees.

The ICG also played a vital role in rapidly mobilising vaccines from the manufacturers. Also, the executive committee of the ICG maintained close coordination with the task force. During the peak of the epidemic in April-May, regular communication was maintained between the task force and the ICG through telephone meetings.

Contributions

See Annex 1 for details.

Conclusion

Epidemics require efficient and coordinated intervention and response networks between all the actors, as well as an effective plan of action, good management and sufficient resources. For meningitis in

particular, close surveillance, interpretation of the epidemic situation and adaptation of intervention priorities, mobilising vaccines in large quantities, and making treatments available without delay are the key elements for a successful operation. The meningitis task force has played an important role in managing the operation in Sudan.

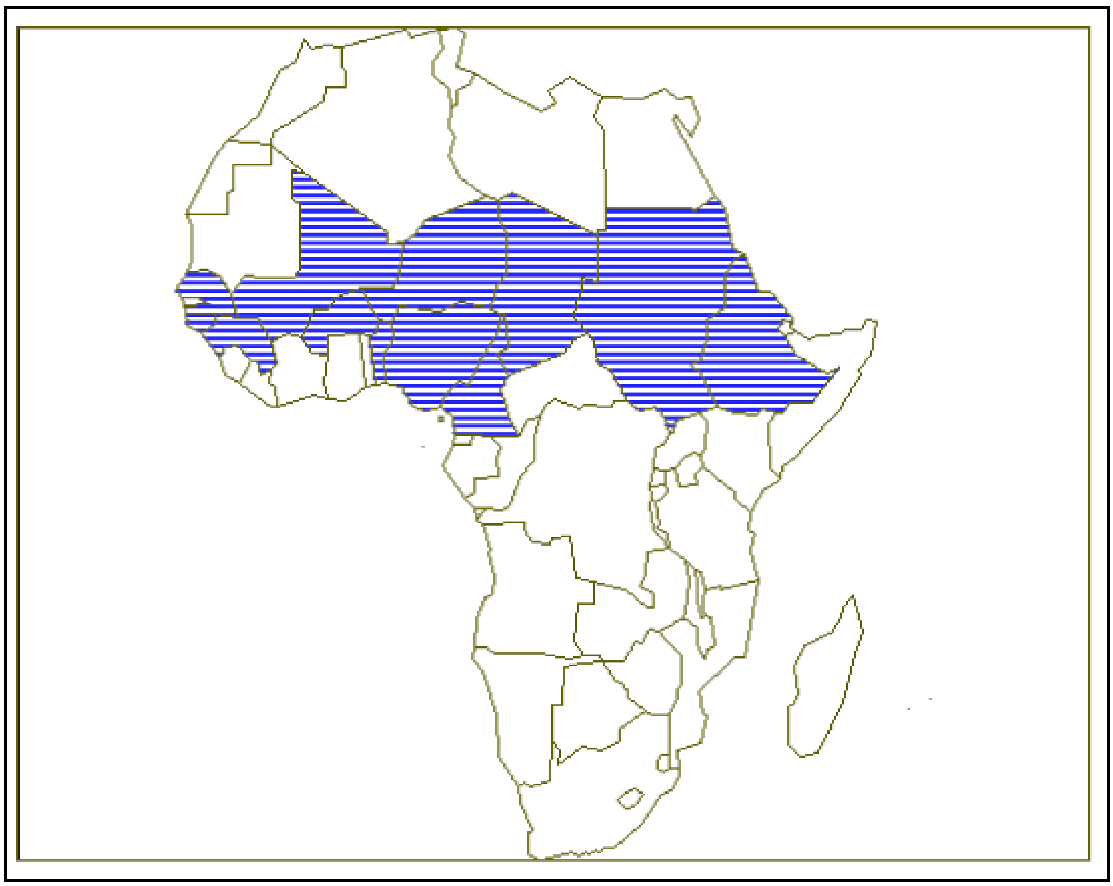
For the Federation and SRC, this was a large-scale operation and considerable effort was made by staff and volunteers in the branches to make the operation a success. Important lessons have been learned on the need to prepare for such operations before they occur, and during the current intervention efforts have made to prepare for future needs.

Peter Rees-Gildea
Director
Operations Funding and
Reporting Department

Bekele Geleta
Director
Africa Department

This and other reports on Federation operations are available on the Federation's website: http://www.ifrc.org

Annex 1



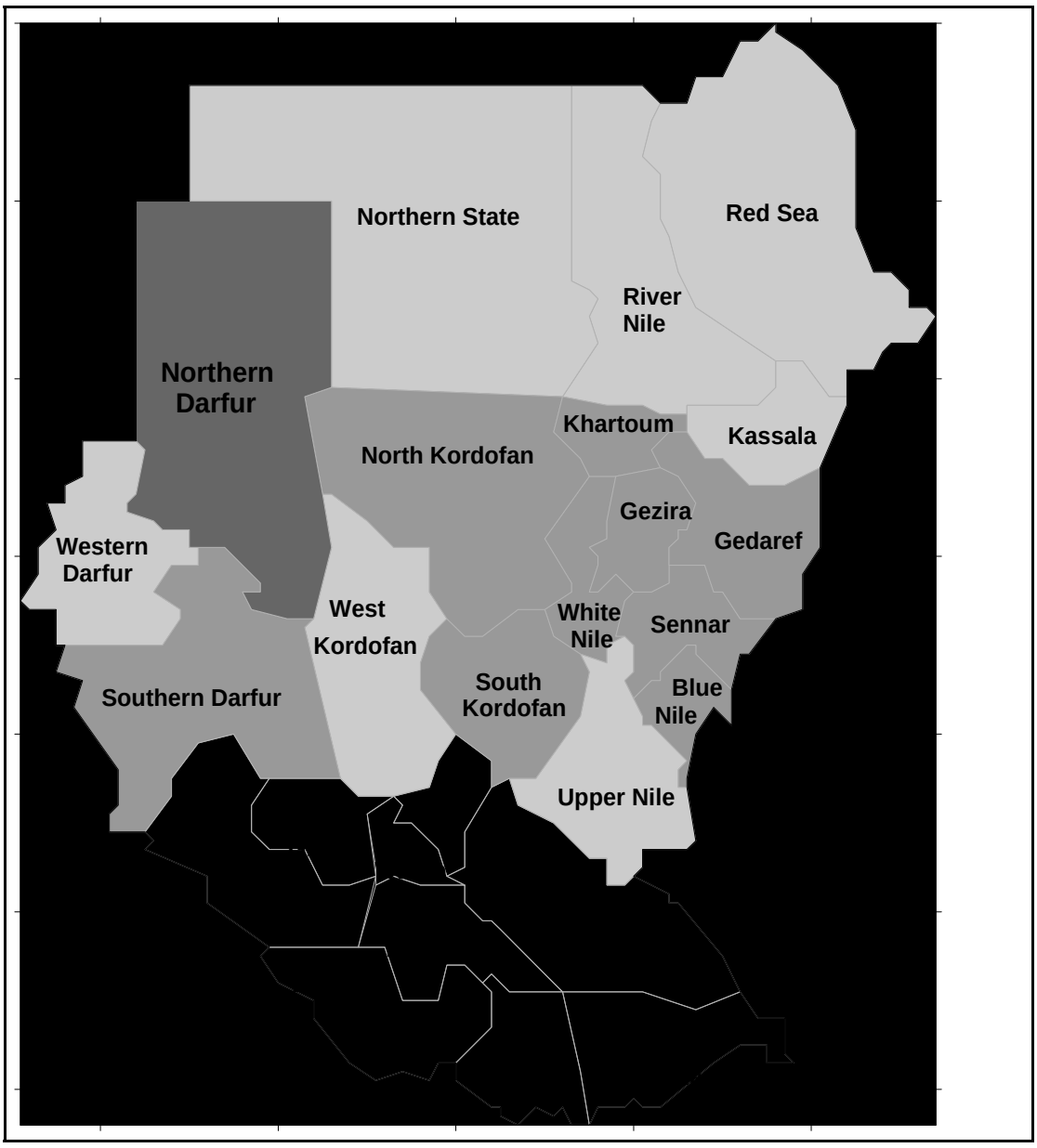
Sub-Saharan meningitis belt

African countries in sub-Saharan meningitis belt:

- *Senegal*
- *Gambia*
- *Guinea-Besseau*
- *Guinea*
- *Mali*
- *Burkina Faso*
- *Niger*
- *Nigeria*
- *Chad*
- *Sudan*
- *Ethiopia*

Annex 2

Sudan meningitis epidemic 1999



The outbreak started in North Darfur state during the month of December 1998 and spread within two months to 12 other States along the main road and rail transport routes. It soon affected adjacent States up to a total of 17 states altogether. Darker shades represents states with higher number of cases.