

SAM patient in the TFC, Aden, Yemen



# Building capacity in inpatient treatment of severe acute malnutrition in Yemen

By Fekri Dureab, Dr Ayoub Al Jawaldeh and Dr Latifah Abbas



Fekri Dureab MD was the head of the nutrition department at WHO Yemen office until June 2016; currently he is a PhD Student at Heidelberg University, Germany.



Dr Ayoub Al Jawaldeh is a Nutrition Regional Advisor at the World Health Organization (WHO) in EMRO, Cairo.



Latifah Abbas MD is a Nutrition Officer at the WHO in Aden, Yemen.

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Location: *Yemen*

**What we know:** Complicated cases of severe acute malnutrition (SAM) have a high mortality risk and require competent inpatient care.

**What this article adds:** WHO conducted a study to explore the impact of a programme of in-service training and systems support on the inpatient care of malnourished children in Al-Sadakah Hospital, Aden Governorate, Yemen from 2010 to 2013. Support included six-day training courses of health professionals, training of hospital physicians as trainers, refresher training, continuous on-the-job training, basic training for all hospital health workers, awareness-raising of non-clinical staff, and monitoring. Problems with therapeutic food and medicine supplies and staff incentives were resolved. Outpatient treatment services were expanded with UNICEF and WFP support in 2013. Inpatient mortality rates fell (from 8.3% in 2010 to 4.5% in 2013) and recovery improved, but the defaulter rate increased (from 15.5% in 2011 to 21.3% in 2013) due to challenges in accessing the service. One quarter of admissions were under six months of age; half were under one year old. WHO continues support to sustain the service in the current humanitarian crisis, with increasing admissions. Staff turnover remains a critical challenge to sustaining quality of care.

## Context

Acute malnutrition threatens the survival of children both in emergency and non-emergency contexts and is responsible for around 45% of all child deaths worldwide (WHO, 2016). Globally, severe acute malnutrition (SAM) affects between 19 and 26 million children under five years of age and contributes to nearly one million child deaths each year (UNICEF, 2013). A child who is severely under-weight is 9.5 times more likely to die of diarrhoea than a child who is not. Reduction of under-five mortality cannot be achieved unless action is taken to treat and prevent acute malnutrition (WHO, 2011; UNICEF, 2013a; Generation Nutrition, 2014).

Yemen is currently facing a major humanitarian crisis; the current conflict has been preceded by four years of civil unrest, against a backdrop of chronic poverty. The March 2017 Integrated Food Security Phase Classification (IPC) reports that an estimated 17 million Yemeni people (60% of the population) are food-insecure, including 6.8 million who are severely food-insecure and who require urgent humanitarian assistance to save lives and protect livelihoods (UNICEF, 2017). According to health cluster analysis, the main causes of avoidable deaths in Yemen are communicable diseases, maternal, perinatal and nutritional conditions (together accounting for 50% of mortality) and non-communicable diseases (39% of mortality). There have been 18,848 suspected cholera cases since October 2016. An estimated 14.8 million people lack access to basic healthcare, including 8.8 million living in severely underserved areas (WHO, 2017).

Acute malnutrition treatment in the current crisis in Yemen is influenced by

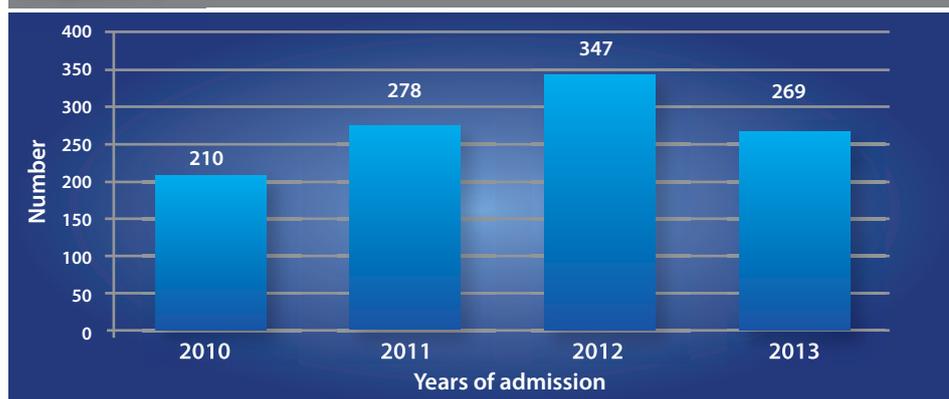
existing service capacity. From 2010 onwards, a World Health Organization (WHO)-led programme sought to improve the quality of inpatient SAM treatment in Al-Sadakah Hospital in the Aden Governorate of Yemen. WHO conducted a study to explore the impact of improving the environment and capacities of the therapeutic feeding centre (TFC) on the inpatient care of malnourished children in Al-Sadakah Hospital during the period 2010 to 2013. The main findings and reflections are shared in this article.

## Improving acute malnutrition treatment services

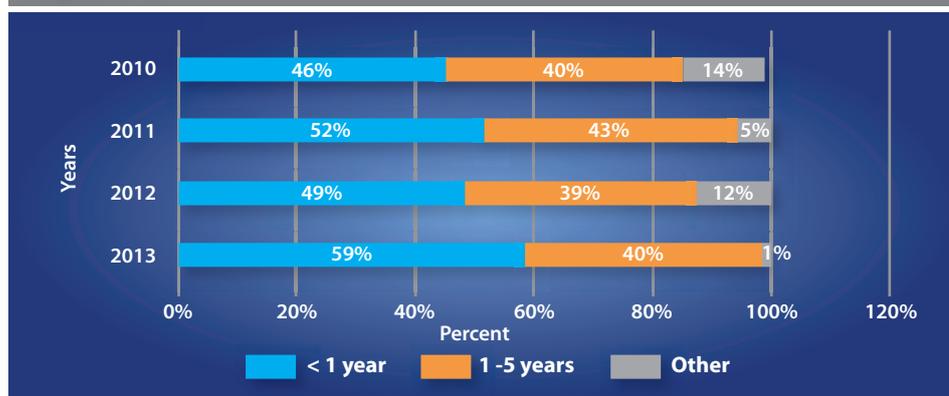
Al-Sadakah TFC or nutrition unit is a major centre for the treatment of SAM cases coming mostly from Aden Governorate and other nearby Governorates (Lahj, Ad Dhala'a, Shabwah and Abyan). It is located at the Al-Sadakah teaching hospital in Aden and began operating in July 2006. At the outset, the TFC faced many difficulties that negatively impacted on its performance, including resistance of paediatricians to SAM management protocols, low number of beds, staff shortages, lack of drug supplies and other materials, and transport problems that hindered the supply of therapeutic milks and foods. To address these issues, a period of raising awareness of the problem with hospital management was followed by a three-year programme of capacity-building within the TFC and wider hospital.

From 2011 to 2013, six training courses on SAM management were carried out for doctors, nurses, medical students and health workers across the hospital, supported by WHO and UNICEF. Each course lasted for six days and used WHO training materials on the inpatient care of SAM with complica-

**Figure 1** Number of SAM cases admitted to the TFC from 2010 to 2013



**Figure 2** Distribution of SAM cases admitted to the TFC by age



tions. Adapted materials were used for distinct staff cadres. Most health workers in the hospital were trained in some level of SAM management so that early management could begin even before transfer to the TFC. Hospital administrative staff were targeted with short awareness sessions on malnutrition and the importance of the nutrition unit. National and international WHO nutrition experts conducted training of trainers (TOT) with hospital physicians. Initial training courses were followed up with annual refresher courses and continuous on-the-job training by the expert physician in the centre. This effort was supported by continuous quality checks by hospital management, with support from the Ministry of Health (MoH) and WHO, and included the use of a monthly monitoring and evaluation sheet by staff.

In July 2009, an outpatient therapeutic programme (OTP) was established in the community with support from UNICEF to deal with un-complicated SAM cases and to receive referrals

of stabilised cases from Al-Sadakah TFC. A further five new OTPs were opened in the surrounding Governorates during 2013 with UNICEF support. In 2013, a supplementary feeding programme (SFP) was added to the nutrition service to manage cases of moderate acute malnutrition (MAM) in the community and receive referred cases from the OTP. In 2011, the TFC/nutrition unit was improved to include 21 beds, a training room, a maternal education and counselling corner, a child development and play corner, and a critical care unit. Therapeutic milks and foods (F75, F100 and ready-to-use therapeutic food (RUTF)) were provided by the MoH with support from UNICEF and WHO. The SFP is supported by WFP with the provision of ready-to-use supplementary food (RUSF). Supply problems of therapeutic milks and RUTF were also resolved; from 2012, the Nutrition Cluster and UNICEF took on the responsibility of transporting goods to the warehouse of each Governorate. Support from WHO

also continued over the period and included provision of medicines, equipment, maintenance and staff incentives for night shifts.

**Review 2010-2013**

To examine the impact of these improvements on the TFC performance, researchers analysed data from annual reports of the Al-Sadakah TFC between 2010 and 2013. All children of both sexes admitted to the nutrition unit diagnosed with SAM and with available records were included in each annual report. Diagnosis of SAM was based on weight-for-height z-scores (WHZ) or presence of bilateral oedema, according to the recommended WHO classification (WHO, 2013).

The number of SAM cases admitted to the TFC increased gradually from 210 in 2010 to a peak of 346 in 2012, then decreased again to 269 in 2013 (see Figure 1). The peak admission in 2012 coincided with a period of armed conflict in Abyan Governorate. The fall in admission rates in 2013 likely reflects the expansion in community treatment services (OTP) in the surrounding governorates, which relieved pressure on the TFC.

Figure 2 shows the distribution of SAM admissions by age. More than half of the admitted cases between 2011 to 2013 were infants (under one year of age); around half of these were under six months of age.

Patients admitted to the TFC were usually complicated cases and were sometimes admitted in the late stages of SAM, particularly those coming from distant areas. Some admissions re-remained in the TFC until fully recovered; this proportion increased from 2.9% in 2011 to 17.5% in 2013. These cases were mostly under six months of age and were required by WHO protocol to remain in the unit until fully recovered. After recovery, these patients were transferred to the infant and young child feeding (IYCF) corner for counselling before discharge. The proportion of inpatients successfully treated (recovered cases plus those transferred to OTP) increased after the programme of improvements began (from 68% in 2010 to 79% in 2011), then fell again (from 77% in 2012 to 73% in 2013). This can be explained by the in-crease in defaulter rates from 2011 (15%) to 2012 (17%) and 2013 (22%) (Table 1). There was no system to follow up defaulters to explain why this figure increased; however the main suspected reasons for defaulting were socioeconomic pressures and the need to care for other children at home.

The mortality rate decreased from 8.1% in 2010 to 4.3% in 2012 and 4.5% in 2013 (Table 1).

**Discussion and conclusions**

Variation in admission rates over the three-year period likely reflect changes in risk of acute malnutrition in the population due to conflict, as well as the increase in access to more community-based care options from 2013. The fall in mortality rates among TFC admissions to less than 5% by 2013, and increase in recovery rates and transfers to OTP, are likely due to the improved

**Table 1** Performance indicators for the TFC 2010 to 2013

	No. of admissions	Recovered		Death		Non-response		Medical Transfer		Transfer to OTP		Defaulter	
		N	%	N	%	N	%	N	%	N	%	N	%
2010	210	10	4.80%	17	8.10%	7	3%	6	3%	133	63%	36	17%
2011	278	8	2.90%	15	5.40%	0	0%	1	0%	211	76%	43	15%
2012	346	13	3.80%	15	4.30%	1	0%	1	0%	253	73%	59	17%
2013	269	47	17.50%	12	4.50%	1	0%	2	1%	149	55%	58	22%
<b>Total</b>	<b>1103</b>	<b>78</b>	<b>7.10%</b>	<b>60</b>	<b>5.40%</b>	<b>9</b>	<b>1%</b>	<b>10</b>	<b>1%</b>	<b>746</b>	<b>68%</b>	<b>196</b>	<b>18%</b>

quality of care for children with SAM, brought about by the training programme with consequent adherence to SAM management protocols and access to community-based management. Training continues to the present day and involves courses for new staff and refresher training for old staff, as well as special courses for academic staff to integrate the management of malnutrition into the medical curriculum to ensure sustainability through effective pre-service education.

Data show a high proportion of young infants were admitted to the TFC with SAM. SAM in infants is a chronic problem; admissions occur in stable times but increase during conflict periods. Diarrhoea and respiratory infection are common in this age group. Anecdotally, most infants under six months of age admitted to the TFC were mixed-fed, usually using infant formula in addition to breastmilk. This feeding pattern concurs with prevalent feeding practices in the community, where exclusive breastfeeding rates are low (10%) and bottle-feeding common (44%) (MoPHP and CSO, 2013). Most of the admitted cases came from poor areas with sub-optimal household hygienic conditions. At home, infant formula is purchased from the local market, costing 2,000-5,000 Yrs monthly. Most of the mothers presenting with young malnourished infants are stressed for many reasons, including the conflict, poverty and concerns about meeting daily food needs; this has not been examined in detail within the programme. Diluted F100 and breastfeeding support are used as part of the treatment protocol for SAM cases under six months old. However,

in the hospital, more generally, IYCF support services are limited. While WHO with the MoH have adopted a national guideline on the International Code for Marketing of Breastmilk Substitutes, implementation has been delayed due to insecurity related to conflict. Thus it is likely that many factors, including prevalent feeding practices, infectious disease, maternal wellbeing and household factors contributed to the high proportion of SAM admissions in this age group; an observation shared by others (Islam, 2017).

Community participation and access to community services has an important impact on health. The development of community-based services for uncomplicated SAM cases and for MAM relieved pressure on the inpatient service. Development of all CMAM components is very necessary; aspects of community outreach and follow-up need strengthening in the current situation in Yemen to further improve recovery rates.

An increasing number of cases is being admitted to the TFC in the current humanitarian situation, particularly due to the flow of internally displaced people from Taiz Governorate; the TFC is working at full capacity. The programme to build capacity of inpatient treatment of SAM has been a worthwhile investment and has helped prepare for the current crisis. One of the biggest challenges continues to be staff turnover and the need for continuous training of new staff to sustain good quality of services. WHO continues to support the TFC with training and running costs in order to maintain its vital function at this critical time in Yemen.

For more information, contact: Fekri Dureab; [fekridureab@yahoo.com](mailto:fekridureab@yahoo.com) and Latifah Abbas; [alilat@who.int](mailto:alilat@who.int)

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# Evaluation of the response to Hurricane Matthew, Haiti

## Summary of research<sup>1</sup>



On 3 and 4 October 2016, Hurricane Matthew struck southwest Haiti, affecting an estimated 2.1 million people; the first major disaster since the May 2016 World Humanitarian Summit (WHS) in Istanbul. A real-time evaluation (RTE) was undertaken to determine if the response lived up to the commitments made at the WHS, especially those laid down in the ‘Grand Bargain’ agreement between donor governments and agencies. Two

independent experts visited Haiti in weeks six and seven of the response to assess if the international response was effective, efficient, relevant and timely and how it reflected the Grand Bargain commitments<sup>2</sup>. The following provides a summary of findings in the RTE report.

The overall finding is that there has been significant, albeit uneven, improvement in the international humanitarian response to Hurricane

Matthew compared to earlier disasters in Haiti, with major differences in the understanding of the scale and complexity of the disaster among

<sup>1</sup> Grünewald F and Schenkenberg E. (2017). Real time evaluation: response to hurricane Matthew Haiti, November-December 2016. CCIC, CCO, CLIO, DfID, IFRC, OFDA/USAID, SDC, United Nations. <http://www.alnap.org/pool/files/report-rte-haiti-compressed.pdf>

<sup>2</sup> [http://reliefweb.int/sites/reliefweb.int/files/resources/Grand\\_Bargain\\_final\\_22\\_May\\_FINAL-2.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/Grand_Bargain_final_22_May_FINAL-2.pdf)