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Health-seeking behaviours in Sofala and Manica in relation to cyclone Idai response

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Rapid review question:

> What are the health-seeking and nutritional practices of the affected populations? How do they frame, understand and engage in prevention of cholera/AWD, malaria, measles/rubella (or vaccine preventable diseases); infant and child feeding and other relevant diseases? What do these entail in terms of behaviour change communication and community engagement?

This review is based on a review of literature and consultation with experts that was undertaken in April-May 2019. It is important to take this information with caution, as much of the literature was produced before the current crisis, in which social organisation may have undergone significant change due to the impact of the cyclone. Rapid ethnographic assessments and other social science surveys in the field should run in parallel to the response.

In his contribution, Stephen Lubkemann cautions against considering Manica and Sofala as socio-demographically contained areas. Rather 'this area has a long and enduring history of lifelong circular migration that predates the war, was accentuated during it, and continues unabated since, some internal, but in particular to South Africa. Local thinking about health, information on it, access to medicines etc. is all highly influenced by the connections to migrant communities, the transnational circulation and flows. This is another vector of opportunity, and a factor of relevance, not least of all because these communities are probably the first line of assistance to which many devastated by the cyclone will [and] indeed must turn' (contribution Lubkemann). For information on migratory patterns, please refer to the brief 'The context of Sofala and Manica in relation to cyclone Idai response in Mozambique'.

Health systems in Central Mozambique

Health systems pre-cyclone

Nearly three decades of war, exacerbated by periods of severe drought (1988–1992) and outbreaks of cholera, diarrhoea, and malaria, has put serious strain on Mozambique's health care services. The epidemiological picture of Mozambique is dominated by communicable diseases such as malaria, HIV / AIDS, diarrhoea, acute respiratory infections and tuberculosis, but with a significant rise in non-communicable diseases (cardiovascular diseases, cancers, etc.) particularly in urban areas (African Health Observatory 2019). Malaria and cholera are more common in the rainy season, and diarrheal diseases and meningitis in the dry season.

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Although Mozambique still ranks 180/186 in the Human Development Indicators (UNDP Mozambique 2018), and it has some of the worst health indicators in the world; the country has made significant progress in reducing mortality rates and improving access to primary health services (Fernandes et al. 2014).

Formal government systems: The National Health System (NHS) has four levels of service provision: 1) health posts and health centres 2) district hospitals, general hospitals and rural hospitals (which usually serve more than one district); 3) provincial hospitals; and 4) specialised hospitals. In Sofala province there are an estimated 146 health facilities, including one central hospital in Beira city, four rural hospitals, 114 health centres and 27 health posts (Sherr et al. 2013). Manica province has 117 medical facilities, including one Provincial Hospital, five rural hospitals and 113 health centres. Manica province has 1,278 beds, with 3,654 technical staff (one every 567 inhabitants) (INE 2017) . Each with a District Health Director, Chief Medical Officer, Statistician, Administrator and Heads of Programmes where they exist (e.g. HIV, laboratory, Maternal and Child Health, TB etc.).

Data for selected districts (INE, 2013a, 2013b):

Beira city (Sofala)	There are 11 health centres, 2 health posts and 1 central provincial hospital. In total there are 859 beds as well as 235 beds in Maternity clinics/wards.
Buzi district (Sofala)	Health centres 11 and 2 health posts, with 101 beds and 69 beds in Maternity clinics/wards. There is a Rural Hospital in Buzi. People may be referred to Beira hospital. There is one health centre for every 13,000 people, a bed for every 1,350 people and a doctor for every 36,000 people
Dondo (Sofala)	Health centres 11 and 2 health posts, with 142 beds and 59 beds in Maternity clinics/wards. There is one central hospital, and people may be referred to Beira hospital. There is one health centre for every 10,784 people, one bed for every 1,051 people, and one doctor for every 16,000 people.
Nhamatanda district (Sofala)	Health centres 12 and 6 health posts, with 169 beds and 65 beds in Maternity clinics/wards. There is one rural hospital. People can be transferred to the Provincial central hospital in Beira or neighbouring provinces. There is one health centre for every 13,421 people, one bed for every 1,508 people, and one doctor for every 16,000 people.
Manica district (Manica)	There are 20 health centre and 1 district hospital, with 97 beds as well as 98 beds in Maternity clinics/wards. There is one rural hospital. People can be transferred to the Provincial central hospital in Beira or neighbouring provinces. There is one health centre for every 12,850 people, one bed for every 1,500 people, and one 'health technician' for every 958 people (no reporting on number of doctors).
Gondola district (Manica- surrounding Chimoio city)	There are 13 health centres and 1 district hospital, with 93 beds as well as 30 beds in Maternity clinics/wards.

The Finnish Cooperation has been supporting the health sector in Manica province since 1991, mainly through education, health and infrastructure development. They have purchased and maintained equipment, built infrastructure and developed capacities and skills

(Kolehmainen-Aitken 2005). What has been particularly interesting is the approach with aims to link with civil and grassroots organisations at the local level, as well as to engage with indigenous doctors, but in turn has been limited by the FRELIMO-Renamo conflict at a local level (Lubkemann 2001). As indicated in the 'context in Manica and Sofala' brief, in his contribution Lubkemann warns of the distrust that people in the region have towards the central Mozambican State, and may extend to distrust towards the response.

According to the National Health Sector Strategic Plan 2014–2019 (Mozambique Ministry of Health 2014), the health facility network only reaches approximately half of the population and some health facilities lack the conditions to provide quality health care, whether in terms of human resources, equipment, drugs or other inputs. There are reportedly only three doctors per 100,000 people, a proportion that is among the lowest in the world (USAID 2019).

Results from the Household Budget Survey (2014-2015) found that 72.1 per cent of women and 72.9 per cent of men use the formal healthcare system but that women and men living in rural areas are less likely to access quality care (Llop-Gironés et al. 2018). Economically disadvantaged Mozambicans and those living in rural areas used healthcare services significantly less (Anselmi, Lagarde, & Hanson 2015; Llop-Gironés et al. 2018).

In terms of quality of services provided, the strategic plans note an absence or non-observance of protocols and quality control standards; poor planning and supervision of health service provision in the context of decentralization, a lack of a response to real health problems related to chronic sector under-financing and poor management of the limited resources available; lack of HR to respond to needs; irregular availability of medical products and ineffective oversight of services provided (Mozambique Ministry of Health 2014). Much infrastructure is in poor physical condition, with only half of peripheral health facilities having power systems and 60 per cent having water supply, which has further affected the quality of services offered (ibid).

Officially, most state services are free or accessed for nominal fees; (by law, user fees in public facilities must be less than US$1 and all medicines are provided at a subsidized price; there are exemptions for indigent populations and specific diseases, such as HIV, tuberculosis, malaria, and maternal health) however, many providers reportedly ask for under-the-table payments. It is not necessarily the cost of health care that is a barrier, but the inflexibility of payment, e.g. traditional healers may be overall more expensive, but have more flexible payment plans, which can make their services more attractive (Mungumabe 2016).

There is a poorly functioning referral system because of a shortage of referral centres at district level; participation of community members in the health system is negligible; and the logistics system is inadequate leading to regular stock-outs of drugs and supplies.

In Beira city specifically, delay to seek primary healthcare has been associated with farming, visiting first a traditional healer, low Tuberculosis (TB) knowledge and coexistence of a chronic disease (Saifodine, Gudo, Sidat and Black 2013). In more rural parts of Gaza and Zambezia province, the cost associated with travelling long distances to health facilities, in addition to a scarcity of transportation options and poor quality services on arrival has proven major barriers to health service uptake (Schwitters et al. 2015).

Community health workers: Community level service providers, who partially meet basic needs in areas not reached by the NHS. They are the community level arm of the State sector, and mostly mobilise volunteers. Community care providers include Community Health Agents (ACSs, *Agentes Comunitários de Saúde*), Community Health Workers (APEs) and Traditional Birth Attendants (TBAs) (whose role is to signpost to health facilities and provide direct care only in emergencies) but these groups are not uniformly present at community level. Research into community care providers' motivation, retention and performance has found that this

cadre value feedback and feeling connected to the health system and their community, are motivated by status and community standing, and want to be provided with the necessary tools to perform. Responders should take this seriously should they use this cadre (Strachan et al. 2015).

Private sector: In post-colonial Mozambique privatised health services were banned as part of the governments' attempt to revitalise the public system. The private sector is now growing, but this is limited to urban areas. The private health sector is not well-regulated at the central level and the exact number of facilities is not known. There is limited literature on private health provision and how people engage with it, within Manica and Sofala.

NGOs and faith-based organisations: Many health facilities have been run by European Catholic missionaries. A number of national and international NGOs, and other faith-based organisations still provide health services, supposedly in close collaboration with the NHS. Dependence on external and short-term funding, unequal distribution throughout the country, and concentration on a restricted set of programmes has meant these activities have not always ultimately strengthened national institutions. Some accounts suggest these systems have contributed to further the fragmentation of the public health system and have undermined local control of health structures, including the exodus of health workers from the public sector health system ('internal brain drain') provoked by large disparities in salaries and work (Mussa, Pfeiffer, Gloyd and Sherr 2013; Pfeiffer 2003).

In general, the funding of vertical programming is not to be encouraged. Key ministry workers have reported that this makes coordinating external resources difficult; it creates inequalities, where some services remain severely under-resourced, with others bloated; and it can leave core administrative functions of the Ministry unfunded (Mussa et al. 2013).

Alternative health providers

Traditional Medical Practitioners or Indigenous doctors: These services are very popular and widely accessed. During the colonial period and in the first years of FRELIMO's Mozambique traditional medicine was banned or sidelined. However, in the past two decades its popularity has increased amongst service users and the formal health system. As mentioned above, biomedical health coverage is very limited, and people either by preference or need, depend on alternative health providers.

In Mozambique rural communities there is a wide variety of providers in traditional health-service, and among them are the *curandeiros* in Portuguese and *nyanga (s) or tinyanga (pl)* in Ndau language, and 'prophets' or *profetas*. *Tinyanga* will first try to understand the cause of the disease, which are usually put down to a system of misfortune which are closely linked to social and spiritual factors.

Even though we use the term 'traditional healers', this indigenous system of knowledge has incorporated social and political changes, incorporating new spirits and practices into tradition. Indigenous healers are in many senses modern, they may travel long distances as their social networks have become more regional or global, they can heal over the phone, and they often incorporate modern technologies in their work such as television, radio and video cameras (Granjo 2009).

Causes of illness

In Indigenous models, people may differentiate between natural and supernatural causes, as well as between personal and impersonal. For example healers in central Mozambique use Portuguese words to describe diseases as 'natural', 'from God', or 'from the wind' (*do vento* o *com o vento*), in similar ways as biomedicine would frame a natural disease. Diseases that may be considered as natural are few, for example smallpox, measles, cholera, leprosy, conjunctivitis, cataract, malaria, and abscess (Bagnol 2017).

However, even though material causes can be described as immediate explanations, other layers of explanation related to social relations will be used. Material explanations may be able to explain *how* misfortune happens, but it does not explain *why* these happen, and most importantly, why these circumstances have arisen to that particular person (Granjo 2009). The three possible explanations to illness or misfortune that arises to a particular person are (ibid):

a) The victim has neglected to or been unable to recognise and prevent particular dangers
b) witchcraft has attracted that person to the danger or has distracted her from preventing it or
c) the ancestors have suspended their protection to that person, and no longer alerts or prevent them from dangers.

Therefore, if someone has taken the necessary steps to avoid disease or misfortune, and still these emerged, then a spiritual or magical explanation must be sought. For example in the context of AIDS, in the Dondo district, people believe in the presence of a 'germ' a *bichino* in Portuguese, *xirombo (or funhe* in Sena*)*, which is understood to be a tiny or small, but dangerous bacteria that makes the blood of a human being dirty and carry death in it, and would be used to describe HIV, and *phiringaniso*, to describe diseases that carry weight loss, coughing or diarrhea, including AIDS. Because AIDS is likely to produce death, and death is never accidental, further explanations of why it arises is necessary, including taboo transgression, ancestor grievances, foreign or evil spirits (*mbepho* in Sena culture) or witchcraft and sorcery (Bagnol 2017; Monteiro 2012). Purifying/cleansing rituals have to occur in order to redress taboo transgression or spirit intervention or clear the contamination that follows death, partum or destruction of a house (in Sena culture) (Monteiro 2012)[3].

The role of ancestor spirits: Disease can be linked to a lack of protection from the ancestors which results from having neglected ritual ceremonies of respect and memory (Pfeiffer 2002), or through immoral behavior, such as infidelity, murder, and intra-family conflicts (Bruschi, Morganti, Mancini, and Signorini 2011). Ancestor spirits coexist in everyday lives with the living; after death, spirits remain in the same place they lived, keeping the same responsibilities, rights and obligations that senior kin have with the younger family members, guiding and orienting them. The living ask the ancestors for counsel and support in their endeavours. The ancestors have limited ways of communicating, and illness and misfortune is their mechanism to convey to the living that something in the social equilibrium has been undone, and hence consultation with specialists (through trance or divination) is necessary to communicate their message (Granjo 2009). Under this logic, it is not enough to cure the illness to cure the patient, the social equilibrium with kin and community, but also with ancestors needs to be addressed, if not the illness will reappear. Illness can also emerge as a particular

[3] These cleansing rituals, called *kupitufa* for death, *kupitamoto* for postpartum and *xitonga* for a house being burned down. For in depth understanding of these rituals and how they impact HIV/AIDS risk and treatment, see Monteiro 2011.

ancestor spirit wants the person they are inhabiting to become a *nyanga*, an indigenous doctor.

'Foreign' spirits, may play a fundamental role in creating disease and misfortune, yet they also play a central role in resolving the situation through their interaction with healers. Foreign spirits are not ancestor spirits, but rather spirits that feel they need to collect a debt contracted by an ancestor in past history (ancient or recent) (Bagnol 2017). This means that people may be affected by spirits, when someone in their lineage in a past generation has aggrieved someone. Honwana (2002) explains that often the person was killed, not buried according to ritual, and not mourned appropriately. Consequently, these spirits did not join the world of the dead properly and hence are still aggrieved. There are spirits linked to the lineage called *Vahlonga*. On the other hand, 'foreign' (*madhlozi* in Cindau) spirits link closely to Mozambique's politics:

- *Ngoni* and *vandau*: spirits from the Nguni invasions, both from Ndau and Nguni ethnicities
- *Valungu*: spirits from Portuguese colonialism
- *Vabanyana:* spirits from people from the Indian diaspora
- Xikwembu xa matlharhi: generic terms for spirit of somebody killed in a war, including Nguni wars, independence wars, and civil war (Monteiro 2012).

Tinyanga will act as mediums between ancestors, the foreign spirits and the clients to identify the cause of the problem and identify a solution.

Witchcraft and sorcery have been, compared to other South African countries, less prevalent as explanations of disease, with notions of contamination and pollution, as well as spirits. That said, witchcraft and sorcery are key explanations to disease, particularly in those cases in which wealth and envy arise. This makes it a modern explanation for misfortune, and thrives in urban areas. There are gender dimensions to take into account. In Manica province, witchcraft (*uroya*) is often attributed to women, who host a spirit of maternal ancestors with special power to cause evil. Targets of witches may be their enemies, or people in their path. According to tradition, witches were said to cannibalise their young. Thus women with reproductive losses or infertility can be accused of witchcraft, and be subject to violence (Chapman 2006). Sorcerers (*feiticeiros* in Portuguese, *muroi* in Cindau) are more likely to be men, who have learned to make medicines from a healer or other witches. They harm others for their own wealth and power, and they can be hired by a client to become wealthier or to harm someone they dislike. Wealth is often attributed to occult dealings, and great success in businesses is thought to be achieved with medicines involving sorcery and committing heinous crimes such as murder (ibid). Jealousy and envy are described to be the main reasons for witchcraft and sorcery. For example, women who are successful at reproducing, or who claim support from a man with several partners, perceives to be at risk from envy and hence sorcery from other partners (Chapman 2004). Thus people may seek to address the symptoms of these illnesses at the biomedical provider, but a visit to the *nyanga* is necessary to address the ultimate cause, sorcery.

In times of socio-economic crises, *tinyanga* are especially sought by men wishing to improve their luck and job prospects (Bruschi et al. 2011).

Treatments

Healers, faith and traditional *tinyanga*, can be divided according to the diagnosis and treatments they provide and the ailments they address, and the spirits they invoke. According to Monteiro (2012):

Indigenous doctor	Treatment	Spirits
Nyangarume	Healing by medicine (mostly herbal)	*Vahlonga* (from the lineage)
Nyanga Nyangarume	Diagnosis/divination with *tinholo*[4] (*Kuhlahluva*) Heals with herbal medicine and rituals	*Vahlonga* (from the lineage) Sometimes foreign (Nguni, Portuguese, Indians)
Nyamusoro	*Tinhlolo* for diagnosis Medicines and rituals to heal Medium and exorcism (*Kuxokara*)	*Vahlonga* (from the lineage) *Nguni, ndau*, Portuguese, Indians

Zion church		
Zion *Nyangarume* (*Muzioni*)	Herbal medicines and prayer	*Vahlonga* (from the lineage) Holy spirit *(moya*)
Muprofeti	Medium and exorcism practice (*kuxokara*) Healing through prayer, ritual performance and remedial administration.	*Vahlonga* (from the lineage) Holy spirit (*moya*) *Nguni, ndau* (their use varies depending on the *profete*)

The value of using medicinal plants is widely recognised across the country. This is generally composed of leaves, roots, seeds, fruits, bulbs, bark of trunks or branches and sap, that are handled and processed (sometimes mixed with vegetable oils and animal fats) for human application. The use of medicinal plants is sometimes accompanied by rituals that involve the chanting of traditional songs, the use of amulets and other protections in the homes and the burning of incense (Baquar 1995). A key cleansing ritual is the *phungula*, a bath and inhalation with medicinal herbs which serves to cleanse, to protect and even to perform exorcism (Mahumana 2015: 187). Consultation with these traditional therapists may be more likely to be conducted at night, so the identity of the patient/client is not disclosed publicly and, thus, he or she is exposed to local interpretations and judgments, as well as to the risks that may be involved (Sequeira 2016).

Given the poor coverage of the NHS, the integration of the network of the many traditional medical practitioners in the formal health system has been deemed crucial. The Ministry of Health created the Traditional Medicine Institute (IMT, *Instituto de Medicina Tradicional*) to promote knowledge and use of traditional and alternative medicine, improve practices, and promote primary health care using this type of medicine. Some indigenous doctors are also part of the community care provider cadre (as above). Some health professionals are however reluctant to collaborate with traditional medical practitioners. One criticism, is although they may refer, often this is often after multiple failed treatments and when it is already too late.

[4] The *tinhlolo* are a series of small, specific and selected objects (bones of animals, plants, cockles, coins, stones and others) that symbolize the body and its spirit, the household, the family and society. The *tinholo* used vary according to the spirits that are invoked to help in the diagnosis. The objects are thrown on a surface and then analysed by nyanga, patients and the spirits (Monteiro 2012).

An Association of Traditional Doctors of Mozambique (AMETRAMO) was founded in 1990 although a considerable number of healers may not be affiliated with this association, yet still claim to offer these practices, especially foreign traditional practitioners e.g. from Malawi. Sofala has its own branch of AMETRAMO. There is another smaller association called Association of Traditional Medicine Professionals (Aprometra), linked to more 'modern' and educated practitioners that focus more on offering hospital-tested complementary treatments to biomedicine in a holistic fashion. AMETRAMO is a more 'traditionalist' association.

One of the main community criticisms directed to the *tinyanga* is the fact that their services have become very costly and show a lack of compassion to the financial and material resources of patients who hire their service. Another social criticism widely reported in relation to the *tinyanga* refers to them being promoters of conflicts within families, because during their practice they can accuse relatives of "ordering" illnesses and misfortunes (Sequeira 2016).

Faith-healing: Independent Christian faith-healing churches (sometimes referred to as African Independent (or Indigenous) Churches) have also been popular in Mozambique – which combine local Shona religious notions of illness and Pentecostal beliefs in the healing power of the holy spirit. These have been documented in Central Mozambique, especially for issues of child health and infertility, especially as *tinyanga* may be perceived as too expensive and contributing to social conflict by women who may tailor their services more towards men. The AIC churches tend to have male-dominated leadership hierarchies, in which provincial bishops oversee city pastors and local *bairro* pastors, who organize their own branches supported by church elders, church mothers, deacons, prophet healers, church midwives, and youth representatives. Some churches also have youth organizations and cultivate youth leaders. Church 'prophets' *(maprofeta*), both female and male, are the faith healers in AICs and can treat both men and women (Pfeiffer 2002). *Profetas* position themselves against *nyanga* doctors, and for this reason many no longer use herbal treatment but rely mostly instead on prayer.

Muzioni (in Manica province, the term used to refer to members of the Zion Church and its pastors), are health providers too. They cure illnesses related to witchcraft, use plants and roots in their treatments, as well as ash and roots. They often condemn of *tinyanga,* although some types of healers may be deemed more acceptable (e.g. those who use herbs in their practice). In a context where biomedical facilities have reduced coverage, and the *tinyanga* are criticised, Zion healers can be considered the best option. Importantly, most other religious institutions in southern Mozambique are not willing to perform therapeutic and spiritual practices combined (Sequeira 2016)

Both traditional and faith-based sources of healing have become increasingly commodified and commercialized. Because of their radically different approaches to treating social conflict and health problems, the relationship between faith-based and traditional healers is not necessarily positive. So whilst it is essential to have a strategy of community dialogue and mobilization that can respect the different approaches, these actors may consider one another as rivals, and only in certain cases their cooperation can be observed.

Drug sellers: Pharmacies and informal drug sellers can be sought for health advice for particular ailments in Mozambique (Munguambe et al. 2016). For example, in the case of diarrheal disease, 11.7 per cent of people attend pharmacies for advice (as well as other providers, see below) (Nasrin et al. 2013).

Other community members: In Sena culture, the family and community play a large role in transmitting aspects of health-related information. The godmother (*sankulo* in Sena*)* or another popular lady in the community has commonly given education to girls around sexual and reproductive health matters (including the performing of initiation rituals), and there are

male specialists who do the same for boys. Oral literature, including oral short stories, proverbs, poetry and songs are the traditional means of transmitting this knowledge (Rodrigues da Silva 2016).

Health-seeking pathways

Health-seeking: Mozambique has a pattern of typical ethnopluralism, with people often using biomedical, traditional and faith-based health services alongside one another.

Some people might skip the primary health-care level and go straight to hospital. With increased urbanization and population growth in peri-urban areas where access to public services is lower, there is greater dependence on hospitals and other urban medical facilities, reducing demand for primary health care facilities (Mozambique Ministry of Health 2014). Because of the limited reach of biomedical facilities, as well as a recognition of alternative forms of medicine, it is part of the departmental government responsibilities to 'ensure the functions of health units and promote traditional medicine' (INE 2014).

It generally depends on the type of sickness as to which health provider is chosen (Schwitters et al. 2015). For illnesses not immediately associated with spiritual activity, treatment may be sought at the health centre. Traditional healers may themselves refer their patients to the formal health system, for example for HIV treatment. When an illness persists, is especially severe and occurs in combination with other unusual symptoms, or coincides with a social conflict or other events in social life, a spiritual cause might be considered. According to healers, there are some diseases that only hospitals can cure, and some that only *tinyanga* can cure. Signs of mental health and psychosocial distress are usually first addressed by traditional and religious healers (Igreja, Kleijn, & Richters 2006). Epilepsy, asthma, thrombosis and some infertility and impotence issues are usually treated solely by *tinyanga* (Granjo 2009). In their eyes, the rest of diseases can be covered by both providers, but the pharmacological efficacy will depend on the reestablishment of the social harmony of the person (ibid).

Literature suggests generally favourable attitudes towards using formal biomedical health systems. Patients have reported to be committed to promoting formal medical services (Munguambe et al. 2016). DHS 2015 indicators for health-system uptake, show that nationally, 91 per cent of women who gave birth in the five years prior to the survey received antenatal care from a health professional during their most recent pregnancy. This figure was slightly less in rural vs urban areas (88 per cent vs 96 per cent) but generally high in Sofala and Manica provinces (95.2 per cent; 99.2 per cent). Whereas, only 54.3 per cent gave birth with a health professional nationally, 71.1 per cent did so in Sofala and 74 per cent in Manica. Use of TBAs for deliveries were only at 3.6 per cent in Sofala and 0.9 per cent in Manica, but slightly higher for 'relative/other' at 21.4 per cent and 21.5 per cent respectively (Mozambique Ministry of Health and INE 2019).

Having a health facility nearby which has staff and equipment increases the probability of seeking care when ill. Demand side barriers to health care use exist but have a smaller impact when health care services are available within one hour walking distance (Anselmi et al. 2015). Ethnographic research has highlighted the potential acceptability of mobile health clinics, on the provision it is coordinated well with community leaders and traditional healers (for HIV, but this could be adapted to the current need) (Schwitters et al. 2015).

There are successful examples of public health efforts liaising with healers. For example, in the past healers have motivated people to take HIV tests. Similarly, treatments can be complementary, for example, in the case of HIV/ADS, healers have a number of plants to remedy secondary diseases and with anti-viral effects (Kotanyi 2016). Further, there is evidence of the psychosocial effect of traditional healing, cleansing and other 'traditional'

treatments have ‘a stabilizing effect on health, providing meanings for misfortune and ways to cope with adversity, comprehensively and by combining traditional ‘ancestral’ approaches with biomedical or faith healing’ (Kotanyi 2018: 301). The response should seek these complementarities.

In terms of health entry points, it is also import to consider who are the decision-makers, for example, pregnant women are not always the decision-makers regarding their own health care, more so husbands and elders, or for children, mothers (Munguambe et al. 2016). Traditional and religious healers and AICs also influence health-seeking and health practices.

Cholera and other diarrhoeal diseases

After the floods that followed cyclone Idai, a cholera outbreak was declared on the 27 March 2019. According to data until the 09 May, 6,750 Cholera cases were reported, as well as 8 deaths, and a rather low case fatality rate (CFR 0.1 per cent) (OCHA 2019). The outbreak centred mainly in Beira, Buzi, Dondo and Nhamatanda districts in Sofala province, and Beira district continued to be the most affected district with an overall attack rate of 909 cases per 100,000 population. The outbreak has been largely contained, despite the cyclone’s destruction of water and sanitation infrastructure, due to, in part to a rapid deployment of Oral Cholera Vaccines, which aimed to provide over 900,000 doses.

After malaria, diarrhoea is the most frequently disease reported by health centres. For example. Diarrhoeal cases spike in the rainy months, as faecal matter is washed into unprotected sources of water. Diarrhoea is one of the principal causes of infant mortality as well as malnutrition. The Ministry of Health is promoting that families increase liquid ingestion followed by foods in diarrheal episode. Similarly, oral rehydration is promoted, either through the distribution of sachets of ORS (to homes and clinics) or conveying the necessary knowledge to produce homemade ORS. Before cyclone Idai, rates of diarrhoea were 8 per cent in Sofala and 9 per cent in Manica (Mozambique Ministry of Health 2015). The worse rates occurred mainly in Zambezia and Nyassa with 17 per cent, and the best rates 7 per cent in Inhambane and Tete (ibid).

Cholera outbreaks are not new to Mozambique since the disease entered the African continent in the 1970s. More recently, a large epidemic occurred in January-April 2015 following floods, with 7,000 suspected cases and 59 deaths in five provinces. In this case Zambezia province was heavily affected (Munier et al. 2017).

Taxonomies and causal explanations of diarrhoea

Biomedical and public health explanations of cholera diarrhoea and its transmission predominate in Mozambique. Cholera is mostly attributed to environmental and sanitation related factors of contaminated water or food, as well as the importance of WASH infrastructure in ensure the availability of clean water (Démolis et al. 2018). Other narratives do coexist (including witchcraft-related and spiritual explanations), but they are less prevalent. This is in part explained by the fact that biomedical explanations of risk to transmission of diarrhoeas resonate with indigenous ideas of dirt, contamination, cleansing and purification. That said, even diseases that are often framed as ‘natural’ or as a product of contamination, can be explained by supernatural causes when unexplained events occur: e.g. the diarrhoea does not respond to treatment or is of considerable long duration, or if symptoms are extremely acute (e.g. including nervous symptoms) (Granjo 2009). In these cases, social explanations are sought.

According to Green (Green, Jurg, & Djedje 1994), in Manica province, the indigenous ways of speaking of diarrhoea are:

Local term	Diarrhoea	Causes
Manyoka	General term for diarrhoea, often simple, common, non- dangerous type. (Nyoka is a snake in the stomach- see below)	Most often naturalistic: - Eating bad/dirty food or water - Cutting teeth Less often, neglect of tradition (*nyoka kusororoa*), or foreign spirit (*manyoka kuhambisa asinadriru*)
Phiringaniso	More serious watery diarrhoea, sometimes vomiting. Sunken fontanelle, dehydration	Violations of norms of sexual behaviour by parent- child is contaminated.
Chinhamukaka	Whitish, milky, diarrhea. Vomiting. Sunken fontanelle, dehydration.	Heat Child ingests dirt
Chikahara	Depressed fontanelle, dehydration	Believed to be congenital (not associated with diarrhea) Nyoka reacting to contamination
Chikamba	Greenish diarhrea, and pain in waist	Related to chikahara Violations of norms of sexual behaviour
Ntsanganiko	Chronic diarrhea mixed with blood, weight loss and fever (dysentery)	Failure of parents to perform funeral rituals Acting too modern- forgetting tradition Visiting families that have had a death without purifying oneself afterwards
Kuamwissira	Child diarrhea, milky and mucosy. Dry, wrinkled skin	Nursing a child when newly pregnant, which spoils the milk
Nyongo	Diarrhea and Greenish or very white eyes. Brown mucus in vomit.	Easting of green leaves Fear stuck in the child stomach
Colera (Portuguese) *Nyoka djokwenda (Ndau)* *Kolera (Sena)*	Portuguese term used mainly in the cities but expanding Serious illness, vomiting and diarrhea, pain and 'heat in the stomach'	Spirits bringing bad luck or perhaps revenge. Treated as other diarrhoeas.

Political explanations of cholera transmission: As it may occur with cholera outbreaks in politically marginalised constituencies, the disease and its spread can be attributed to the government or political parties. This happened in the cholera outbreak in the city of Nampula in September 2015-July 2016. Following the 2014 municipal elections Nampula city was governed by the MDM, and FRELIMO controlled the national and provincial governments. Due to the historical mistrust of the central government, people attributed the outbreak to active contamination of waters by government officials or health workers. People thought wells were polluted at night, or through water chlorination teams (Démolis et al. 2018).

Alternatively, people would claim the government had neglected the sanitation infrastructure in their area, and were thus responsible. Other fault lines were between rich and poor, in which the poor were either neglected or attacked by the wealthy (ibid). Note that the political dynamics in Sofala and Manica (Renamo and MDM strongholds) are similar, hence similar narratives in opposition to the government or along class lines can easily arise.

Reducing risk

Evidence suggests that knowledge or cultural beliefs are not the main constraints on reducing risk behaviour for cholera transmission (Collins, Lucas, Islam, & Williams 2006). In fact, the constraints are lack of 'money, property rights, and gaps between individual, community and authority roles and responsibilities' (543). As in other contexts, it is the capacity and willingness of the public authorities to deliver appropriate water and sanitation infrastructure, as well as the class position people are in that determines their exposure to contaminated water. When given the right tools, people will engage in risk-mitigating behaviours: safe water points, distribution of soap, water purification, etc.

Under those structural constraints there are some things that can be done for hygiene promotion in these circumstances: strategies that convey community and peer pressure for cleanliness.

When communicating during cholera outbreaks, the use of local language and simple terms has proven to have a positive impact. Using public gatherings and interpersonal communication has proved critical. Similarly, in places were indigenous understandings of diarrhoea are prevalent, incorporating the concepts of purity and contamination in health education can be useful (Green et al. 1994).

Trust-building initiatives need for credible leaders to take part in these engagement events and do things themselves and visibly (e.g. drink chlorinated water, take vaccinations or tablets in front of the community). In Portuguese, *cloro* (chlorine), sounds too much like *colera* (cholera), so communication campaign around purification with chlorine use the word *certeza* instead (which means certainty). This has increased people's trust in it, coupled with house-to-house information campaign (Démolis et al. 2018).

Seeking treatment

The best remedy for cholera is rehydration, intravenously for the worst cases of dehydration, and through oral rehydration salts (sachets or homemade) for cases that are not life threatening. 90 per cent of women of reproductive age (15-49 years) are aware of the value of ORS at a national level (DHS 2011). Traditional remedies have often played the role of rehydration. In most of the diarrhoeas detailed above, the aim of treatment is to 'calm the nyoka snake' of the sufferer. Traditional treatment often consists on herbs (usually roots, sometimes leaves) used as decoctions or cold-water solutions and given as teams to the child, or mixed with porridge. In those cases in which taboos have been broken, rituals to ameliorate the relationship between partners, or to decontaminate the mother's milk can be attempted. In those unusual cases in which spirits are causing the disease, they would need to be expelled (Green 1994) through ritual treatment with a *nyanga*.

Depending on the diarrhoea, people's health-seeking practices will differ. Cholera diarrhoea and other Acute Watery diarrhoeas are understood to be dangerous, and people accordingly seek treatment at a biomedical provider first (Lucas et al. 2005), whereas for other diarrhoeas they would attempt home remedies, going to the pharmacies, etc. For example, in a survey conducted in Manhiça city (near Maputo- there is limited information for Manica and Sofala), when any type of diarrhoea was reported, 33 per cent did not seek care outside the home (relying on home remedies). Of those who did seek care: they would do so in a health centre (84.3 per cent), in a pharmacy (11.7 per cent), Bought remedy from the market (2.5 per cent), and sought advice from traditional healer (1.4 per cent). (Nasrin et al. 2013). In Nasrin et al.'s study, of those children who attended the health centre, 13.9 per cent received intravenous fluids, and 74.0 per cent received ORS. If children were treated at home, 15.8 per cent were

offered more to drink, 61.7 per cent were offered more food. Parents at home relied on herbal remedies (30.3 per cent), ORS (26.6 per cent), homemade fluids (8.5 per cent), and zinc (5.9 per cent).

There is potential to link with *tinyanga* and faith-healers in the referral to cholera treatment centres in the case of high-risk cases of cholera, and in the milder cases, to incorporate rehydration goals within their treatment. For example in Mozambique, healers have distributed ORS sachets, created their own solutions, recommended to ingest coconut water, as well as traditional medicines that facilitate rehydration (Echenberg 2011).

Attitudes towards cholera vaccination

The fact that people may have alternative explanations of what causes cholera or its mode of transmission does not mean that people will not accept the vaccine. According to Demolis' study in Nampula city, people's willingness to be vaccinated was very high (95 per cent of respondents). People perceived oral methods to be safer, but less effective than injectables. People preferred delivery of vaccines by health professionals rather than community health workers (83 per cent vs. 11 per cent), and public health centre-based delivery rather than house-to-house (75 per cent vs. 6 per cent) (Démolis et al. 2018).

Malaria

According to the World Malaria Report, Mozambique has the third highest number of malaria cases anywhere in the world, or 5 per cent of all cases globally, with the majority of deaths being in children under 5 years (WHO 2018). The country's temperature, rain patterns, abundant mosquito breeding sites and poor housing are the main contributing factors (Mabunda 2006). Malaria transmission is year-long, with a seasonal peak during the rainy season from December-April. *Plasmodium falciparum* accounts for 90 per cent of all malaria infections, with *P. malariae* and *P. ovale* responsible for about 9 per cent and 1 per cent, respectively. The major vectors in Mozambique are *Anopheles gambiae* s.s., *An. arabiensis*, and *An. funestus* s.s. (USAID 2018). Predictors of malaria in Sofala province[5] include geographical location, socioeconomic status, HIV prevalence and access to malaria-prevention interventions (especially bed nets and spraying). (Brentlinger et al. 2007; USAID 2018). When there is a HIV and malaria co-infection, there is a high risk of complications, in particular anaemia.

The country runs a National Malaria Control Programme which has thus far focused on providing access and coverage of vector control measures (e.g. insecticide treated nets (ITNs), indoor residual spraying (IRS)), encouraging and providing health care in a timely manner, and strengthening the surveillance system so that health facilities and districts report timely and quality data. Intermittent Preventative Treatment (IPT) has also been routinely offered to pregnant women in different localities. Each province should have a provincial malaria focal point, and more recently, each district should have a malaria focal point, to coordinate the implementation of malaria control activities (USAID 2018). The biggest documented challenges to the programme include slow national scale up, low domestic funding, poor supply chain management and lack of behaviour change communication (BCC) especially in rural areas (Malaria Elimination 8 2019).

Cases of malaria have spiked in the wake of Cyclone Idai. UNICEF have flagged more than 14,800 cases of malaria since 27 March 2019 in Sofala Province alone, as '*receding muddy*

[5] From data collected between August 2003 and January 2004 in Beira city and Dondo district

waters and standing pools left in the wake of Cyclone Idai are ideal breeding grounds for the mosquito population' (UNICEF 2019). Travellers entering and leaving regions in response to floods pose a further risk factor for malaria transmission. The situation is only likely to be worsened by the impact of Cyclone Kenneth. The humanitarian response has so far included the distribution of mosquito bed nets and treating schools and health centres with disinfectant and anti-mosquito spray.

There is limited data on malaria care seeking in Mozambique and an urgent need to better understand the patterns and factors associated with care-seeking to improve diagnosis and treatment (Cassy et al. 2019). Due to this limitation, country-wide data is offered below, and it is advised to carry out localised rapid ethnographic assessments to assess the malaria-related contextual factors in affected regions.

Taxonomies and local explanations of malaria

In terms of sociocultural and health communications issues related to malaria prevention, many communities see malaria as part of everyday life and many are familiar with most of the disease's symptoms (Bingham et al. 2012). The term 'malaria' is, however, quite recent in the lexicon of the population, except for those who had a close relationship with Portuguese settlers or with biomedical institutions in the post-independence era. In Gaza province, the widespread introduction of the term 'malaria' occurred in 2000, when flood-affected areas received support from humanitarian NGOs, who distributed mosquito nets, food aid and conducted health education sessions (Sequeira 2016). The most commonly used terms for malaria in both Chókwè and Massinga districts refer to either mosquito or fever. For example, *dzedzedzé, dsedse, mudinhane, muzototó, and ximungwamugwane* all refer to mosquito. The term *efevere* references fever. The term 'malaria' is also used in Portuguese. In Cindau, people use an adaptation of the Portuguese term, *mararia,* or the local term *fobiri.*

Regarding uptake of preventative vector control measures, DHS 2015 data suggests that 63.1 per cent of households in Sofala province and 61 per cent of households in Manica Province had at least one Insecticide Treated Mosquito Net or had been sprayed in the previous year. Furthermore, 47.8 per cent in Sofala province and 44.9 per cent in Manica province had actually *used* these by either sleeping under an ITN or in a room that had been sprayed in the previous 12 months (Mozambique Ministry of Health & INE 2019). Caregivers and other community members in Chókwè and Massinga districts identified the main household prevention methods for malaria as the use of mosquito nets and the cleaning of living areas. Most linked transmission to mosquitoes, some linked transmission to unclean living areas and poor personal hygiene (Bingham et al. 2012). In Chókwè, spraying activities have come under some scrutiny, with community members reporting that they do not believe it works, because the mix has been diluted with water, and revealing that they usually closed their doors and windows to prevent the sprayers from entering their homes (Sequeira 2016).

Malaria vaccines are not yet available in Mozambique, although it was a key testing ground for the RTS,S vaccine in 2001. Research suggests that a malaria vaccine would be acceptable if issues related to eligibility, dosage and potential side effects are well-communicated; if channels for two-way communication are open for people to ask questions; and if supply side issues include distance, waiting times and service quality (including communication skills of providers) are addressed (Bingham et al. 2012).

Importantly, much of the printed information, education, and communications materials on malaria prevention has in the past only been accessible only to people who read Portuguese, which is only 62.9 per cent of the population in Sofala province and 54.2 per cent in Manica province. Language specificity, diversity and comprehension should be adequately assessed and addressed by responders moving forwards.

Seeking treatment

The limited data available suggests that seeking treatment for malaria is influenced by health beliefs, existing providers, economic factors, and relational factors (including social status and political connections). Using 2011 DHS and 2015 IMASIDA datasets, biomedical care-seeking was deemed 'sub-optimal' at 63 per cent, although the main place care was sought in 2015 was at public hospitals (86.7 per cent), followed by community health workers (6.6 per cent), suggesting a preference for public services. Care seeking was more common for children whose mothers had a secondary level of education (but less common for those with higher education), those in a poorer quintile (but not the poorest quintile) and those in urban areas. People from Manica, Sofala, Inhambane and Gaza were more likely to seek care than those in Maputo city (Cassy et al. 2019). People may ascribe malaria-like symptoms to biomedical causes, and therefore recognise that a visit to the health centre or hospital is therapeutically helpful. Many also first try to manage malaria symptoms at home with common treatments including over-the-counter medicine paracetamol and the use of cold water or wet cloths 'to cool off the body.' Traditional remedies within the context of treatment for malaria include the drinking of boiled herbs or plant leaves, including avocado and eucalyptus leaves, although these might be less popular (estimates were at 1.1 per cent in 2015) (Cassy et al. 2019). If these efforts fail, medical treatments might be sought at a hospital (Bingham et al. 2012).

Delays can happen when the signs and symptoms of malaria may be mistaken for diseases outside the biomedical sphere. For example, in Chókwè and Massinga Districts convulsions/collapsing/fainting can be seen as a manifestation of a local illness (*nweti, nhocani,* or *tynhocani*) that is associated with the presence of a full moon and has local associations of ancestral and spiritual nature (Bingham et al. 2012). Also in Gaza province, there is an association between malaria and *dzedzedza* (which refers to fever and a feeling of heat in the body), reinforced by a diagnosis of malaria whenever someone has fever (Sequeira 2016). In these cases caregivers prefer instead to seek traditional healers *(nyanga/tinyanga*) or home remedies (Bingham et al. 2012). With traditional healers becoming more expensive and perhaps less acceptable (see health seeking section above) religious healers have filled the gap for illnesses that are understood as 'diseases of tradition' rather than biomedical diseases. If a subsequent referral (or self-referral) is made to a health facility, health workers have been documented to wait a few hours before they administer antimalarial drugs, blood transfusions or other therapies due to a fear that certain traditional remedies may have caused intoxication or has weakened the immune system (Sequeira 2016). There is a gap in research on local aetiologies in Sofala province (including the affected areas of Beira, Buzi, Dondo, Nhamatanda); and Manica province (around Chimoio city and Gondola district) which need to be addressed by responders through participatory enquiry, supported in the longer-term by rigorous social science research.

Biomedical practitioners have previously tried to equate local aetiologies with malaria (e.g. moon disease = malaria), but local perceptions are more complex and can challenge this approach. For example, the behavioural disturbances caused by malaria can sometimes be associated with 'craziness disease' (severe mental health disorders) and so confusing the various ethno-diseases with malaria can cause offence to some (Sequeira 2016). Rather than questioning health knowledge and practices, people should see their questions clarified, so that new knowledge and practices emerge based on the experience with biomedical services.

Vaccination of common diseases measles/rubella

Full immunisation coverage of children 12-24 months is 64 per cent in Mozambique, specifically 75 per cent in rural areas and 60 per cent in rural areas. Sofala and Manica

provinces have slightly about average coverage at 78.4 per cent and 64.6 per cent respectively (Mozambique Ministry of Health & INE 2019). Children are more likely to be vaccinated if they live in urban areas than in rural areas, if the mother is educated, and if household income is high (Mozambique Ministry of Health 2011). As part of the emergency response, 700,000 children have been vaccinated against Polio, and more than 650,000 children against measles and rubella.

Research from Chókwè District in Gaza Province and Massinga District in Inhambane Province shows a generally positive feeling to the country's childhood immunisation programme and about vaccines in general. Community members did report a lack of information on particular vaccines and expressed fears that an injection or vaccine could potentially harm or kill a child. Community members said they often did not know what discomforts or side effects to expect. Supply side issues related to vaccine uptake include distance, waiting times and service quality (including communication skills of providers) (Bingham et al. 2012). Decisions related to childhood vaccinations and other issues of child health are generally made within the immediate family by one or both parents, but mostly the mother due to her role as primary caregiver.

If new vaccines are to be introduced, there is a need to clearly communicate who is eligible, information on dosage and potential side effects. It would be important to build on familiar practices and using trusted sources to influence vaccination behaviour. Reliable processes include: government relaying dates for vaccinations to community and block leaders, health care providers, and chiefs, who then make announcements at community gatherings or through mobile brigades, by going door to door to reach parents at home with their children, or (in Chókwè) through a village secretary (Bingham et al. 2012). Mass media, specifically television, radio, and mobile units with mega-phones are other documented means of communicating health information. Hospitals also play a central role in announcing new health campaigns. Religious and other leaders as well as traditional healers were seen as important sources of health information in the community.

Indigenous ideas of protection can be used to promote vaccination. Protection is often sought against sorcery or spirits. Similar to the *phungula* inhalation ritual detailed above, the *bafo,* a kind of sauna treatment with different medicines for each misfortune or disease, serves to protect. Other ways of ways of granting protection can be through ingestion, inhalation or baths. There is one technique called *vacina* (vaccine), which consists in applying a medicine in incisions under the skin. The application of *vacina* is done several times simultaneously with a complementary protection treatment to 'shield' the body. Cuts are made in what are considered the most vulnerable points to spirit or physical aggression: head, flanks and chest, lower back and joints of arms and legs (Granjo 2009)

Child nutrition and feeding practices

According to the demographic and health survey (Mozambique Ministry of Health 2011) in Mozambique, 43 per cent of children under 5 have moderate chronic malnutrition, and 20 per cent suffer severe chronic malnutrition. 8 per cent have acute malnutrition. Malnutrition is deemed responsible for 30 per cent of infant mortality. Chronic malnutrition is more prevalent in rural areas (46 per cent) than in urban areas (35 per cent). Rates of chronic malnutrition are highest in the Northern provinces like Nampula (55 per cent), and lowest in Maputo, with 23 per cent. In Manica, rates are 41.9 per cent and in Sofala 35.7 per cent. Chronic malnutrition decreases significantly depending on wealth (rates in the poorest quintile is double that of the richest one), mother's nutritional status, mother's education and time between births. Acute malnutrition is 6.7 per cent in Manica and 7.4 per cent in Sofala. Women working outside the

household, a situation prevalent in poorer, urban households, is linked with undernutrition (García Cruz et al. 2017).

	Height for age (chronic malnutrition)			Weight for height (acute malnutrition)				Low weight for age				N
	-3SD	-2SD	Z-sc	-3SD	-2SD	+2SD	Z-sc	-3SD	-2SD	+2SD	Z-sc	
Manica	18.2	41.9	(1.6)	2.5	6.7	10.3	(0.2)	2.5	10.8	0.8	(0.8)	671
Sofala	14.8	35.7	(1.4)	1.6	7.4	7.4	(0.1)	3.2	11.3	0.9	(0.8)	1,082

Low birth weight rates in Manica and Sofala are close to the national average of 14 per cent Sofala is 15.1 per cent, and in Manica 13.6 per cent. Low birth weight is more likely with young mothers (less than 20 years old) (Mozambique Ministry of Health 2011).

Anaemia rates are 64 per cent in Sofala and 59 per cent in Manica. Anaemia rates are lowest in Maputo with 50 per cent . Anaemia is more likely to occur in poor households (74 per cent in the poorest income quintile vs. 50 per cent in the highest) (ibid)

Breastfeeding practices

Almost all children are breastfed (97 per cent), and 92 per cent of mothers start breastfeeding within the first day. Only 6 per cent are documented to use substitute milks. Duration of breastfeeding is a determinant of positive nutritional outcomes for the child, with the average duration of breastfeeding recorded as 20 months (Mozambique Ministry of Health 2011).

Although not breastfeeding one's child carries stigma*, exclusive* breastfeeding is only practiced by 43 per cent of mothers of children under five months. It is practiced by most mothers in the initial weeks, but after two months it diminishes quickly. 19 per cent of children are documented to be fed breastmilk, alternating either with water (19 per cent), or complementing with other foods (25 per cent) (Mozambique Ministry of Health 2011). It is common for infants to receive water, porridges and traditional medicines before reaching 6 months of age (Arts et al. 2011). Traditional medicines for infants consist of baths, smoke, amulets, or oral decoctions in teas. Pharmacy purchased 'gripe water', (with ingredients including essential oils, sodium bicarbonate and sugars) are also used. Traditional medicines are used to cure colic, diarrhoea, as well as 'moon disease' (see above). It protects the child from illnesses caused by spirits or harm from sorcerers, as well as enabling the re-initiation of sexual relation between the wife and husband (Arts et al. 2011: 27). Decision making on breastfeeding practices is not solely done by mothers, in Mozambique paternal grandmothers and fathers influence these decisions greatly and should be involved in nutrition communication (ibid).

Weaning

Weaning has traditionally been done through the preparation of porridges. As mentioned above, the use of porridges often occurs before the 5th month of life. Babies are often weaned with bland, fermented or non-fermented corn flour porridge, called in Portuguese *papa* or *panihna.* Non-fermented porridges have lower energy and protein content and are at risk of contamination, whereas fermented porridges have higher nutrient content and bioavailbility, and are safer to eat. Fermented foods are understood to improve appetite, protect from diarrhoea and make children stronger. Note that with processes of urbanisation, and with mothers' time incredibly stretched, there has been a decrease in the use of fermented foods, and in many households, the tradition is being lost (Lechtig & Srivatsa 1987). There is limited

up-to-date information on weaning practices in Central Mozambique and how these impact nutritional outcomes.

Traditionally in Manica, mothers use fermented sorghum called *uputu*, and made with milk, it is called *massa.* In Sofala, they also use fermented sorghum (*uputu*), maize (*uswa* or *uputu*), rice (term not available) or millet (*uswa* or *uputu*) (Lechtig & Srivatsa 1987).

When fermenting corn or millet to make *uswa*, the grain is pounded and washed, put in a mud pot with water and left for 24 hours. Then the water is removed, the grain is dried and then pounded again into a paste called *mili mili*, which is then separated and cooked. Rice is rarely fermented for this purpose, but when it is, the same process applies. Sweet potato may be used to support fermentation. When using milk for weaning, the milk is left to stand for 1-2 days and then the why is removed, and the curd is used for baby food.

Another traditional weaning food is *mahewu*, in which maize flour is cooked in water, and then wheat flour, potato, sugar or sweet potato is added. This is then incubated to produce the mahewu drink. *Chicucumuca* is a similar process although the result is thicker. To make *shinkwa*, fresh maize is washed and ground, sugar and water is added to make a dough, and then these are boiled rolled up in maize.

Some development interventions aim to promote weaning foods that complement the traditional grain (often corn or millet) porridges with other higher protein foods grown locally. For example the WFP is promoting weaning dishes made from pumpkin, cassava and sweet potatoes, and their leaves, yam, and *malambe* yogurt (Catueira 2016).

Recommendations

Health systems

- Health communication must be in local languages, ideally audio messaging, with graphic heavy visual aids to ensure comprehension.
- Explore alternative forms of biomedical provision such as mobile health clinics, and ensure these are coordinated well with communities, community leaders and traditional healers.
- Work with alternative health providers (private clinics, community and NGO providers, drug vendors, indigenous doctors and faith-healers), providing training and tools for the identification of diseases, and create mechanisms for the referral to biomedical centres when necessary. Indigenous doctors and faith healers can be trusted vehicles for health communication. Beware that faith healers and *tinyanga* may be opposed to each other and hence should be approached separately.
- Use local language and indigenous causal concepts of diseases (e.g. nyoka) in order to communicate more effectively, particularly when biomedical and locals resonate, for example ideas of pollution and contamination.
- Whenever necessary, work with indigenous doctors and faith healers in the administration of complementary treatments, as well as facilitate spaces for chiefs and healers to redress non-natural causes of disease or misfortune (e.g. offerings to ancestors, purifying ritual to repair breaking of norms or tradition, etc.).
- In parallel to the dissemination of biomedical explanations of the disease, specifically protect through messaging those who are at risk of being accused of witchcraft or sorcery (e.g. young women in cities).
- Engage with local branches of AMETRAMO and Aprometra, as well as the National Institute for Tropical Medicine for community engagement activities, after assessing if these are used and trusted channels.
- Work with Community care providers include Community Health Agents (ACSs, *Agentes Comunitários de Saúde*) and Community Health Workers (APEs) and Traditional Birth Attendants (TBA). Ensure that they are adequately remunerated and their work is publicly recognized.
- People within families and communities such as godmothers have traditionally been communicators of health information, for example in initiation rites. These people could be mobilized to transmit health messages for the response.

Malaria

- Use words for malaria, mosquitoes and other malaria-related concepts in the local language.
- Communicate the purpose and demonstrate the effectiveness of insecticide spraying, and beware of people's interpretations of spraying as they can be viewed with suspicion.
- Work with informal health providers, indigenous doctors and faith-healers to identify acute malaria cases and create systems for referral to biomedical centres. Seek ways of complementarity between biomedical and indigenous treatment of malaria. When a person is referred to a clinic, it would be useful for the nyanga or faith-healer to remit what treatment (e.g. herbal) he/she has practiced.

- Since malaria symptoms often attributed several causal mechanisms in indigenous frameworks, spaces should be open for communities to ask questions about the disease, its aetiology and its possible treatments and prevention.
- In general, the funding of vertical programming is not to be encouraged, so where-ever possible work through government structures.

Cholera

- Use the local word for cholera in messaging in an outbreak, and communicate the urgency and need to refer to cholera treatment units.
- Communicate where treatment is available, but also convey the quality of treatment- how cholera cannot be transmitted there, the training of staff and the availability of supplies.
- Identify and work with alternative health providers, helping them identify the symptoms of cholera, and work with them to refer severe cases to hospitals or cholera treatment centres, and to treat mild and moderate cases with purchased or homemade ORS.
- When promoting ORS, where possible, work using the local disease frameworks and recommend variations on traditional treatments that serve as rehydration solutions.
- Work with local understandings of hygiene, e.g. building on ideas of dirt and pollution to shape hygiene messaging. Use positive measures that convey a feeling of control, appealing to visual and emotional triggers.
- Work with community leaders and trusted individuals to mobilise the population in hygiene prevention measures with them actively and publicly doing hygiene prevention practices (e.g. drinking chlorinated water, having the vaccine).
- Acknowledge in messaging that the cause of the outbreak is inadequate sanitation, not breaches in personal hygiene, yet conveying that water treatment and hygiene are the available activities to pursue whilst rebuilding the WASH system.
- Basic WASH infrastructure must be put into place at the same time that hygiene promotion programmes are rolled out.
- As above, in general, the funding of vertical programming is not to be encouraged, so where-ever possible work through government structures.

Vaccination

- Assess the populations' previous historical experience with vaccination, and clearly explain the side effects and protection rates of the vaccine.
- Communicate clearly who is eligible, information on dosage and potential side effects. Reliable processes to promote vaccination include: government relaying dates for vaccinations to community and block leaders, health care providers, and chiefs, who then make announcements at community gatherings or through mobile brigades, by going door to door to reach parents at home with their children, or through a village secretary.
- Use ideas and local terms and concepts for protection' in messaging for vaccination programmes.
- Radio and mobile units with megaphones are useful tools for vaccine communication, as well as TV in the cities. Hospitals and alternative health providers are also good interlocutors.

Nutrition and feeding practices

- Promote exclusive breastfeeding until 6 months as a way of protecting and strengthening children in local terms
- Promote through communication, livelihood opportunities and social protection programmes the purchase and consumption a varied diet and recover traditional weaning foods (e.g. fermented weaning foods)

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