

Chad's health system in crisis

- Better primary healthcare for communities in Chad

Every day, Chadians fall ill with easily treatable and preventable diseases – and this has been a decade-long trend with devastating consequences: high death rates, an overwhelmed health system, and personal despair. Time has come to break the vicious circle of ill-health and poverty. To prevent Chad's health system from an imminent collapse – an increasing number of refugees seeking medical help and on-going uncertainties due to COVID-19 – the country needs easy to implement, low-cost health interventions: it needs *strong community-centered primary health care*. Health interventions adapted to local customs can particularly prevent Chadians dying of the country's two biggest burdens of diseases: diarrheal diseases and neonatal disorders.

This policy brief shows how Chadian policy-makers, international organizations, and NGOs can support communities to implement primary health care and simplify treatment and prevention of diarrheal diseases and neonatal disorders. Based on the best available research, this policy brief proposes interventions that can lead to better treatment and prevention of diarrheal diseases and neonatal disorders, particularly:

- 1. Adapt primary health care to local customs:** tackle chronic shortage of physicians and nurses by teaching locals to manage easily treatable illnesses. Educational outreach can improve knowledge of health staff who may only have rudiment education in health issues.
- 2. Encourage hand-washing to reduce diarrheal diseases:** foster knowledge of diarrheal diseases' risk factors and increase self-efficacy, e.g. at school through providing soap alongside hand-hygiene promotional activities.
- 3. Community-based maternal and neonatal care to reduce neonatal disorders:** improved education among women, families, and health care providers can have positive impacts on birth outcomes.

TUM Better Health Insights support health policy-makers in the Global South to draft, plan, and implement evidence-based health policies to improve health systems and outcomes for everyone.

In many parts of the world, considerable barriers prevent people to access health resources – particularly women and children. If we were to achieve the SDG goals by 2030, we must act now.

Any questions or feedback?
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Chad's health crisis

Four physicians for 100,000 people and a death rate of 163.5 per 100,000 inhabitants – Chad's health system is in a fragile state and is considered as one of the most inefficient and unreliable health systems in the world (see e.g. Unicef, 2019/ World Bank, 2021).

To tackle Chad's biggest health burdens – diarrheal diseases and neonatal disorders – this policy brief proposes a more effective and reliable primary health approach which can better manage treatable and preventable deaths and disabilities. This policy brief provides answers to the following questions:

1. **Primary health in communities:** how can we tackle the country's chronic shortage of physicians and nurses in rural and remote regions?
2. **Treatment and prevention of diarrheal diseases:** which interventions foster knowledge of diarrheal diseases' risk factors and increase self-efficacy?
3. **Maternal and neonatal care to reduce neonatal disorders:** which interventions can equally improve maternal health and prevent neonatal disorders?



Credit: Doctors without borders



Credit: Oxfam/GB/Fatoumata Diabate

Approach

The [Global Burden of Disease Project \(GBD\)](#) is a powerful resource to examine the main burden of communicable and non-communicable diseases of 204 countries – this is particularly important in countries like Chad where data and studies on its health system are sparse. Based on the GBD's data, the *Research* section of this policy brief provides an overall picture of the most pressing health issues in Chad.

The section *Policy Recommendations* builds upon high-quality and up-to-date academic research on healthcare in low-income countries. Systematic reviews and various randomized control trials from health-policy databases were consulted to ensure the effectiveness of the suggested policy recommendations.



Credit: Brendan Bannon/Flickr; photo taken in Djiogi, Chad.

Research findings

Four key findings emerge from the research

1. Chad's health system provides for rural inhabitants insufficiently

Delivery arrangements and quality of health care. Chad suffers from a considerable maldistribution of medical staff: 77 percent of Chadians live in rural areas (World Bank, 2019), but the majority of physicians (65%) are located in the region of the capital city (N'djamena) (Ochieng/Azétsop, 2015, p.4). The uneven geographical distribution of the population and its medical staff indicate how challenging it is to deliver health services to its rural population. To date, strategies to supply rural inhabitants with health services have proven inadequate or are non-existent (Ochieng/Azétsop, 2015, p.4)

Each healthcare center – usually situated in a town – is organized into areas of responsibility with smaller, often rural, health care facilities with poor sanitation, insufficient equipment, and an unreliable electricity supply. Only 1,061 out of 1,305 areas of responsibility are running (Ochieng/Azétsop, 2015, p.4), i.e have sufficient staff and equipment. Particularly in remote areas NGOs, such as Doctors without Borders, step in to provide health resources (Kiendrébéogo, 2017, p.83).

Moreover, several studies find Chadian health workers demotivated due to inadequate wages, infrastructure, working conditions, and the remoteness of workplaces (e.g. Jaeger et al. 2018; p.3). However, we need more quality studies to sufficiently evaluate Chadian health staff well-being.

Overall, fragile delivery arrangements, and a chronic shortage of health resources affect the country's capability to provide its people, with health services, particularly for those in remote and rural areas.

Financial arrangements – In 2017, Chadians paid on average 60 percent of their costs for health services “out-of-pocket” (GBD, 2017) – a high number compared to other Sub-Saharan countries, e.g. Niger (based on Niger's GBD data, 2017).

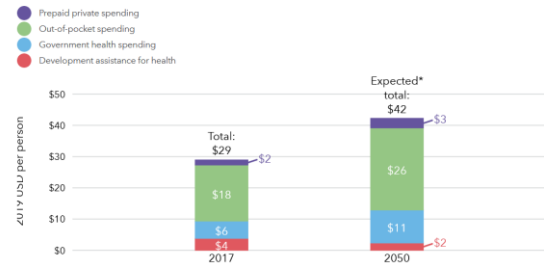
In 2017, Chadians' total cost for health services was USD29 per person: USD18 (~62 percent) was paid out of pocket, the remainder was covered by the state, NGOs or international organizations. In comparison, in Niger, health costs were only a little less than Chad's – USD26 per year/per person – but Nigeriens only paid USD14 (54 percent) out of pocket. Meaning, Chadians had to cover a comparatively higher proportion of health costs out of pocket. This raises questions: although the Government claims to offer a wide range of treatment of diseases for free or for a reduced price (Columbia University – Comparative Public Health Library, 2019), Chadians cover large parts of health expenditures themselves. We urgently need sophisticated studies to understand why Chadians pay such a large amount: are they paying nurses and physicians, because the state is absent?



Credit: Doctors without borders

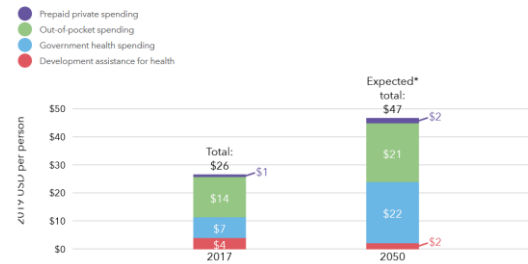
Based on Chad's "out-of-pocket" spending compared to Niger's. (based on GBD data, 2017).

How much is spent on health – now, and in the future – and from which sources?



Source: Financing Global Health Database 2019
**Expected* is the future growth trajectory based on past growth.

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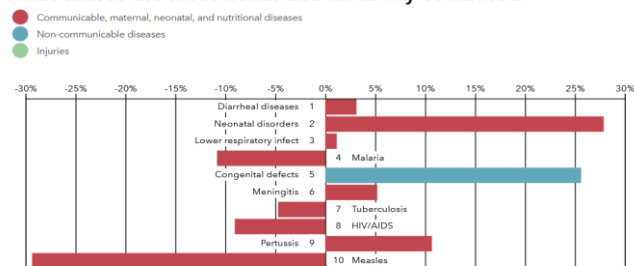
2. Prepare for the "double burden" of communicable and non-communicable diseases

In Chad, there has been an increase in deaths and disabilities due to non-communicable diseases such as congenital defects (up by 25% since 2009, GBD 2019). Moreover, risk factors for death and disability due to non-communicable diseases have been increasing: e.g. High fasting plasma glucose (up by 32.7% since 2009 /GBD 2019) and dietary risks (up by 29.2% since 2009/GBD, 2019).

Yet, communicable diseases continue to present Chad's greatest burden of disease – and most are preventable through adequate health resources and public-health measures. **Diarrheal diseases** are the country's biggest burden of disease (an increase of 2,5% since 2009, GBD 2019) despite the existence of low-cost cures (e.g. Oral Rehydration Salts). A high number of enteric diarrheal diseases, often caused by consuming contaminated food or water (Troeger et al. 2018, p. 1217), call for improvements to the country's state of sanitation, water, and hygiene (WaSH), as it is Chad's second greatest risk for death and disease (GBD, 2019). But also malnutrition – Chad's highest risk for death and disability – leads to increased frequencies and durations of diarrheal illnesses (e.g. Brown, 2003, p.329).

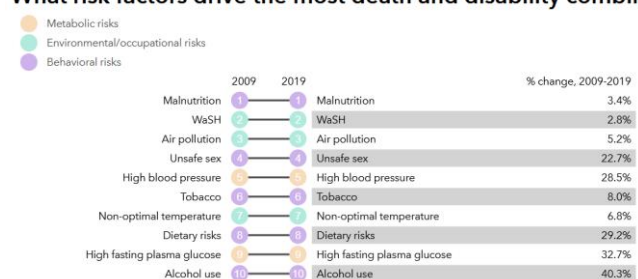
Overall, the country's greatest health concerns remain communicable diseases, despite evidence that non-communicable may likely increase in the coming decades. Early interventions can prevent the "double burden" of coping with communicable and non-communicable diseases simultaneously, as for example currently seen in Ghana (Kushitor, 2018, p.2).

What causes the most death and disability combined?



Source: Chad – deaths & disabilities combined, Global Burden of disease, 2019

What risk factors drive the most death and disability combined?



Source: Chad – Risk factors, Global Burden of disease, 2019

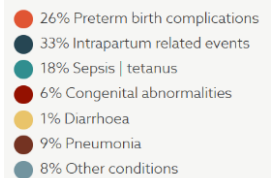
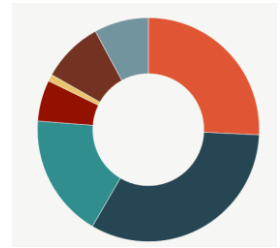
3. Neonatal disorders and maternal deaths – Chad must take action

Globally, Chad has the fifth highest infant mortality rate (69 per 1,000 live births/World Bank, 2019) and the country's life expectancy is 53 years for infants born in 2018 (World Bank, 2018): not surprisingly, neonatal disorders are the second greatest cause of death and disability in Chad and range from prematurity sepsis/tetanus to intrapartum-related difficulties.

The often young mothers – 51 percent get pregnant before the age of 18 (Unicef, 2019) – and the newborn's health are closely related. Often, Chadian women and babies die or develop disorders due to complications during pregnancy, delivery, or shortly after birth. Most complications are preventable or treatable, e.g. through the assistance of a qualified midwife. In 2019, only 24 percent of deliveries were attended by skilled health personnel (Unicef, 2019).

Overall, Chad is in a dire need of decent women's and newborn health resources, as access and delivery to treatment and prevention is limited – particularly training and employment of qualified birth assistants. However, studies in Burkina-Faso and Uganda (e.g. Sarker, 2007, Bajunirwe, 2005) have shown that culture, gender rules, and disparate decision-making power within families can affect the uptake of maternal and neonatal treatments and prevention. Therefore, health interventions should take gender-related aspects into account.

Leading causes of neonatal deaths in Chad (2017)



Source: Healthy New Born Network 2020, data based on WHO and Maternal and Child Epidemiology Estimation Group (MCEE) 2018

4. Data to improve stakeholder coordination

Despite the presence of international organizations and NGOs, there are surprisingly few sophisticated studies on Chad's health system. Information technologies can provide crucial information on the health system's performance and improve coordination and cooperation amongst the country's different health stakeholders (Dodd et al. 2019, p.12). This can foster efficient synergies amongst international NGOs, state policy-makers, physicians, and nurses and is an important step for providing patients with adequate health care.



Photo: Iriba Hospital, a referral hospital run by International Medical Corps in Iriba, Chad.

Credit: Brendan Bannon/Flickr

Policy Recommendations

To improve health care in Chad, this policy brief proposes two policy recommendations for better primary health care. With the support of national policy-makers, NGOs, and international organizations, these two policy recommendations can be realistically implemented. Moreover, we provide an outlook of what is needed to ensure the sustainability of the policy recommendations.

Our evidence-based policy recommendations are based on recent systematic reviews which have evaluated the plethora of proposed health care interventions. The quality of studies set in low-income countries, particularly Sub-Saharan Africa, leaves much to be desired (e.g. methodological flaws). Therefore, the policy recommendations are only based on moderate- to high-quality-graded research based in low-income countries.



1. How to treat and prevent diarrheal diseases through effective primary health care

Primary Health Care encompasses a broad range of health services provided by health workers in a community (Ejemot-Nwadiaro, 2020, p.2) tailored to the locals' social and cultural customs. However, to ensure the accountability of community-based primary health care, community health care workers must be sufficiently linked to state health systems, (Lassi/Bhutta, 2015, p.2), e.g. to transfer patients with serious symptoms to other facilities.

As Chad's biggest health burden is diarrheal diseases, we propose the *following steps* to treat and prevent the disease in community-settings.

1. Health provider-based interventions

- ✓ **Address the shortage of health staff through task-shifting and adequate training.** Symptoms of diarrheal diseases are easily identifiable and usually do not need a physician's expertise if health workers are adequately trained (Ejemot-Nwedijao, 2020, p. 20). **Educational outreach** can improve the knowledge of less specialized health workers in low-income countries. For instance: through regular meetings with local or NGO healthcare professionals, less specialized health workers can improve their practice and receive **feedback** (Pantoja et al., 2017, p.3). This has proven to be especially **effective for correctly prescribing drugs** (Pantoja et al., 2017). As diarrheal diseases are often falsely treated by antibiotics (Nijume/Goduka, 2012, p.3914), this intervention should be a priority and can probably reduce antibiotic use. (Ranji et al., 2008, p.2).
- ✓ **Reach out to opinion leaders and emphasize the importance of treating and preventing diarrheal diseases in their communities.** Opinion leaders are individuals who have substantial influence in a community. They are capable to improve **healthcare workers' adherence** to desired practices and can persuade healthcare providers to use the best available practices in low-income countries (Pantoja et al. 2017, p.11). This approach could prove more successful than the World Bank's pilot study of 2013 which aimed to increase Chad's health care quality through rewards for health staff. It showed that a lack of adaption to the rural context can lead to policy implementation failure (see Kiendrébéogo et al. 2018).

Primary Health Care encompasses a broad range of health services provided by health workers in a community.

Did you know... Chad's internet and mobile-phone penetration is very low (Statista, 2016), therefore, digital training strategies are likely to fail.

2. Patient-based interventions: delivery and access to diarrheal disease treatments

- ✓ **Encourage health workers to undertake home-based visits to increase the uptake of services and treatments in communities.** This allows for medical treatments near to home and avoids the need for transportation (Das et al., 2013, p.5). This is important because children, in particular, often lack access to adequate treatment for diarrhea and low-cost interventions (Das et al., 2013, p.2).
- ✓ **To decrease “out-of-pocket” payments “, the Government should review the possibility of conditional cash transfer programmes (CCT) for diarrheal diseases.** CCT can increase the uptake of preventive services and encourage preventive behaviours (Attanasio et al., 2005, p.14). To date, there is no sophisticated study on CCT and diarrhea treatment/prevention in Sub-Saharan Africa. Yet, studies in Colombia show that money transfer for growth monitoring visits can reduce diarrheal symptoms for children (Attanasio et al., 2005, p.7). This study should be replicated in Chad and results assessed according to the local context.

Conditional cash transfers are monetary transfers to households on the condition that they comply with pre-defined requirements.

3. Health prevention – how can we change health behavior to prevent diarrheal diseases?

How to encourage handwashing

Handwashing promotion is one of the most effective ways to reduce diarrheal diseases in community settings in low-income countries (Ejemot-Nwedijao, 2020, p.20). Yet, handwashing behaviour in communities is complex and includes social, cultural, and infrastructural aspects (Ejemot-Nwedijao, 2020, p.8).

Providing **soap** alongside hand-hygiene **promotional activities** can foster **self-efficacy**.

Acclaimed studies often focus on preventive interventions for **school children**. Yet, interventions should **also target families as a whole** to ensure the best health outcomes.

- ✓ **Nurses, teachers, and field workers can foster school children’s knowledge of diarrheal diseases’ risk factors through leaflets, posters, and songs on when, why, and how to wash hands** (Ejemot-Nwedijao, 2020, p.8). Knowing about risk factors, such as inadequate sanitation, is key and can induce behavioral and cultural changes which can stay for a lifetime (Curtis, 2011, p.2).
- ✓ **Emphasize the benefits of implications of behavioural change of handwashing, e.g. spending less time caring for sick children.** The aim should be to foster a change of knowledge, attitudes and beliefs about hand washing to induce self-efficacy: e.g. **by providing soap alongside hand-hygiene promotional activities** (Ejemot-Nwedijao, 2020, p.8). For **children, handwashing with soap before lunch events together with communication activities** (as outlined above) can teach children that dipping hands into the same bowl of water without soap, especially before meals, can be dangerous and make you ill (Ejemot-Nwedijao, 2020, p.8).
- ✓ **Policy-makers, NGOs, and international organizations should not forget to consider targeting families as a whole** – a fact that studies often fail to consider. It is recommended that information should reach all members of a household. Providing soap for free at family community events can increase handwashing activities at home, such as before and after meals, visiting the toilet, or when changing babies’ nappies (EjemotNwedijao, 2020, p.2).

2. Reproductive health: tackle neonatal disorders through primary health care



The greatest risk of childhood death occurs during the neonatal period which spans from birth to the first month of life. Community-based interventions can decrease newborn deaths and diseases in low-income countries (Lassi/Bhutta, 2015, p.2). To tackle neonatal disorders, antenatal care is indispensable, as many preventable complications occur during pregnancy. For many conditions, improved education among women, families, and health care providers could have a crucial impact on birth outcomes and reduce neonatal disorders.

Steps to treat and prevent neonatal disorders in community-settings

1. Health provider-based interventions

Community-based intervention packages can reduce neonatal mortality by 25% (Lassi/Bhutta, 2015).

- ✓ **Provide training for traditional birth attendants (TBA) and lay workers.** Chad has a **chronic lack of qualified midwives**. To increase the number of birth attendants, TBAs and lay workers with appropriate training could provide antenatal care, safe deliveries and neonatal care (Sibley, et al., 2012, p.6). Regular educational sessions by skilled individuals in delivery care, counselling, and communication are key (Munabi-Babigumira et al., 2019, p.20).

2. Patient-based interventions during pregnancy and labour

Antenatal care takes place during pregnancy and can ensure that the mother and baby are staying well.

- ✓ **Provide home-based antenatal care combined with mass media campaigns.** Many causes of neonatal deaths and disorders can be directly addressed and prevented by **antenatal care**: community-based intervention packages, such as home visitation by skilled individuals during pregnancy, can reduce neonatal mortality by 25 percent in low-income countries (Lassi/Bhutta, 2015, p.16.). Furthermore, other knowledge interventions, such as information-education during social gatherings and **mass media campaigns**, can reduce newborn deaths/disabilities and encourage women to give birth in health facilities (Mbuagbaw et al., 2016, p.9).

Many studies primarily focus on **girls and women**. Future research should pay more attention on involving **boys and husbands**.

- ✓ **Provide birth-assistants with the adequate equipment for home- and health facility-based births.** Birth assistants must be capable to assist a normal delivery **at home and at a health facility** (Lassi/Bhutta, 2015, p.2) and have potentially life-saving, low-cost drugs at their disposal, such as corticosteroids (helps promote the baby's lung maturity). In Chad, most neonatal deaths occur at home, following unsupervised deliveries and limited equipment.
- ✓ **Decrease "out-of-pocket" payments through performance-based payments (P4P).** In Rwanda, "P4P" improved the use and quality of maternal and child health services (Basinga et al., 2011): providers put more effort into specific activities and increased the number of available resources. The failed World Bank pilot of 2013 – which aimed to implement a "P4P" system in Chad – showed how a lack of stakeholder cooperation led to failure (see Kiendrébéogo et al., 2018). The Government should closely review this failed project.

3. Health prevention – how can we change health behavior to prevent neonatal disorders

Risk factors of preterm birth

Risk factors for preterm birth– such as girls’ young age at pregnancy – can be tackled by *preventing* early pregnancies. Surprisingly, reproductive health education programmes have shown limited impacts on preventing pregnancies at a young age (Mason-Jones et al., 2016, p.3). Rather, incentive-based interventions, such as school attendance, have been found more effective in low-income countries (Mason-Jones et al., 2016, p.3).

Conditional, unconditional cash or other **transfer programmes** are effective to overcome substantial financial barriers for **girls to remain at school**.

- ✓ **Reduce the number of girls’ getting pregnant at young age through transfer programmes.** In Chad, 51 percent of women get pregnant before the age of 18 (Unicef, 2019). Incentive-based interventions that aim to keep girls in secondary school may reduce adolescent pregnancies. Conditional, unconditional cash or other transfer programmes are effective to overcome substantial financial barriers for girls to remain at school or to access health services. The longer girls stay in education, the less likely they are to engage in risky sexual behaviour (Mason-Jones, 2016, p.3).

3. Outlook: How gender links to health – Increase gender equality to decrease Chad’s burden of disease?



Chad exhibits equally high levels of gender inequality and maternal/neonatal deaths and disabilities. To date, there are no sophisticated studies on Chad’s level of gender inequality and its potential impact on the country’s burden of disease. However, sex-linked biological characteristics can impact gender differentials in health outcomes (Krieger, 2003, p.1).

The following numbers depict the country’s state of gender inequality:

Gender Data for Chad data: Social Institutions and Gender Index (SIGI) Policy Simulator, 2019

Child marriage prevalence: **40.5%**

Population justifying violence against women: **73.5%**

Prevalence of female genital mutilation: **38%**

Proportion of women among population not feeling safe walking alone at night in the city or area where they live: **36%**

There is a need for sophisticated studies on **Chad’s high prevalence of child marriage** and its links to the **country’s burden of disease**.

The next issue of **“TUM Better Health Insights”** pays a close look at interventions to reduce Chad’s child marriage prevalence, violence against women, and female genital mutilation. We will carefully evaluate how the county can overcome cultural, social, and economic barriers to foster decent health outcomes for all.

Conclusion

Chad's decade-long non-invest in national health care has resulted in a staggeringly high number of preventable deaths and illnesses, particularly from diarrheal diseases and neonatal disorders. Chadians cannot count on their country's health system, as it is not capable to provide its people with often life-saving health resources. Therefore, primary health care by the people and for the people – *strong community-centered primary health care* – can step in to overcome shortages of qualified medical staff, drugs, and equipment.

The fact that community-based primary health care is the only feasible strategy to prevent further deaths and disabilities is a clear evidence of government failure to provide low-cost community/primary health care. The Government, together with NGOs and international organizations, should reliably support communities with health education sessions, drug supply, and equipment to ensure the best and sustainable health outcomes for Chadians.

Additional Resources

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