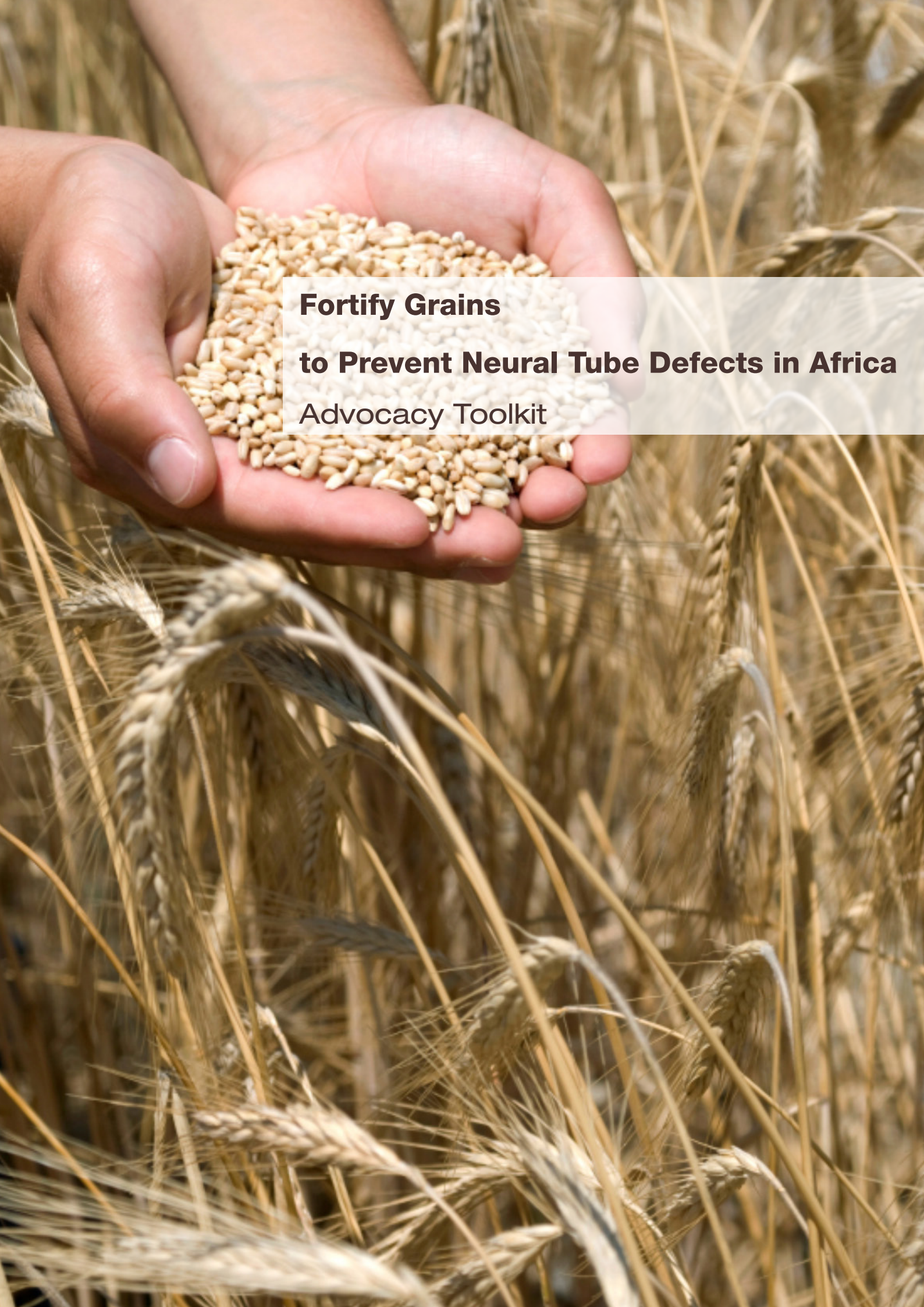

Fortify Grains

to Prevent Neural Tube Defects in Africa

Advocacy Toolkit

Join the movement!

INTRODUCTION

Vitamin B9 is an essential nutrient, meaning every person in the world needs it to maintain proper health. When inherently found in foods like spinach and lentils, this vitamin is called food folate. When it is added to fortified foods or supplements, it is called folic acid.
Amazingly, this vitamin can reduce the risk of children being affected by one of the world's most common birth defects. Neural tube defects (NTDs), which develop shortly after conception, are debilitating and sometimes life-threatening. They can be treated but cannot be cured. Continue reading to find out how you can join the worldwide movement to eliminate folic-acid preventable birth defects so more children are born healthy.

WHAT ARE NEURAL TUBE DEFECTS (NTDs)?

THIS TERM IS NEW TO ME.

NTDs occur when the neural tube of a fetus fails to close properly, thus impairing the central nervous system. These defects form early in a pregnancy, at roughly 28 days after conception. The precise cause of NTDs is not fully realized, but researchers expect that a combination of genetic, health and environmental factors are involved.
The most common NTDs are anencephaly and spina bifida. Anencephaly affects the brain; babies born with this type of NTD will unfortunately die within a short period of time. As the name suggests, spina bifida is a defect of the spine and spinal cord. Advances in medicine and access to healthcare increase the likelihood that individuals born with spina bifida will live fulfilling, active lives. However, the majority of those affected will have to rise above additional health challenges, such as partial paralysis, incontinence and hydrocephalus (fluid on the brain), to reach their full potential.

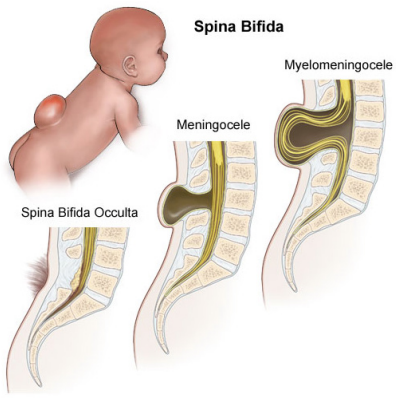

Illustration of three different degrees of spina bifida

DO NTDs OCCUR IN AFRICA?

Why, of course. However, there is a dearth of nationally representative NTD data in African countries due to a lack of investment into surveillance systems. To date, the global understanding of NTDs in the region is largely based on hospital studies, such as the following:

Country	Author, Year Published	Year Data Collected	NTD Birth Prevalence per 1000
Algeria	Hocher et al, 2012	2004-2006,	7.5[1]
Cameroon	Njammshi et al, 2008	1997-2006	1.99[2]
Egypt	Samaha et al, 1995	1994	18[3]
Ghana	Anyebuno et al, 1993	1991-1992	1.15[4]
Malawi	Msamati et al, 2000	1998-1999	0.47[5]
Nigeria	Airede, 1992	1987-1990	7[6]

OKAY, SO NTDS ARE DEFINITELY A HEALTH CONCERN

CAN THEY BE PREVENTED?

Folic acid is required for proper cellular development and division, DNA methylation, the metabolism of amino acids and the regulation of homocysteine in the blood. But enough of the technical terminology, let's get to the best part. Remarkably, folic acid also helps reduce the risk of an NTD-affected pregnancy by up to 70% when consumed appropriately (MRC Vitamin Study Research Group, 1991). This means, NTDs are one of the few congenital anomalies that can be prevented. It also means healthier babies, more-productive citizens, and a decreased burden on health systems.

[1] Includes spina bifida (SB), anencephaly(A), encephalocele, and SB+A.
[2] Includes spina bifida, anencephaly and encephalocele.
[3] Includes spina bifida, anencephaly, macrocephaly and arnold chiari (0.9%).
[4] Includes spina bifida and anencephaly.
[5] Includes spina bifida.
[6] Includes spina bifida (meningomyelocele, occipital meningocele, occulta), anencephaly, encephalocele and arnold chiari (7.1%).

WOW, SO A VITAMIN CAN PREVENT NTDS?

HOW DO I ENSURE THE POPULATION I SERVE HAS ACCESS TO FOLIC ACID?

The two most common ways to provide folic acid to populations are through supplementation and food fortification. Fortification should be the primary strategy. Why? Because to obtain the benefits of folic acid supplements, women need to consume them ideally from two months prior to getting pregnant and through the first trimester (the periconceptional period). Unfortunately, many women do not follow this recommendation because their pregnancies are not planned, they lack information, and they have limited access to supplements due to availability or cost. Also, for many women it is difficult to remember to take a daily vitamin. A study from Nigeria, published in 2012, stated that none of the 220 participants consumed folic acid supplements prior to conception and the average gestational age of commencement was 18.5 weeks (Rabiu et al, 2012). A large study in Tanzania using data from 1999-2008 reported that only 17.2% of mothers had taken folic acid at any time during their pregnancy (Ogundipe et al, 2012).

Grain fortification is the addition of specified vitamins and minerals to wheat flour, maize products or rice during the milling process. This is often viewed as a means to provide populations with additional iron, but fortification is also the most effective way to ensure women of childbearing age consume folic acid during the periconceptional period. Countries that adopt mandatory fortification of at least one type of commonly consumed flour thus provide their populations with folic acid in a simple manner. Everyone with market access to flour or flour-based products can benefit without changing their consumption habits.
The cost to fortify with folic acid is just a few cents per person per year (FFI consultant, Millers Toolkit)

Research and country experiences indicate that the estimated lowest achievable NTD birth prevalence through folic acid initiatives alone is 0.5 per 1000 births (Heseker et al, 2009). Based on the aforementioned studies, there are clearly opportunities for African countries to capitalize on the knowledge about folic acid's unique capability to improve birth outcomes.

WHAT MAKES FORTIFICATION SO IMPORTANT FOR AFRICA?

Though grain fortification is promoted around the world, this initiative is especially worthwhile in Africa. Here are a few reasons to think about:

1. *The health infrastructure of many countries in Africa is not well advanced, especially outside the major cities. For example, a woman may not find out that her child has an NTD until s/he is born because ultrasounds are not routine and the technology may be out-dated. This means she will not be appropriately prepared to raise a child who needs extra care and attention. Additionally, few specialists in Africa are trained to address the complex health issues that affect those living with NTDs, especially as they age into adulthood.*

2. *Antenatal care is not always accessed in a timely manner due to a surprise pregnancy, associated costs and/or local customs. This increases the likelihood that women are not aware of folic acid's benefits prior to or during the first weeks of pregnancy.*

3. *Some cultural and religious beliefs in the region give people the impression that children with birth defects are cursed or are bad omens. This can lead to negative treatment of the child and the affected families within a community.*

4. *Economically, the direct costs (i.e. surgery and rehabilitation) and indirect costs (i.e. caregiver time off work) associated with treating individuals with NTDs is substantial, far greater than the relative cost for flour fortification. In South Africa, the cost benefit ratio was found to be 1:30, meaning for every rand spent on fortification, 30 rand were saved due to averted medical costs associated with NTDs (Sayad et al, 2008).*

SO WHERE IS THE PROOF?

DOES FORTIFICATION REALLY MAKE AN IMPACT?

Many countries can be highlighted to illustrate the impact of mandatory flour fortification, but briefly here are a few examples. Oman was the first country to fortify flour with folic acid in 1996. When the program started, 3 per 1000 births were affected by spina bifida. By 2006, the birth prevalence was down to 0.3/1000 births (Alasfoor et al, 2010). South Africa started to fortify flour with folic acid in October 2003. Using data obtained from 12 hospitals, researchers reported that the NTD birth prevalence dropped by 30.5% from January 2003 to June 2005 (Sayed et al, 2008). In terms of global impact, a meta-analysis conducted in 2010 using data from multiple countries, indicated that mandatory flour fortification decreased the risk of an NTD-affected pregnancy by an average of 46% (Blencowe et al, 2010).

WHO SUPPORTS FORTIFICATION?

IS IT BACKED BY GLOBALLY RECOGNIZED ENTITIES?

Flour fortification is recognized by renowned entities, such as the World Health Organization (WHO), the US Centers for Disease Control and Prevention, UNICEF and the Copenhagen Consensus Center. As of July 2013, 74 countries around the world had legislation to fortify at least one type of commonly consumed wheat flour with folic acid. Twenty-one of these countries are located in Africa.

We encourage yours to join the movement!

I HAVE NO IDEA HOW TO ACTUALLY START A FLOUR FORTIFICATION PROGRAM IN MY COUNTRY.

WHERE CAN I FIND SUPPORT?

Here are some websites and resources to get you started!

Websites and contacts for Smarter Futures partners:

The Food Fortification Initiative (FFI):
www.ffinetwork.org
Provides resources for every stage of the fortification process. Start at the top of the webpage where it says "Why Fortify" for advocacy information. Then move through the planning, implementing, and monitoring tabs for an overview on each subject.
You can also contact the following people with specific questions:
Ronald Afidra, Africa Network Coordinator: afidron@yahoo.com
Anna Verster, Senior Advisor: anna@annagram.nl

The International Federation for Spina Bifida and Hydrocephalus (IF):
www.ifglobal.org
Offers further details about NTD prevention and advocating for those affected by this birth defect. IF has nearly 50 members around the world, including four in Africa.

Netherlands Ministry of Foreign Affairs:
www.government.nl/ministries/bz
Through development cooperation initiatives, the Ministry of Foreign Affairs supports efforts related to security and legal order, water, food security and sexual and reproductive health rights in specified targeted countries.

Hellen Keller International:
www.hki.org
This organization has years of experience in Africa addressing the causes and consequences of blindness and malnutrition. One of its programmatic efforts is fortification.

Akzo Nobel:
www.akzonobel.com
Producer of a highly bioavailable iron fortificant, sodium iron EDTA, which is recommended for fortifying whole-wheat flour.

Documents:

WHO Recommendations on Wheat and Maize Flour Fortification:
www.who.int/nutrition/publications/micronutrients/wheat_maize_fort.pdf

Flour Fortification with iron, folic acid, B12, vitamin A and zinc: Proceedings of the Second Technical Workshop on Wheat Flour Fortification:
www.ffinetwork.org/plan/documents/FNB2010.pdf

Flour Millers Toolkit:
www.ffinetwork.org/implement/toolkit.html

Guidelines on Food Fortification with Micronutrients:
www.who.int/nutrition/publications/guide_food_fortification_micronutrients.pdf

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