QUEEN ELIZABETH CENTRAL HOSPITAL | THE NEUROSURGERY UNIT PROJECT | MALAWI | COLLEGE OF MEDICINE

OPTIMISATION OF FOLATE STATUS IN MALAWIAN WOMEN TO REDUCE INCIDENCE OF NEURAL TUBE DEFECTS

26TH JANUARY 2018, BLANTYRE, MALAWI, CONFERENCE RESOLUTIONS

A conference was convened on 26th January 2018, in Blantyre, at Queen Elizabeth Central Hospital, at the John Hopkins Research Project Conference Room with the aim of appreciating the burden neural tube defects in Malawi which are a result of folate insufficiency. Malawi, located in sub-Saharan central Africa is one of the poorest countries in the world with a population of 19.16 million people in 2018 and a gross domestic product of US$481.50 as of 2016. Malawi's population is largely rural (80%). Of the challenges facing the country is malnutrition and recently the problem of micronutrient malnutrition has been highlighted. Among these is folate, a generic term for a naturally occurring family of B-group vitamins which are naturally found in a variety of foods including green leafy vegetables, fruit, liver, and yeast. Folate insufficiency in women during the first month of pregnancy results in birth defects (myelomeningocele and anencephaly) in their babies. Correction of folate insufficiency is associated with a significant reduction (50-70%) in the occurrence of these birth defects. Folate deficiency can be prevented by taking foods high in folates or through supplementation with folic acid tablets or eating foods fortified with folic acid. Folic acid is a synthetic form of folate which is widely used in supplements and for food fortification. Folic acid is more stable in foods and is much better absorbed than the natural folates.

Neural tube birth defects (NTDs), specifically spina bifida and anencephaly, are not so rare and are observed in 5-20 infants out of every 100,000 births. Although this rate is quite small, the impact on affected infants and their families can be hugely negative. Infants born with anencephaly rarely survive over 10 days after birth, leaving mothers psychologically traumatized. Those with spina bifida live a life complicated by hydrocephalus, neurogenic bladder, kidney involvement, orthopaedic complications, and the psychosocial consequences. These complications can cause severe disability, which add significant burden to patients with NTDs and their families.

The more important aspect concerning NTDs is that they are easily preventable thereby avoiding a lot of stress on families. The Government of Malawi in 2015 regulated that bread and maize flour be fortified with folic acid amongst other vitamins as one of the strategies for combating micronutrient deficiencies in Malawi. Mandatory fortification of these foods came into effect in January 2017 and is monitored by the Malawi Bureau of Standards and the Ministry of Health.

We convened this one-day conference with the aim of highlighting the burden of NTDs in our central hospitals and engaging the stakeholders and policy-makers on reinforcing folate deficiency prevention strategies in the country. The following issues transpired from this conference.

1. **Neural tube defects are a significant congenital problem in Malawi, occurring in about 13 out of every 10,000 births**

   It was noted that NTDs are a very common problem in Malawi as shown in a study in 2001 which showed that out of every 10,000 babies born at Queen Elizabeth Central Hospital there were 13 babies with NTDS (Mkandawire N, 2002). At QECH, 120 infants with myelomeningocele were operated on in 2017, representing 10% of the annual incidence of NTDs in the country epidemiologically.

Resolution 1

The conference resolved NTDs are a real threat to families in Malawi. There is need for current sound epidemiological studies to clearly define the incidence of NTDS. This baseline information will be important monitoring the effectiveness of any interventions on the problem in future.

2. Folate levels in women of child bearing age in Malawi are very low with 80% of the women being at risk of delivering a baby with a neural tube defect

It was noted that folate has a number of important functions in the body, and that each of these has its own critical level: folate requirements to prevent NTDs are 7 times higher than those required to prevent megaloblastic anaemia. The World Health Organisation defines folate deficiency as those levels below which one is at risk of developing megaloblastic anaemia, whilst folate insufficiency describes those with enough levels to prevent anaemia but not high enough to prevent NTDs.

A recent study by the National Statistics Office, the Micronutrient Study, has shown that folate levels in women of child bearing age in Malawi are insufficient in 80%. This means that these women have a risk of carrying a pregnancy with an NTD. According to this study, women in the urban areas have a statistically significant higher risk of pregnancies with NTDs, as compared to rural women.

Resolution 2

The conference agreed that folate insufficiency is unacceptably high and measures need to be taken immediately to improve the folate status in women of child bearing age in Malawi in order to reduce the incidence of NTDs.

3. Lack of awareness of the relationship with folate deficiency and neural tube defects

This lack of awareness was noted at several levels

a) Policy makers

It was noted that current Ministry of Health policy on folate supplementation only targeted megaloblastic anaemia in pregnant women and did not consider prevention of NTDs in early pregnancy. Folate supplementation in the antenatal period has no influence on NTDs prevention.

Resolution 3

The Ministry of Health representative informed the participants that a clinician will be drafted into the Micronutrient Technical Working Group so that clinical effects of micronutrient deficiencies can be better presented and covered.

b) Health Care Providers

It was noted that health care providers are also not aware of the benefits of preconception folate supplementation and that would make them unprepared to handle the demand from preconception women.

Resolution 4

It was agreed that we should engage an educational program for all health care providers to sensitise them on the new developments in the medical field including folate supplementation in the preconception period.
It was agreed that the Medical Council of Malawi and the Nursing Council of Malawi should ensure and enforce that all medical practitioners and nurses are kept abreast with recent developments in medical care in the country. Specialists should update the respective councils of such developments so that the councils are aware of what knowledge to enforce.

The Ministry of Health to incorporate pregnancy planning into family planning programmes so that families can prepare for the pregnancy adequately.

c) Society (Beneficiaries)

It was also noted that the women of child bearing age, their partners and families, and society in general are not aware of the requirement for folate supplementation in the preconception period as such they do not demand such services.

Resolution 5

It was agreed that the issue of preconception supplementation should be disseminated to women of child bearing age and all family members through health talks in family planning clinics, antenatal clinics, under-five clinics, cervical cancer clinics, the print and electronic media, churches and social gatherings. ***Resolution 4*** is expected to facilitate the transfer of knowledge here.

Participants emphasized that the dangers of NTDs should be presented to families as real as they are so that families can understand the seriousness of the conditions. It was agreed that messages should be directed at the whole spectrum of society and not only for the poor and the under-privileged since any woman can be affected by the condition.

Participants also agreed that the Ministry of Health should work with the Ministry of Education and Technology to include the importance of folate in the human body in the school curriculum.

4. Several strategies for increasing folate intake exist and each one has its own advantages and challenges in the Malawian setting.

The meeting appreciated that there are a number of scientifically proven strategies to increase folate intake in society and thereby reduce the incidence of NTDs. These methods include: promotion of intake of natural foods high in folate; folic acid supplementation; and folic acid fortification of staple foods. Each has its own advantages and limitations in our setting. The participants recommended that Malawi should promote the use of all recognised strategies in improving folate intake in order to gain from the advantages of each whilst mitigating the limitations.

Resolution 6: Promote and advocate intake of folate rich foods among the population

The participants agreed to promote the regular intake of properly prepared folate rich foods which include green leafy vegetables, fruit, liver, and yeast

Resolution 6: Promote the intake of supplementary folic acid tablets in the preconception period

The meeting adopted promotion of intake of folic acid-containing tablets as a supplement in the preconception period in order to combat folate insufficiency in women planning to give birth.
It was agreed that the Central Medical Stores should be engaged to include folic acid 400mcg tablet on essential drugs list and also to maintain adequate supply of the tablet at all times and throughout the country. There is also need to advocate for the availability of folic acid-containing tablets in drug stores and shops for people to buy independently without prescription.

Resolution 7: Promote the use of folic acid fortified foods in Malawi

The conference noted that mandatory fortification of maize and bread flour came into force in Malawi on 1st January 2017. The participants appreciated that this is one way of combating folate deficiency in Malawi, in that proportion of population that has access to centrally processed food products. The conference resolved to embrace the regulation and promote utilisation of fortified foods.
Participants called for a change of policy such that all food suppliers for schools, hospitals and other institutions only provide fortified products. Noting that food fortification makes staple foods slightly more expensive, the conference proposed fortified foods should be subsidised so that they remain affordable to consumers.

5. Support for innovative ideas and technologies

The conference noted that each of the methods to improve folate intake has challenges and there is need for innovation to increase the effectiveness of delivery of folates to the target population.

Resolution 8: Promote innovative fortification technologies

The conference agreed to advocate for research in the following potential areas: household and community level fortification initiatives; manufacturing of a combined tablet with folic acid and oral contraceptive pills; fortification of sugar with folic acid; and biofortification.

6. Monitoring and Evaluation

The conference agreed that sound research is necessary for us to assess the effectiveness of the above interventions on combating folate insufficiency in women of child bearing age. We also noted that it is important to have baseline values of incidence of NTDs to complement the population levels of serum and red blood cell folate data from the Micronutrient Study. It was also agreed that Implementation Science principles should be used in research on folate deficiency prevention since we know the interventions that work but there is low uptake of such interventions. Other research areas identified included understanding the behaviours of health workers, stakeholders and society; defining the bottlenecks in the adoption of known effective interventions in folate deficiency prevention; genetic studies on folate metabolism in the Malawian population to help understand why we have a such a high incidence of NTDs.

Resolution 9

The Department of Nutrition and HIV/AIDS offered to link interested parties with other stakeholders in nutrition who would assist in moving this agenda forward

7. Champion of Folate Deficiency Prevention

The conference appreciated that for any agenda to move forward, there is need to have a champion for the cause. Opportunities exist for business people to push folic acid products into society, and organisations to lead in advocacy and example for good practices in folate deficiency prevention.

Resolution 10

The Blantyre Institute for Neurological Sciences confirmed its determination to continue advocating for folate status improvement in women in Malawi.

The Director for Health Services for the Blantyre City Assembly expressed interest for the City of Blantyre to lead in good practices for improving folate intake in residents.

26th January 2018, Blantyre