The Royal College of Pathologists
Pathology: the science behind the cure

College response to Department for Health and Social Care consultation on adding folic acid to flour

2 September 2019

Introduction

This consultation response from the Royal College of Pathologists on the proposal to make it mandatory for flour millers to add folic acid to flour covers the key messages and main points from the College. The consultation was sent to College members for their views which have shaped the response.

Key messages

The College supports the position statement from the Faculty of Public Heath (FPH), 2018, and the key messages identified by the FPH on adding folic acid to flour:

• In the UK between 700 and 900 pregnancies each year are affected by neural tube defects that can cause severe disabilities.

• Folate plays an important role in foetal development. It reduces the risk of neural tube defects in babies.

• Folate is only available from the food we eat. Promotion of folic acid supplements before, and in the early stages of pregnancy has not changed the incidence of neural tube defects.

• Mandatory folic acid fortification of bread flour could prevent approximately 150 of these cases.

Further information

Our paediatric pathologist colleagues told us:

In pregnancy women are advised to take folic acid supplements as soon as they know they are pregnant, if they have had a previous pregnancy affected by a neural tube defect or are actively trying for a family. This is advice designed to reduce the risk of babies developing neural tube defects. The problem with this is that many women will not know they are pregnant for the first month of pregnancy and this is the critical time for the development and closure of the neural tube that will form the brain and spinal cord.

The neural plate is developed in the human embryo by day 18. It folds by day 25 and closes by day 28. Therefore any insult during this time is critical. Failure of the neural tube to fold and close results in various degrees of neural tube defect from a small defect in the lumbar spine (where the child may lead a normal life) to complete failure of closure of the spinal canal and cranial cavity (craniorachischsis) which is incompatible with life. Folate deficiency is a known cause of neural tube defects although it is recognised that NTDs may occur with no currently known specific cause.

A College Fellow told us that a concern with using unmetabolised folic acid is that it is not metabolised like folate (natural form). Humans need the enzyme methylene tetrahydrofolate reductase to reduce it and some conditions such as methylenetetrahydrofolate reductase and medications are problematic in this process. Folate is significantly more expensive than folic acid so a public health initiative might limit this approach using public finance.

The Fellow continued: ‘However, if you consider rising obesity (where it may mean that folic acid is even more important) and increasingly processed diet, and the fact that folic acid/folate is water soluble so is lost in boiling anyway, it is likely that women of child bearing age and economically deprived are very deficient in folic acid.

There is about 35 mcg in one slice of fortified white bread, less in wholemeal. If research from countries that do fortify suggests that it does reduce neural tube defects even in small amounts like this, then it would be worthwhile. It could also be argued that if you eat wholemeal bread you also maybe eat more vegetables and a better diet generally. Breads using mixed flours, such as "Best of Both" could encourage people to eat wholegrain too.’

Our paediatric pathologist colleagues told us:

Folic acid, water soluble B vitamin, has been added to cold cereals, flour, breads, pasta and bakery items in USA since 1998.

Folic acid is used in a variety of therapeutic situations:

Prevention of macrocytic anaemia, ulcerative colitis, liver disease, supplement in ethanol (ETOH) addiction and patients on renal dialysis. It is also used as a preventative Rx for colon and cervical cancer.

The addition of folic acid to foodstuffs such as bread has not been associated with harmful complications. It is a simple public health measure that helps to reduce a known factor associated with significant birth defects. Children born with even moderate neural tube defects have a lifetime ahead of them of medical interventions and often significant pain associated with their condition. If

the number of cases can be reduced by a simple intervention it will have long term socio-economic benefits.

A College Fellow told us:

‘I strongly support the fortification of flour with folic acid. My sister had spina bifida and died aged 39 from complications of hydrocephalus. I simply cannot believe that the UK has delayed so long in introducing fortification when the benefits are so obvious and the expense and risks so trivial.

In addition to the documented reduction in births of babies with neural tube defects in countries which have introduced folic acid fortification which is clearly excellent, many parents choose to terminate pregnancies when they discover that babies have neural tube defects and this is an appalling loss of life and a terrible decision for the parents to make. These “invisible” cases which do not lead to the birth of babies with neural tube defects should not be forgotten in the consultation on this proposal.’

A College Fellow commented that the only disadvantage could be the effect on persons with undiagnosed B12 deficiency who might suffer neurological symptoms. ‘It should prevent neural tube defects, whose cost in suffering and care is considerable and worth avoiding. On balance it seems worthwhile.’

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About the Royal College of Pathologists

The Royal College of Pathologists is a professional membership organisation with more than 11,000 fellows, affiliates and trainees, of which 23% are based outside of the UK. We are committed to setting and maintaining professional standards and promoting excellence in the teaching and practice of pathology, for the benefit of patients.

Our members include medically and veterinary qualified pathologists and clinical scientists in 17 different specialties, including cellular pathology, haematology, clinical biochemistry, medical microbiology and veterinary pathology.

The College works with pathologists at every stage of their career. We set curricula, organise training and run exams, publish clinical guidelines and best practice recommendations and provide continuing professional development. We engage

a wide range of stakeholders to improve awareness and understanding of pathology and the vital role it plays in everybody's healthcare. Working with members, we run programmes to inspire the next generation to study science and join the profession.