

The benefits of fortifying flour with folic acid

December 4 2017, by Geoff Webb



Credit: AI-generated image ([disclaimer](#))

The UK Health Secretary, Jeremy Hunt, [announced plans](#) to halve the number of infant deaths, stillbirths and brain injuries by 2025. Yet successive UK governments have resisted expert advice to fortify flour with folic acid – including from the Food Standards Agency. This simple measure would prevent many serious birth defects, known as neural tube

defects.

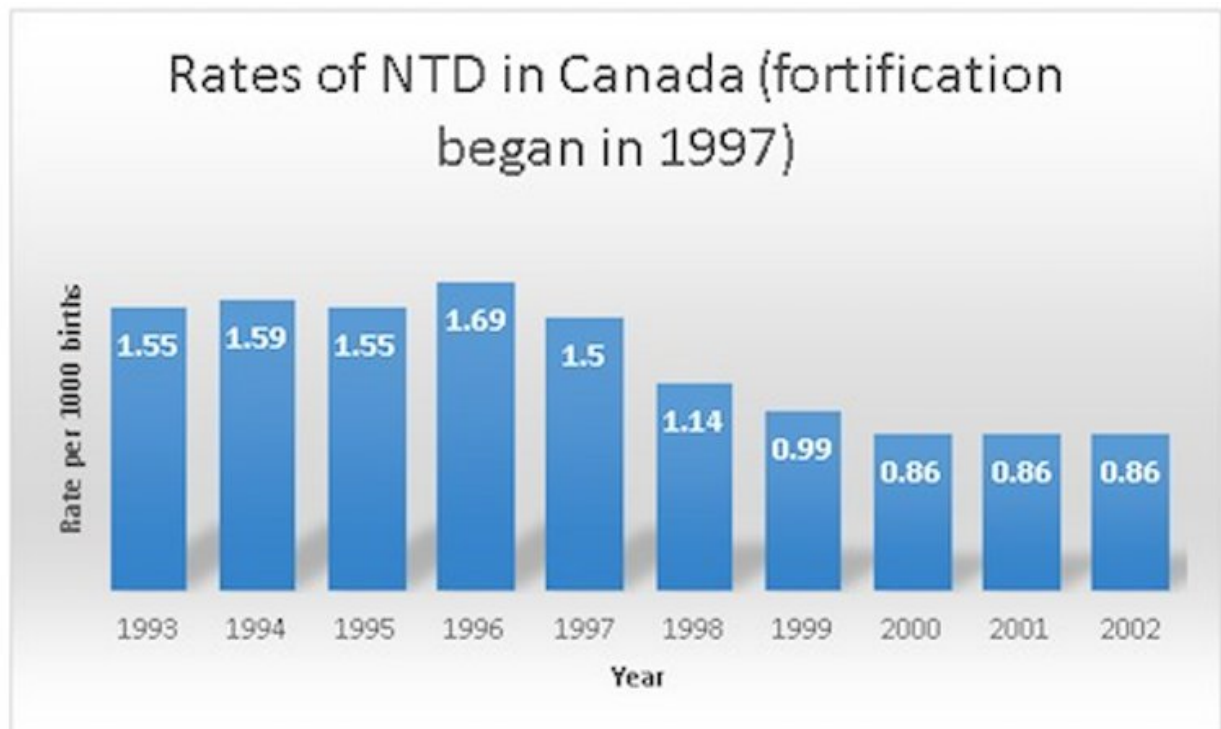
Neural tube defects are defects of the central nervous system that occur in the first month of an embryo's life. They include conditions such as [spina bifida](#), where the spinal column doesn't close properly, and [anencephaly](#), a condition where large parts of a baby's brain and skull are missing. The incidence of neural-tube-defect pregnancies in the UK is around [13 per 10,000 births](#).

In 1991, supplements of folic [acid](#) given before conception and in early pregnancy were [shown to reduce the rate of neural tube defects](#). This finding has since been supported by many other studies. A [meta-analysis of those studies](#), conducted in 2010, found that if a woman takes 400 micrograms of folic acid daily before conception, she can reduce the risk of her baby having a neural tube defect by around 70%.

Since 1992, women in Britain and Europe have been [advised to take folic acid](#) supplements if they are trying to conceive. However, [a study](#) conducted by the US Centers for Disease Control and Prevention, found that by 1998 this had made no difference to neural tube defect rates in Europe because over-the-counter supplements tend to be taken by those who least need them – because they're getting enough folic acid in their diet. And the people who do need them, are the least likely to take them.

The US and Canada took a different route. Instead of advising supplementation with folic acid pills, they made it mandatory for [flour to be fortified with folic acid](#). Since then, more than 70 countries have followed their lead, and [neural tube defects](#) have fallen by 25-50%.

Canada implemented flour [fortification](#) in 1997. By 2000, neural tube defect rates had halved compared with the rate in 1996 (see graph below).



Credit: NEJM/Laval University in Canada, Author provided

In 2014, a group of British scientists reported in [Archives of Disease in Childhood](#) that UK rates of neural tube defects had not changed much since 1998 (the year the US introduced mandatory fortification). The graph below shows how that played out.

If the UK government had introduced flour fortification at the same time and at the same level as the US, then almost 3,000 cases of neural tube defect would now have been prevented. Without terminations, this would equate to around 1,500 dead or miscarried babies and 1,500 babies with severe disabilities.

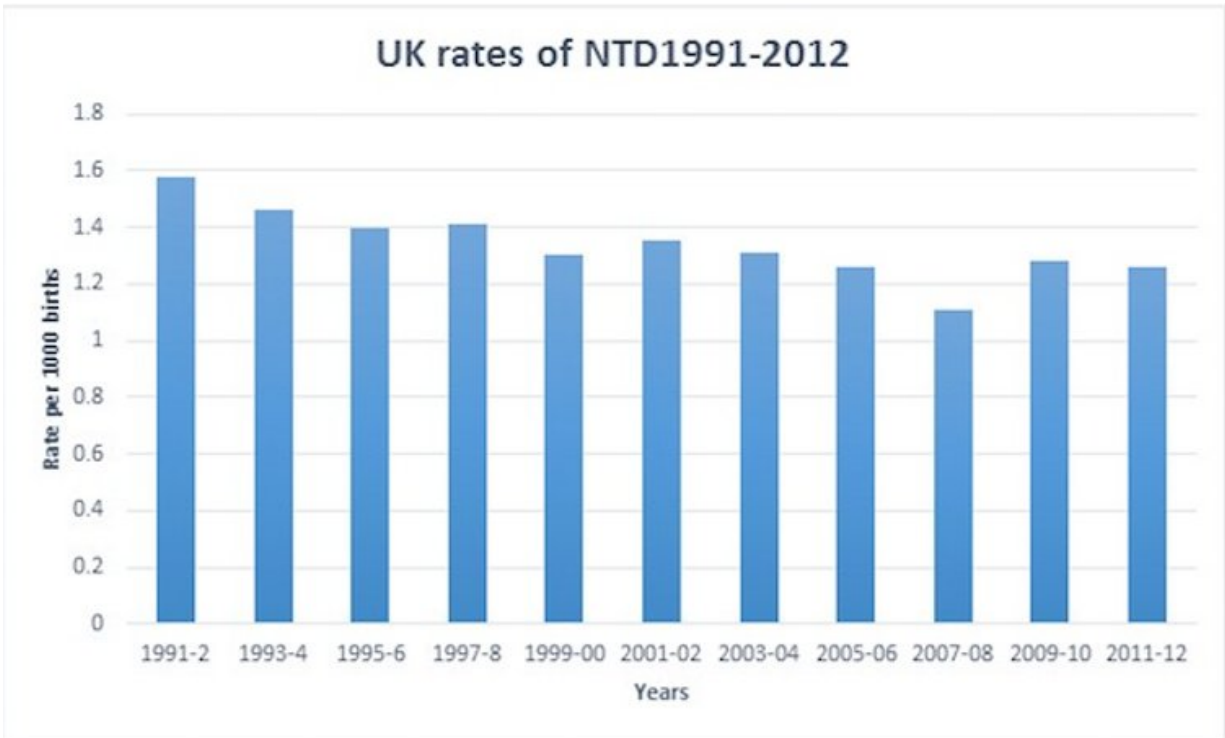
To be most effective, folic acid needs to be taken before or just after

conception. However, in the UK, [40% of pregnancies are unplanned](#), meaning the window of opportunity for taking the supplement is lost. A study led by Queen Mary University of London found that only [25% of British women](#) take folic acid supplements at the right time. And, as previously noted, people who take supplements tend to have the best diets and are the [least likely to need them](#).

Objections don't withstand scrutiny

For every case of [neural tube defect](#) prevented, several thousand people eat the fortified food. This could be seen as "medication" without choice or consent, although, since World War II, flour has been [fortified with several vitamins and minerals](#). Several other objections to fortifying food with folic acid have been suggested by those opposed to fortification:

- It might mask the symptoms of vitamin B12 deficiency in the elderly and so delay diagnosis and treatment.
- It might promote the growth and malignancy of existing benign bowel tumours.
- It might interfere with drugs like methotrexate, which is used to treat rheumatoid arthritis, that have an anti-folic-acid action.



Credit: Geoff Webb, Author provided

The US has been fortifying flour for 20 years with no indication that these represent [real hazards](#). The doses of folic acid involved are [unlikely to seriously affect](#) diagnosis of B12 deficiency.

Rates of bowel cancer in the US [have been dropping since 1970](#), and this fall was not slowed by the introduction of fortified breakfast cereals in 1973 nor the mandatory fortification of flour in 1998. Most epidemiological evidence suggests that folic acid might be [protective against bowel cancer](#) and a [meta-analysis](#) of [folic acid supplement](#) trials published in The Lancet found no increase in [bowel cancer](#) after five years of use.

Folic acid alleviates the side effects of methotrexate and so some

methotrexate treatment regimens for rheumatoid arthritis use folic acid for this purpose.

According to the [International Federation for Spina Bifida and Hydrocephalus](#), the UK government has decided not to introduce fortification. More recently, the health ministers of Scotland and Wales wrote a [joint letter to Jeremy Hunt](#), asking him to reconsider his position on fortification. According to Food Standards Scotland, 80% women of childbearing age in Scotland and Wales are deficient in folic acid.

I [recently advocated](#) flour fortification with 50% more [folic acid](#) than the US level. This could result in 300 fewer affected pregnancies each year. Unfortified [flour](#) could be permitted, but with a warning that it does not comply with government fortification advice.

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