Annex A

FACT SHEETS FOR CANDIDATE DISEASES FOR ELIMINATION OR ERADICATION

1. Noninfectious conditions

Folic-acid-preventable spina bifida and anencephaly*

1. Brief description of the condition/disease

Spina bifida and anencephaly are among the most common and severe birth defects. Almost all affected persons with spina bifida have lower-body paralysis and significant physical disability. In many countries, spina bifida is the most common cause of infantile paralysis. Anencephaly is a common birth defect that contributes to fetal and infant mortality.

An estimated 50–75% of these birth defects can be prevented by providing adequate intakes of synthetic folic acid (pteroylmonoglutamic acid) before and during the first trimester of pregnancy. Preventing folic-acid-preventable spina bifida and anencephaly presents an outstanding opportunity to improve the health of children throughout the world. Moreover, substantial evidence suggests that, in adults, suboptimal intake of folic acid is a major factor for increasing the risk of cardiovascular disease.

2. Current burden and rating within the overall burden of disease

Each year, 300 000 to 400 000 infants worldwide are born with spina bifida and anencephaly. In China, 100 000 infants are born annually with these two birth defects, which are the leading cause of infant mortality. The rates are also high in Mexico and Central America. Together these conditions contribute significantly to infant morbidity and mortality.

3. Feasibility (biological) of elimination/eradication

Approximately 75% of spina bifida and anencephaly are folic-acid-preventable, and it is biologically possible to prevent *all* folic-acid-preventable spina

bifida and anencephaly. The prevention impact would be approximately equal to the prevention derived from poliomyelitis vaccines.

The biological feasibility of preventing spina bifida and anencephaly using folic acid-containing vitamin supplements has been demonstrated in randomized controlled trials and other studies. Data from these studies indicate a 50–100% reduction in risk for women taking the supplement before conception and during the first trimester of pregnancy. No randomized controlled studies indicate that dietary changes alone will prevent these birth defects.

The U.S. Public Health Service recommends that all women who could become pregnant should consume 400 µg of folic acid daily to prevent these birth defects. Many other countries have policy statements seeking to increase consumption. The United States Institute of Medicine recommended in April 1998 that all women who could become pregnant should consume 400 µg daily of synthetic folic acid to prevent birth defects.

4. Estimated costs and benefits of elimination/eradication

Folic acid fortification of flour is feasible and inexpensive. In the USA, formal analysis of costs and benefits of fortification of wheat flour and other grains indicate that a fortification strategy would be highly cost-beneficial. Because costs associated with the purchase and distribution of folic-acid-containing supplements would be higher, programmes depending on pill consumption would break even.

5. Key strategies to accomplish the objectives

Folic acid intake to prevent folic-acid-preventable spina bifida and anencephaly can be increased by fortifying staple foods with folic acid or implementing a programme that increases the consumption of

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folic-acid-containing supplements, as follows: fortify with synthetic folic acid one or more centrally processed and distributed foods, such as grain products, so that the vast majority of reproductive-aged women consume at least 400 µg of folic acid each day; establish folic acid vitamin pill consumption programmes; add folic acid to iron supplement pill programs; and add folic acid to contraceptive pills.

6. Research needs

Cost-effective methods for population assessment of blood folate levels need to be field tested and improved. Such indicators of folate status are needed to provide a reliable means of evaluating the effectiveness of folic acid intervention programmes. Research is needed to develop messages that will motivate women to consume more folic acid.

7. Status of elimination/eradication efforts to date

Although many countries have developed recommendations to increase the consumption of folic acid, more needs to be done to implement these strategies. In the USA, 3 of 4 reproductive-aged women have blood folate levels that place them at risk of having a child with a folic-acid-preventable

birth defect. Data from Europe are similar. The USA and China are implementing programmes to increase folic acid intakes. Approximately 20 other countries encourage the use of folic-acid-containing vitamins and the consumption of folate-rich foods. The USA and a few other countries have fortified one or more grain products with folic acid. Fortification concentration levels, however, so far have not been sufficient for complete prevention of these preventable birth defects.

8. Principal challenges to elimination/eradication

The principal challenges to eliminating folic-acid-preventable birth defects are a lack of awareness of this prevention opportunity by health care providers, policy-makers, and the public; the financial burden and logistical barriers to providing supplements to women; lack of centrally processed and distributed foods to serve as fortification vehicles in some countries; regulations in some countries limiting the amount of folic acid in supplement pills; misinterpretation of data, resulting in recommendation to promote only increased consumption of folate-rich foods rather than an adequate fortification or supplement programme with crystalline folic acid (pteroylmonoglutamic acid); and unwillingness of government to set fortification concentration levels high enough.