Iron and folate supplements during pregnancy: supplementation is valuable only in selected patients

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The belief in the need for prophylactic haematinic treatment during pregnancy in the United Kingdom originates from the era of economic depression and "welfare foods," which coincided with the development of organised antenatal care. As with many other aspects of antenatal care old established traditions tend to continue without sufficient objective assessment of their benefit in a changing community.

Haemopoiesis is dependent on more than the minerals and vitamins that can be conveniently made into a pill but may not be in an assimilable form, as haem iron in the diet. The necessary materials may be provided only by a good mixed diet, which is available to most of the population in a reasonably affluent Western society, although women may not choose the right foods because of ignorance, inertia, or a lifetime of bad habit.

Healthy eating campaigns are rife in other fields of preventive medicine, especially coronary artery disease, and there is no reason why greater impetus should not be given to promoting good eating during pregnancy.

Proposed advantages of prophylaxis

Many of the studies that purport to show a need or desirability for wholesale prophylactic treatment are flawed for two principal reasons. Firstly, the assumptions that the physiological norms for non-pregnant women are applicable to pregnancy and that depletion equates with deficiency. Secondly, that a study based on a selected population is applicable in a more general or even national way. In a recent seminar, for example, the case for prophylactic treatment was based largely on a study confined to 42 mothers who had had unplanned pregnancies and were of mixed racial origins with an average age of 16.¹

That prescribed treatment will be taken is also assumed, which is far from the practical truth.^{2,3} In a review of 17 controlled clinical trials (some of which had methodological inadequacies) on iron or vitamin supplementation, or both, in developed countries Hemminki and Starfield found little or no evidence of obvious benefit as judged by a large number of clinical outcomes.⁴

Blind, uncritical prescription of any drug is to be deprecated but is usually justified for haematinic treatment during pregnancy on the basis that dietary intake is precarious in relation to needs (although

allowance must also be made for the improved rates of absorption during pregnancy⁵); the preparations used are without harm; and deficiencies are so common as to justify supplementing the whole population.

The fact that stores of iron are depleted in virtually all pregnant women is beyond dispute; but this is commonly equated with loss of iron and clinical compromise. In fact much of the iron is only debited from the stores to increase the red cell volume and becomes available for storage again after pregnancy. This is reflected in studies that showed a return of serum ferritin concentrations to values before pregnancy 5-12 weeks postpartum irrespective of whether iron supplementation had been used (figure).^{1,6}

Serum ferritin concentrations during pregnancy in untreated women (●) and women given oral iron supplements (○). (From Fenton et al.,⁶ reproduced with permission of Blackwell Scientific Publications)

Excessive intake of iron may result in unpleasant gastrointestinal side effects and overload may occur.⁷ Falsely boosting the red cell volume is unnecessary and possibly undesirable.⁸ Folic acid treatment without investigation could mask pernicious anaemia, although this is unlikely.

New strategies for combating anaemia in pregnancy

We need therefore to move away from the philosophy of striving for physiological norms that are not necessarily relevant to pregnancy and from the polarising effects of "all or none" arguments. Such preoccupations divert attention from the real problems.

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EDITORIAL COMMENT

Professor Hibbard and Dr Horn agree that not all women will require iron and folate supplements during pregnancy and that the best way to predict deficient iron stores is to assay serum ferritin concentration during early pregnancy. They differ, however, in their approach to the practical management of the problem. Professor Hibbard with good reason considers that only those in whom there is a clear indication for iron or folate supplementation should receive this additional treatment. Dr Horn, on the other hand, draws attention to the cost entailed in identifying those women most at risk

and also shows that those in most need of supplementation may be those who are most difficult to pin down in the clinic. I am certainly attracted to the point made by Professor Hibbard that compliance with treatment is likely to be better if the patient appreciates that there is specific need for supplementation in her case. Although I appreciate Dr Horn's view about cost, the point of antenatal care is to identify those at risk and to deal with the problem, and my own view is that wholesale supplementation is probably inappropriate.

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Clearly, new applied strategies suited to the needs of specific groups need to be developed. As a starting point demographic studies and nutritional surveys would highlight circumstances in which anaemia is more likely to occur, although considerable variations may occur even within a hospital population, especially when dealing with a broad spectrum of social classes and ethnic groups.⁹ In some communities intestinal parasites are rife, and prophylactic antihelminthic drugs would be more beneficial than haematinic treatment.

In the laboratory simple but more accurate predictors of anaemia need to be developed, such as detailed analysis of variables that may be readily obtained when electronic counters are used. Additional investigations such as serum iron concentration, iron binding capacity, and total red cell volume¹⁰ either are poor predictors of impending anaemia or are not practicable for large scale use. Possibly the best predictor is serum ferritin concentration estimated at booking.⁷

Cost* and content of different preparations of iron and folic acid available on NHS prescription. Preparations with additional vitamins and minerals are not included

Preparation	Elemental iron (mg)	Folic acid (mg)	Basic cost (£)	Cost (£) for four weeks of about 100 mg/day
<i>Iron formulations</i>				
Ferrous sulphate compound	60		3.00/1000†	0.17 (120 mg)
Feospan‡	47		0.90/30	1.68
Fergon	35		0.77/50	1.29
Ferrocap‡	110		0.70/30	0.65
Ferrocontin Continus‡	100		0.57/30	0.53
Ferrograd‡	105		3.94/150	0.74
Fersaday	100		0.45/28	0.45
Fersamal	65		0.89/100	0.50 (130 mg)
Galfer	100		2.66/100	0.74
Meterfer	100		0.57/30	0.53
Niferex	50		2.63/100	1.47
Niferex 150	150		9.50/100	2.66 (150 mg)
Slow Fe‡	50		2.30/150	0.86
<i>Compound iron and folic acid formulations</i>				
Folic acid BP		0.5	11.53/1000†	0.32
Fefol‡	47	0.5	0.91/30	1.70
Ferfolc SV	30	5.0	2.62/100	2.20
Ferrocap F350‡	110	0.35	0.97/30	0.90
Ferrocontin Folic Continus‡	100	0.5	0.57/30	0.53
Ferrograd Folic‡	105	0.35	4.03/150	0.75
Folex 350	100	0.35	0.75/30	0.70
Galfer FA	100	0.35	2.68/100	0.75
Meterfolic	100	0.35	0.63/30	0.59
Pregaday	100	0.35	0.51/28	0.51
Slow Fe Folic‡	50	0.4	2.30/150	0.86
<i>Liquid formulations </i>				
Ferromyn	37		2.91/100 ml	12.22
Fersamal syrup	45		1.47/200 ml	2.06
Niferex elixir	100		1.56/30 ml	7.28
Plesmet	25		0.77/100 ml	4.31
Syttron	27.5		1.70/500 ml	1.90
Lexpec with iron	80	2.5	3.70/125 ml	4.14 (80 mg)

*Prices from MIMS June 1988 for smallest packs.

†Typical NHS contract price.

‡Slow release.

||Amount of iron and folic acid is for each 5 ml.

Conclusions

Currently, empirical selective haematinic supplementation is probably the best option (box). From the patient's point of view recognition of a specific need is likely to lead to better compliance.

Indications for prophylactic haematinic treatment

Iron

- Previous anaemia
- Dietary inadequacy—for example, poverty, dietary fads, ignorance
- Chronic blood loss—for example, previous menorrhagia, haemorrhoids
- Borderline haemoglobin (<120 g/l) in the first half of pregnancy
- Concomitant folic acid treatment (except iron replete haemoglobinopathies)

Folic acid

- Previous obstetric history of conditions that may be associated with folate deficiency
- Malabsorption syndromes
- Haemoglobinopathies
- Treatment with phenytoin
- Multiparity
- Multiple pregnancy
- Adolescence

Cost effectiveness and therapeutic effectiveness are important features in the choice of preparation as both iron and folate content of proprietary preparations are wide ranging (table). But even selective prophylaxis does not negate the need for constant vigilance and regular review of haematological state, for there is no assurance that the tablets will be taken or that other disorders causing anaemia may not ensue.

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ANY QUESTIONS

What is fibromyalgia and how should it be treated?

The existence of fibromyalgia as a disease entity is controversial, and not everyone believes in it as a syndrome. Localisation of pain is accurate in the skin of the hand but much less so over the dorsal and lumbar areas. It is fairly well localised in the area below the skin of the deep fascia, periosteum, and ligaments. Pain in tissues deeper than that is difficult to assign to one site with any accuracy and tends to present with a diffuse ache. In this syndrome patients tend to identify particular areas of tenderness and local pain, such as the costochondral junctions, the lateral epicondyles at the elbow, the area above the scapula spine, the lumbar interspinous ligaments, the upper outer gluteal quadrant, and the medial fat pad overlying the medial ligament of the knee. There are many others, but these are frequently singled out by patients.

A quantitative change in the normal physiological pain mechanism

seems to occur, and there may be local hyperaemia and sleep disturbance. The area of pain may be associated with numbness. The doctor should look for an underlying bursitis, enthesopathy, or soft tissue injury, but most patients have no evidence of any underlying disease—frustrating for patient and doctor alike. The pain is often worsened by fatigue, cold, or rest and may be particularly noticeable in the early morning. Patients often complain of feeling exhausted and may be classically of an obsessional but not depressive temperament. An association with the irritable bowel syndrome and urinary frequency has often been noted.

Analgesics are usually of little help. Local heat or massage may relieve the pain, as may local injections of steroid or local anaesthetic in the tender areas. Diazepam or tricyclic antidepressant drugs may help as muscle relaxants.

Although the patients may jump with apprehension when the tender points are pressed, understanding of the syndrome is bedevilled by the lack of any identifiable underlying disease. This makes many doctors doubt that fibromyalgia is a true disease entity.

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