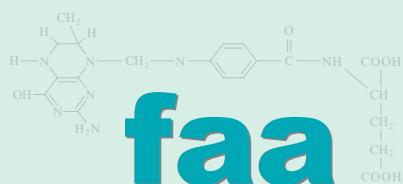


Improving awareness & uptake of folic acid



FOLIC ACID ACTION ROUNDTABLE

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It is estimated that up to three pregnancies in every thousand in the UK are affected with neural tube defects (NTDs), such as spina bifida and anencephaly. NTDs are among the most frequently occurring human congenital malformations throughout the world. As a result of prenatal diagnosis of NTDs, many pregnancies are electively terminated, often a highly distressing decision for the parents. Ninety per cent of babies born with NTDs are born into families with no history of the condition. The physical, emotional and financial cost of NTDs is therefore huge, and in my role as Chief Executive Officer of the Association of Spina Bifida and Hydrocephalus (ASBAH) I see the trauma and stress of families on a daily basis.

Fundamental to reducing the risk of NTDs is education amongst all women of child-bearing age on the benefits and uptake of the vitamin folic acid before and during pregnancy. All clinical studies of women taking this essential nutrient from 1981-2003 have reported a 50-85 per cent decrease in the risk of NTDs. Although folic acid can be derived from a diet rich in fruit and vegetables, obtaining the recommended daily allowance from a healthy diet alone is extremely difficult (approximately 150 – 200µg) – less than a third of the 600µg needed for women planning pregnancy.^{1,2} It is essential therefore that all women who are ovulating and sexually active should be supplementing their diet with folic acid to prevent NTDs.

Whilst overall awareness about folic acid and pregnancy is quite good, research has shown that many women are still not aware of the critical window for taking folic acid, i.e. three months before conception and during the first 12 weeks when the neural tube is developing into the brain and spinal cord. To compound this as many as 50 per cent of all pregnancies are unplanned and women do not realise they are pregnant until

after the first month. Much needs to be done to ensure that consistent hard-hitting messages are reaching all women during their reproductive years so that they change their behaviour to take folic acid before pregnancy, as well as during.

To help encourage support in addressing the issues of sub-optimal uptake and usage of folic acid in women most at-risk, Larkhall Laboratories sponsored an expert panel of healthcare professionals and patient organisations to develop a consensus on the way forward. It was with the greatest of pleasure that I took part in this the inaugural meeting of Folic Acid Action, a group which will act as a campaigning voice to help drive reform.

We hope that this will be the start of a process to ensure women of child-bearing age are aware and proactive in taking folic acid that will lead directly to fewer terminations and better health outcomes for future babies. This is a challenge for us all, but it is also a rare opportunity to empower women to have healthy pregnancies and reduce severe disabilities.

Andrew Russell

Chief Executive Officer, Association for Spina Bifida & Hydrocephalus (ASBAH)

ASBAH is a national charity, supported entirely by voluntary contributions, working in partnership with 40 independent Local Associations to help people with spina bifida and/or hydrocephalus, their families and carers to provide information and advice, and promote individual choice, and quality of life. ASBAH supports medical research into the prevention and treatment of spina bifida and hydrocephalus.

ACKNOWLEDGMENTS

Particular thanks to the participants at the roundtable meeting - Folic Acid Action - and their contribution to this report:

Brenda Griffiths, Public Health Practitioner, Bolton PCT

Denise Henry, Practice Development Midwife, Queen Charlotte's Hospital, Hammersmith, London

Dr Rob Hicks, GP, medical writer and broadcaster

Trevor Hintridge, Pharmacy Adviser, Ellesmere Port and Neston PCT

Donna Kirwan, North West Regional Coordinator, Antenatal Screening Programmes, Central Liverpool PCT

Andrew Russell, Chief Executive Officer, ASBAH

Liz Stephens, Consultant Midwife, St Georges Healthcare NHS Trust, London

Introduction

Deficiency in folic acid among women intending to become pregnant and during the first 28 days after conception can lead to increased risk of neural tube defects (NTDs), which are among the most common of all serious birth defects that affect the baby's brain (anencephaly) or spine (spina bifida).

In the late 1990's [1996-99], the Health Education Authority's campaigning greatly improved general awareness of the importance of taking folic acid to aid the unborn baby's growth in early pregnancy – from the time women stop taking contraception until the end of the 12th week of pregnancy. Since its demise there has been little public health education to support the role of this essential nutrient for supplementation in this at-risk group.

Although there may be good overall awareness of the benefits of folic acid, evidence from a recent survey carried out by IPSOS revealed that there is still lack of understanding and confusion amongst consumers and healthcare professionals as to when to commence taking folic acid. This is compounded by recent developments, such as the increased efficacy of home pregnancy testing kits, where women are not seeking consultation from their GPs on pregnancy until the time of their first scan (at three months). As the neural tube is developed in the first 28 days of pregnancy, the intake of folic acid after six weeks will have limited benefit to the unborn baby.

Also, awareness does not necessarily drive change in behaviour. Eighty seven per cent of women surveyed said they understood the benefits of taking folic acid but just over half took this essential nutrient.³ In addition, the survey highlighted that as many as 40 per cent of women start taking folic acid later than six weeks, with only 28 per cent of women claiming to take folic acid when planning their pregnancy.³

There is an urgent need to take action to address these information and behavioural

issues particularly amongst all women who are ovulating and are sexually active and healthcare professionals through education that is targeted, user-/gender-friendly, motivating and sustained.

The purpose of the meeting of Folic Acid Action was to discuss shared concerns around public and healthcare professional education on folic acid and to propose next steps to drive improvements for healthier pregnancies and babies. The first step involved reviewing levels of information amongst child-bearing women and identifying gaps in information provision. The next step was to produce practical guidance on how to overcome the issues and to identify the specific roles of the healthcare team, the government and society in general in doing this.

Fundamental to the panel meeting was a belief that greater education on the consequences of not taking folic acid at the optimal time will lead to better health outcomes.

The main recommendations arising from the meeting were:

- It is critical to communicate the simple, consistent, and sustainable message that folic acid can help to prevent up to 50 per cent of birth defect cases provided it is taken pre-conceptually and during early pregnancy^{4,5} to the current and the next generation of child-bearing women. It is also important to reinforce the message that daily folic acid supplementation is essential because it is more bio-available than that found in the diet, and even a diet rich in fruit and vegetables provides less than a half of the 600µg daily amount of folic acid required.
- It is essential that all those providing support and advice on matters of pregnancy and contraception to women who are ovulating and sexually active, should provide consistent, relevant and

up-to-date information in line with the recommendations, and emphasise to those women the importance of taking folic acid – three months pre-conceptually and up to at least the first 12 weeks of pregnancy – whilst avoiding any implication of guilt on the part of the mother.

- There is a greater need for collaboration between healthcare professionals, third parties, governmental organisations and

industry to develop an ongoing and hard-hitting health promotion strategy in relation to folic acid and to ensure that all women in the at-risk group have access to such messages and to free or affordable folic acid supplementation.

This report captures the key deliberations of the expert panel. In addition, the report includes a Call to Action to help drive improvements by key stakeholders.

Overview of folic acid and health

What is folic acid?

Folic acid, or folate as it is also known, is the B vitamin that helps build healthy cells. Because it is water soluble, it is quickly flushed from the body, which is why it should be taken every day. Also cooking and prolonged storage will deplete foods of folic acid. In addition, some medications may affect the absorption of folic acid.

Folic acid comes in two forms:

- A natural form – available in foods such as green leafy vegetables, nuts, beans, citrus fruits, beans, meats, orange juice, brewer's yeast (folate).
- A synthetic form – found in fortified breakfast cereals, fortified bread and supplements (folic acid).

Research has shown that natural folates are less easily absorbed by the body than the synthetic form.⁶

Folic acid and pregnancy

Folic acid is a vital nutrient throughout life, but is particularly important during periods of growth, especially during pregnancy and lactation (breast feeding) as the body's requirement for folic acid doubles.

One of the first parts of the baby's body to develop is the central nervous system. The neural tube, from which the spinal cord and

brain develop, is formed within the first 28 days of pregnancy. Research has shown that if taken in the correct dose before pregnancy, folic acid can decrease the risk of neural tube defects (NTDs), which are birth defects of the baby's brain (anencephaly and encephalocele) or spine (spina bifida) by up to 50 per cent.^{4,5}

Anencephaly is the incomplete development and exposure of brain matter due to a failure in the formation of the skull vault. These babies are stillborn or die soon after birth.

Spina bifida occurs when there is a fault in the spinal column. These babies need to have surgery soon after their birth to repair the fault and prevent further damage. They also may need a shunt or a drain to prevent a build-up of spinal fluid in the brain called hydrocephalus, which occurs in 80 per cent of babies with spina bifida but can also occur independently. Babies with spina bifida may lack feeling in their legs and later develop problems with walking. In addition, these children may develop problems with their bowel and bladder control. They may also have learning and developmental problems.

The causes of neural tube defects

The causes are not yet fully understood but are associated with both genetic and envi-

OVERVIEW OF FOLIC ACID AND HEALTH

ronmental factors. Women considered to be at higher risk of having a neural tube defect pregnancy include those who have had a previously affected pregnancy, those who have an NTD themselves and those who have a family history of NTD or whose partner has a family history of NTD.

Folic acid and other health problems

Mounting evidence suggests that folic acid reduces raised levels of homocysteine [a naturally occurring amino acid that when present in raised amounts can cause damage to blood vessels] and helps prevent the build up of atherosclerosis that can cause heart disease and stroke. High homocysteine levels are also thought to affect brain function, digestive processes and bone strength. Research has also suggested that folic acid reduces the risk of Alzheimer's disease, and colon cancer.

Research has also shown that taking a daily supplement of folic acid could also protect against the detrimental effects of a high alcohol intake.⁷

The recommended daily allowance of folic acid

Folic acid is the *only* vitamin supplement that the Department of Health has recommended that people take. Current advice is that all women of child-bearing age should take a 0.4mg daily supplement. Current advice for women who have already had an NTD baby is a prescription dose of 5mg of folic acid (over ten times as much as those without history of an NTD baby). In addition to taking a supplement, a healthy diet and foods rich in folic acid should be eaten.

Note: even with a healthy diet, including five portions of fruit and vegetables daily, people are often only obtaining 0.15-0.2mg of folic acid.^{1,2} In addition, folic acid is easily depleted by factors such as pollution, excessive alcohol, smoking and processed foods.

Folic acid has no known toxic level. However, evidence suggests that there is one group of the population for whom a very

high intake of folic acid carries a theoretical risk of depressing the symptoms of a rare condition known as pernicious anaemia, a deficiency in vitamin B12. Elderly people severely deficient in vitamin B12 can develop pernicious anaemia, so medical practitioners need to be vigilant.

A person taking medication should consult with their GP or pharmacist to ensure that the combination is safe. Some medications, such as the contraceptive pill, can reduce the levels of folic acid. In addition, folic acid may interact with the effectiveness of some medications.

How long should pregnant women take folic acid?

The Department of Health recommends that women take folic acid from the time they stop using contraception until the end of the 12th week of pregnancy. However, the most critical window is the three months prior to conception and the first six weeks of pregnancy for reducing the risk of NTDs in the unborn child.

Since neural tube defects occur early in pregnancy, often before a woman knows that she is pregnant, it is important to take folic acid every day.

Who else is at greater risk of having low folic acid levels?

Poor lifestyle may cause people to have lower levels of folic acid in their bodies. It has been found that people in the following categories have decreased amounts of folic acid and need to remember to take a folic acid supplement every day:

- people with poor eating habits
- people who are dieting severely, anorexics and bulimics
- cigarette smokers
- alcohol and drug users

The financial costs of NTDs

The average total lifetime cost to society for each infant born with spina bifida has been estimated to be \$532,000 in the USA. There are currently no figures available for the UK.

Issues on information provision and uptake of folic acid amongst women of child-bearing age

Folic Acid Action identified the following current issues that need to be addressed:

Some 50 per cent of pregnancies are unplanned and women do not realise they are pregnant until after the time where folic acid will be of most benefit. Targeting this multi-faceted audience will require considerable funding for campaigning over many years and is competing with a number of other health promotion issues, such as the flu vaccination.

Even a healthy diet of five fruit and vegetables per day provides insufficient daily amounts of folic acid;^{1,2} 12 cups of spinach are required per day to meet the recommended amount. Supplementation is essential for all women who are ovulating and sexually active (including those women taking the contraceptive pill which reduces the levels of folic acid in the body). For lower socio-economic groups this may have a considerable impact in terms of cost and thus motivation to uptake.

NTDs are currently not seen as being as serious a health issue as sexually transmitted diseases and unwanted pregnancies, however, they are a priority and their status should be raised in government.

Many healthcare professionals do not discuss folic acid supplementation with non-pregnant patients. Key opportunities to educate women are being missed. Education on folic acid needs to become habitual with all women of child-bearing age.

There is no ownership amongst the healthcare professional team of the folic acid mantra, and as such the message is not being disseminated as frequently and as widely as is needed.

School nurses do not incorporate information on the role of folic acid and the optimal time to take it as part of sex/family

planning education.

Current National Institute on Clinical Excellence (NICE) guidelines recommend that the first antenatal appointment needs to be between 8 and 12 weeks. This is too late to start educating pregnant women on the need to take folic acid supplementation.

There is no government health promotion initiative to widely disseminate clear and consistent messages on the importance of folic acid for all women of child-bearing age. As a result, there is little interest by the mass media on the role of folic acid.

Call to action

- Demand that the government finance a health education campaign with clear and consistent messaging on the importance of taking folic acid for the entire population – but particularly women of child-bearing age, using innovative and effective methods to target this multi-faceted audience (such as, posters on the back of public toilet doors, folic acid health messages on the bottom of prescriptions).
- Key healthcare professional groups should identify their responsibility to routinely discuss and recommend folic acid supplementation to all women who are ovulating and are sexually active at appropriate contacts. These include:
 - General Practitioners
 - Gynaecologists and obstetricians
 - Health visitors
 - Midwives
 - Pharmacists
 - Practice nurses
 - School nurses
 - Sexual health and family planning doctors
 - Sexual health and family planning nurses

CALL TO ACTION

- Healthcare professional organisations (the Royal College of Nurses, the Royal College of General Practitioners, the Royal College of Midwives and the Community Practitioners' and Health Visitors' Association) to be involved in the continuing education of their respective memberships on the importance of advising when women should be taking folic acid. In addition:
 - CPHVA be asked to recommend incorporating folic acid education as a key area to be recorded at health visitor appointments with pregnant women
 - RCN, Midwifery Society and RCM be asked to support incorporating information on folic acid uptake in the midwives' national case notes that are currently being devised
 - All professional organisations to regularly educate their memberships through their respective communications channels
- All relevant primary healthcare professionals should ensure (within 48 hours of notification) via the most appropriate medium, such as telephone, an immediate consultation for any pregnant woman that already has a NTD baby/genetic predisposition, or provide detailed advice on pregnancy including the issuing of a prescription for 5mg folic acid
- Call upon manufacturers of sanitary products, pregnancy and ovulation testing kits, and baby formula companies to include a simple, consistent message on the importance of taking folic acid pre-conception and during early pregnancy within the packaging of their products
- Call upon food manufacturers producing foods fortified with folic acid to incorporate a clear and consistent message on the importance of taking folic acid pre-conception and during early pregnancy as part of the information on the packaging
- Folic Acid Action to spearhead a media campaign (print and broadcast including writing features in consumer and health-care professional press) to increase awareness and education amongst child-bearing women on folic acid
- Folic Acid Action examine feasibility of conducting an audit of services to develop the rationale for piloting enhanced pregnancy services (from pre-planning to post-natal) through the new GP contract
- Call upon the Department of Health to develop Primary Care Trust (PCT) targets for increasing folic acid supplementation and uptake in women of child-bearing age

Sources of information

The following sources were considered as providing practical and relevant information

ASBAH

www.asbah.org

Telephone: 01733 555988

Email: info@asbah.org

British Nutrition Foundation

www.nutrition.org.uk

Telephone: 020 7404 6504

Department of Health

www.doh.gov.uk/folicacid

Food Standards Agency

www.foodstandards.gov.uk

Scientific Advisory Committee on Nutrition

www.sacn.gov.uk

www.microfolicacid.com

Alternatively, please contact the facilitators of the meeting, Ash Communications. It will be more than happy to support you in obtaining the most relevant information for your organisation.

Tel: 020 7734 5666

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www.microfolicacid.com/faa

Email: faa@ashcommunications.com

Appendix 1: Participant biographies

Brenda Griffiths, Public Health Practitioner,
Bolton PCT

Brenda Griffiths qualified as an RGN at the Westminster Hospital, London in 1968 and then worked as a health visitor for nearly 30 years before taking on her current role as a Public Health Practitioner at Bolton PCT. For two years, Brenda worked as lead on the project: 'To improve maternal and child nutrition in an area of deprivation' and holds an MA in Health Research from Lancaster University. In 2001, Brenda gained a Regional Health Authority Fellowship to evaluate the contribution that health visitors make to the government's action on inequalities in health.

Denise Henry, Practice Development
Midwife, Queen Charlotte's Hospital,
Hammersmith, London

Denise qualified as a General Nurse in 1988 and worked on a Female Gynae and surgical ward before she began her Midwifery training in 1990. Since qualifying at the end of 1991, Denise has worked in all areas of Midwifery, including as Lead Midwife on the renowned and innovative 'One-to-One' midwifery scheme from 1997- 2003 where she carried a caseload of 40 women per year, providing ante, intra and post natal care.

Denise started her current post as Practice Development Midwife in October 2003, and is already working with a team to raise the profile of Midwifery evident through the team's most recent award from the RCM for "Promotion of Normality".

Dr Rob Hicks, GP, medical writer and
broadcaster

Rob Hicks qualified at St Mary's Hospital, London in 1989 and has been a GP for over ten years. He now works part-time in general practice and also as a hospital clinical assistant in sexual health medicine. He is trained in acupuncture therapy and takes a holistic approach to healthcare being a firm

believer that prevention is better than cure.

Rob is the *Classic FM* radio doctor and the *Talk Sport* radio doctor. He regularly appears on TV and writes for newspapers and magazines.

An editor and prolific contributor to the *BBC* online health sites, he is also the medical script adviser to the successful *BBC* television drama series "Doctors".

Trevor Hintridge, Pharmacy Adviser,
Ellesmere Port and Neston PCT

Trevor registered as a pharmacist in 1987 following which he briefly worked in Community Pharmacy. He has over 15 years' experience in the NHS as a hospital clinical pharmacist and Pharmaceutical Advisor. He is currently a Pharmaceutical Advisor in a Primary Care Trust. Trevor has an MSc in clinical pharmacy.

Donna Kirwan, North West Regional Co-
ordinator, Antenatal Screening Programmes
to the UK National Screening Committee,
Department of Health

Donna Kirwan registered as a midwife in 1989, and qualified as a sonographer in 1997. She worked as a Specialist Midwife and Co-ordinator of Fetal Services at Liverpool Women's Hospital for nearly ten years. She now works as a key advisor for antenatal screening programmes ensuring the implementation of national policy. Donna is affiliated to the RCN Midwifery Society Policy and Practice Group and the National Forum of Nurses and Midwives in Prenatal Diagnosis amongst many other key groups in this field. Donna has also co-authored many papers and presented many of these at key national and international conferences.

Andrew Russell, Chief Executive Officer,
Association of Spina Bifida and
Hydrocephalus (ASBAH)

Andrew Russell has been the Executive Director of ASBAH since 1991, providing a range of services for people with spina bifida and/or hydrocephalus including

healthcare and educational support. He also manages a programme of medical research. Andrew, who holds a degree in biology from Cambridge University, was a member of the Advisory Committee of the government's Folic Acid Information Campaign 1996-1999.

Prior to ASBAH, Andrew worked for MENCAP, developing and directing a range of services for people with learning disabilities.

Liz Stephens, Consultant Midwife, St Georges Healthcare NHS Trust, London

Liz trained as a midwife in Taunton. Since qualifying she has worked in all areas of midwifery including education and management. Her current role is Consultant Midwife with a remit for midwifery led care at St Georges Hospital in London. A role which has much to offer midwives and women by raising the profile of normality. Liz has an MA in Women's Studies and a PGDip in Health Professional Education.

Appendix 2: IPSOS survey research findings

IPSOS, an international market research company, conducted research to evaluate the current levels of awareness and reported behaviour related to uptake of folic acid amongst new mothers, pregnant women and women contemplating pregnancy aged between 16 and 45. The research was conducted with a nationally representative sample of c. 1,195 women in September 2003.

The key findings included:

- Overall, 67 per cent of the sample that took folic acid claimed that they did so due to GP recommendation (see table 1).
- Overall, nine out of ten women taking folic acid were aware of the health benefits (see table 2).
- Overall, usage of folic acid amongst mothers was greatest in the 25-34 age band with 64 per cent, which was significantly

higher than 16-24 and 35-45 age bands who scored 42 per cent and 53 per cent respectively.

- Overall, 53 per cent of women planning a pregnancy and during pregnancy took folic acid (see table 3).
- Overall, only 28 per cent took folic acid when planning their pregnancy (see table 4).
- One in ten women claimed not to know the benefits of taking folic acid (see table 5).
- Women were four times more likely to get advice on taking folic acid from a GP than a midwife and nine times more likely than family/friends (see table 6).
- Of the women who had a child in the last five years, 52 per cent were asked to attend a health check immediately (see table 7), of these only 43 per cent were working mums compared to 62 per cent of non-working mums.

Table 1: Percentage of sample where GP was initial source for folic acid recommendation

Age Group	% received GP recommendation
35-45 year olds	52%
25-34 year olds	66%
16-23 year olds	82%

Table 2: Awareness of the benefits of folic acid in those taking folic acid

Age Group	% aware	% unaware
35-45 year olds	92%	8%
25-34 year olds	87%	13%
16-23 year olds	83%	17%

Table 3: Percentage taking supplements whilst planning and during pregnancy

Initiation of folic acid uptake	Base = All mothers/potential mothers aged 16-45 N = 530	%
Multi-vitamins	125	24%
Folic acid	283	53%
Iron	159	30%
Nothing	127	24%
Other	2	0%

Table 4: Percentage taking folic acid pre-conception and during pregnancy

Initiation of folic acid uptake	Base = All mothers taking folic Acid N = 193	%
Whilst planning a pregnancy	53	28%
During the first 6 weeks of pregnancy	62	32%
Between 6 -12 weeks	34	18%
Between 12-16 weeks	9	5%
After 16 weeks	3	2%
Can't remember/Refused	31	16%

Table 5: Percentage of females aware of the health benefits of taking folic acid

Age Group	% awareness	% non-awareness	Don't know	Refused
35-45 year olds	92%	–	–	8%
25-34 year olds	87%	10%	2%	1%
16-23 year olds	83%	14%	1%	2%

APPENDICES

Table 6: Recommendation to take folic acid

Recommendation from	Base = All mothers taking folic Acid N = 193	%
Doctor	130	67%
Midwife	15	15%
Family/friend	16	8%
Magazine/newspaper	7	4%
TV programme	7	4%
Other source	8	5%

Table 7: Percentage of mothers asked to attend a prenatal appointment once they informed their healthcare professional they were pregnant. *If the first health check is a key point for giving advice about folic acid, it is too late to have any real benefit. It is imperative to reach mothers earlier than six weeks.*

Period invited for prenatal appointment	Base = mothers in the last 5 years N = 249	%
Immediately	130	52%
At three months	81	32%
Not till three months (but given topline health advice over the phone)	11	4%
Other/refused	24	10%

Appendix 3: References

1. Mason P. Nutrition in Pregnancy. *Pharmaceutical Journal*. 2003; 270; 369-370
2. Folic acid and prevention of disease: Report of the Committee on Medical Aspects of Food Policy (COMA). Report on health and social subjects. London: Her Majesty's Stationery Office: 2000.
3. IPSOS Consumer Research Survey, September 2003
4. Centers for Disease Control and Prevention. Use of folic acid for prevention of spina bifida and other neural tube defects: 1983-1991. *MMWR*. 1991;40:513-516
5. MRC Vitamin Study Research Group. Prevention of neural tube defects: results of the MRC vitamin study. *Lancet* 1991; 338:131-7
6. Sanderson P, McNulty H, Mastroiacovo P

et al. Folate Bioavailability: UK Food Standards Agency Workshop Report. *Br J Nutr*. 2003; 90, 473-479

7. Dept of Nutrition, Harvard School of Public Health, Boston. Joint Association of alcohol and folate intake with risk of major chronic disease in women. *Am J Epidemiol*. 2003; 158 (8):760-71

Hard copies of this report can be obtained by contacting: Carys Thomas at Ash Communications

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