FEBRUARY 1997 VOLUME 3 NUMBER 1 ISSN: 0965-0288

Effective Health Care

Bulletin on the effectiveness of health service interventions for decision makers

NHS Centre for Reviews and Dissemination, University of York

Preventing and reducing the adverse effects of unintended teenage pregnancies

- Teenage pregnancy is associated with increased risk of poor social, economic and health outcomes for both mother and child.
- A factor strongly associated with deferring pregnancy is a good general education.
- The health and development of teenage mothers and their children has been shown to benefit from programmes promoting access to antenatal care, targeted support by health visitors, social workers or 'lay mothers' and provision of social support, educational opportunities and pre-school education.
- School-based sex education can be effective in reducing teenage pregnancy especially when linked to access to contraceptive services. The most reliable evidence shows that it does not increase sexual activity or pregnancy rates.
- Contraceptives when used properly are highly cost effective and can result in significant savings.
- Increasing the availability of contraceptive clinic services for young people is associated with reduced pregnancy rates.
- Contraceptive services should be based on an assessment of local needs and ensure accessibility and confidentiality.

This issue of *Effective Health Care* summarises the research evidence on approaches to preventing teenage pregnancy and alleviating the direct negative health and social effects of teenage pregnancy. It is aimed principally at purchasers and providers of health care services, and those in other sectors responsible for young people's services. It is hoped that the review will help inform discussions about the best ways of developing, organising, delivering and monitoring services to young people.

Two main approaches to the prevention of teenage pregnancy are examined: educational interventions (primarily school-based), and the provision and delivery of contraceptive and counselling services. Strategies for the alleviation of the adverse health, educational, and social outcomes are also reviewed. The bulletin concludes with a summary of some of the implications for health, education and social services and the areas for further research.

Effective Health Care is based on systematic reviews of the research evidence carried out using structured guidelines.[1] A full report is available from the NHS Centre for Reviews and Dissemination.[2]

A. Teenage pregnancy in England and Wales

The United Kingdom has the highest teenage pregnancy rate among 15-19–year–olds in Western Europe. However, the rate of conceptions in the 16-19–year–old age group has been decreasing since 1990 and the rate is currently 56.8 per 1000. In the under 16-year-olds the rate has been steady over the past 20 years (Fig. 1),[3] despite evidence that young people are starting intercourse at an earlier age.[4]

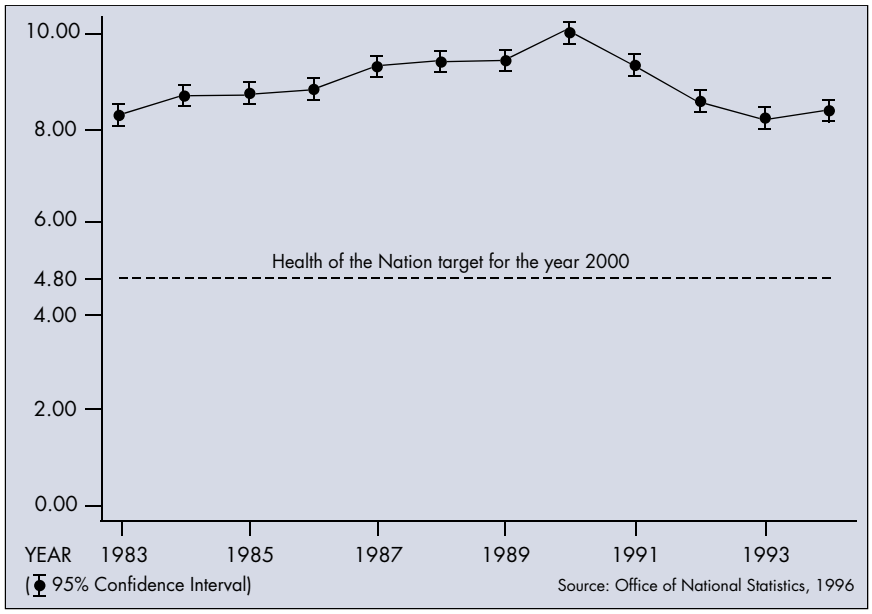

Fig. 1 Under 16-year-old conception rates per1000 females aged 13–15 in England and Wales

In England and Wales, the Health of the Nation strategy has identified the prevention of pregnancy in under 16–year–olds as a priority area, with a target to reduce the rate of conceptions from 9.6 per 1000 in 1989 to 4.8 per 1000 by the year 2000.[5] The most recent figures show that the rate of under 16–year–old conceptions is at 8.3 per 1000 (Fig. 1).[3] In 1993, this rate varied across districts ranging from 4.2 to 19.3 per 1000.[6]

Outcomes from teenage pregnancy

For many young women pregnancy and motherhood are positive and welcomed experiences without long-term negative outcomes.[7-9] However, compared to women aged 20 to 35 years, teenagers are at higher risk of experiencing adverse health and, more importantly, educational, social and economic outcomes (Table 1).[10-17] Teenage pregnancies also may result in significant public costs.[18,19]

Approximately half of the pregnancies among under 16 year olds and a third of the pregnancies among 16-19–year–olds are terminated.[3] These terminations can also have an adverse effect on the health of teenagers. Pregnant teenagers who have a miscarriage may also suffer due to inadequate support.

Table 1 Adverse outcomes associated for the teenager and her child

	Health	Educational	Socio-economic
Young person	Hypertension, anaemia, placental abruption, obstetric complications, depression and isolation.[10-14 20] Termination of pregnancy [3]	School-drop-out and gaps in education.[16 21]	Reduced employment opportunities. Increased reliance on state welfare.[17] Poor housing and nutrition.[16 22 23]
Child	Increased risk of sudden infant death syndrome, prematurity, hospitalisation due to accidental injuries.[24-26] Increased risk of experiencing abuse and of teenage pregnancy.[17 27 28]	In the pre-school years children of teenage mothers display developmental delays.[26 29]	Increased risk of living in poverty.[16 30] Poor housing and nutrition.[22 23]

Table 2 Factors associated with early sexual initiation, contrceptive use, and teenage pregnancy

Individual	Family	Educational	Community	Socio-economic	Contraceptive
Knowledge	Parent/child communication	Academic attainment/ educational goals	Social norms (sexual activity/ pregnancy)	Poverty	Contraceptive services
Self-esteem	Mother or sister teenage pregnancy history	Truancy	Peer influences	Employment prospects	Awareness
Skills base	Family structure (including single headed families)	Sex education	Cultural and religious influences	Housing and social conditions	Availability
Cognitive maturity			Media influences		Accessibility
'Experimental' behaviour			Child abuse		
Age of first intercourse					
Emotional maturity					

Factors associated with teenage pregnancy

A number of factors are associated with early sexual initiation, non-use of contraception, and teenage pregnancy. These include social influences, health service and socio-economic factors as well as individual characteristics (Table 2). One of the factors most strongly associated with deferring pregnancy is girls and young women having a good general education. Such factors can contribute to, as well as be an outcome of, teenage pregnancy, making cause and effect relationships difficult to disentangle.[31]

Pregnancy rates are higher in more socially deprived areas and in areas with less public welfare services, and the proportion of pregnancies terminated lower.[32-35] The associated burden of unintended pregnancy may, therefore, be greater in poorer localities.

Particular groups at increased risk of pregnancy during the teenage years are daughters of teenage mothers, young people 'looked after' by the local authority and leaving care, school non–attendees due to truancy or exclusion, and homeless or runaway teenagers.

Research from the northern European countries suggests that openness about sexuality, the content, context and scope of education, and the accessibility of counselling and contraceptive services contribute to lower rates of teenage conceptions.[36]

B. Educational approaches to prevention

A total of 45 reviews of research in the area of teenage pregnancy were identified, of which five were considered to be relevant and of high quality. An additional four reviews included important source material.[38,40-42] These reviews, together with additional searches identified 42 evaluations of educational approaches to preventing teenage pregnancy.

The majority of the evaluations of educational approaches to prevent teenage pregnancy have been conducted in the USA and are principally comparisons of new methods of sex education compared with those programmes which are routinely provided. Table 3 provides a summary of these evaluations using a randomised controlled trial (RCT) research design.

Four school–based educational models have been evaluated: abstinence programmes, skills building combined with factual information, school–based programmes that are linked with contraceptive services, and school-linked sex education programmes that also encourage vocational development. Additional education approaches include one-to-one counselling within health care settings. The key results, presented in order of increasing complexity, are summarised below with special emphasis on the results from the better quality studies.

B.1 Abstinence programmes: The main aim of abstinence–based programmes is to delay sexual activity until later in the teenage years or until marriage. Such programmes generally develop decision-making and refusal skills, and rarely provide information on contraceptive methods or contraceptive services. When compared to the usual sex education, abstinence programmes were not found to have any additional effect on either delaying sexual activity or reducing pregnancy.[43,44]

B.2 School-based skills building combined with factual information: Programmes which emphasise the postponement of sexual activity, through the development of more sophisticated skills than in abstinence programmes combined with factual information on contraceptives and where to access them, have had some success in changing young people's sexual and contraceptive behaviours.[45-47] Omitting guidance on contraceptives and where to access them appears to reduce effectiveness.[48]

B.3 Programmes encouraging vocational development: Programmes which increase life options by providing guidance, encouragement or support to complete education or improve job prospects may help motivate young people to avoid pregnancy. A number of programmes, for example, which combine sex

education with career planning or work experience during the summer holidays have shown some success in increasing contraceptive use,[49-51] and reducing pregnancy rates.[52] However, it is difficult to identify the separate contribution of vocational training.

B.4 School-based programmes linked with contraceptive services: Programmes which combine sex education with access to contraceptive services have been proven to be effective in increasing contraceptive use.[53,54] One multi-faceted community approach combined peer-led skills and confidence building programmes and access to condoms and transport to contraception clinics. Follow-up of the programme community at 24 months found a significant reduction of pregnancies.[53,55] Longer term follow-up found that after the school nurse resigned and local legislation prohibited the provision of contraceptives from school clinics, the pregnancy rate returned to pre-programme levels.[53]

B.5 School-based and school-linked clinics: Evaluations of school-based clinics providing health and contraceptive services in the USA have been methodologically weak with poor selection of comparison groups and the results are contradictory. Some show delay in sexual initiation,[56] and reduction in birth rate,[57] but no changes in contraceptive use.[56,58]

A promising UK multi-disciplinary project of teachers, school nurse and contraceptive clinic staff, based on a Swedish model using school education combined with group visits to local clinics, has yet to be fully evaluated.[59]

B.6 One-to-one counselling: A small number of studies have evaluated the effectiveness of one-to-one education through counselling within health care settings. Again, the evaluation designs are weak and findings mixed.[60-62]

B.7 Non school-based educational programmes in HIV prevention: In addition to school-based approaches, there may be lessons to learn from educational programmes for the prevention of HIV which have been effective in changing young people's sexual activity.[63-65] Of particular interest are programmes targeted at 'hard to reach' groups. A number of US programmes delivered outside school-hours have exhibited some success in changing young people's sexual activity. For example, the Behaviour Skills Training programme delivered to substance dependent black young in a health centre was successful in delaying sexual initiation, reducing the numbers of sexual partners and increasing the use of protection during sexual activity.[66] A second programme Be Proud, Be Responsible which provided culturally and developmentally appropriate active learning activities to young blacks found some short-term increase in condom use.[67] Finally an educational programme to young women in sheltered housing was effective in improving preventive sexual behaviours.[68]

Features associated with successful education programmes

Despite the variety of the different approaches used in the delivery of sex education programmes, some general lessons emerge. Importantly there is consistent evidence that providing sex and contraceptive education within school settings does not lead to an increase in sexual activity or incidence of pregnancy.[37,64,65,69-72] Indeed, the provision of clear information about contraceptive methods and how and when to access contraceptive services appears important to the success of educational programmes.

The timing of these educational programmes also appears to be important: young people who are already sexually active at the commencement of the interventions, for example, are less likely to change their sexual and contraceptive behaviour. As young people are not homogeneous, programmes should be tailored to the group they serve.

School-based education programmes have been delivered by a range of personnel including peers, teachers, and health care professionals. Two RCTs are being carried out in the UK to evaluate the effectiveness of teacher-led and peer-led approaches to school-based sex education.[73]

Those few studies which have demonstrated a reduction of teenage pregnancy, provided multi-faceted programmes with links to contraceptive services or work experience. However, the lack of evidence of effectiveness of other approaches in reducing pregnancy rates may be due to the fact that most of the studies did not have appropriate comparison groups, large enough sample sizes or long enough follow-up to detect significant effects.

Most of the evaluated programmes have focused on addressing the individual factors associated with teenage pregnancy, and have shown some success. However, few programmes have attempted to tackle underlying social, economic and other environmental factors associated with increased risk of pregnancy.

C. Contraceptive service delivery

C.1 Cost-effectiveness of contraceptive services: Contraceptives when used properly are highly effective at preventing pregnancy. Recent economic evaluations have shown that family planning services are also highly cost-effective and provide a high rate of return to the NHS.[19,74] When the resource consequences of pregnancy are taken into account, family planning provision of contraceptive services to a teenager

Table 3 Randomised controlled studies of educational programmes

Study, year programme and country	Study population, unit of randomisation, sample size and follow-up interval	Programme description	Findings: Outcomes Odds ratios (95% confidence intervals)	Comments
Jorgensen et al[44,127] 1993 Project Taking Charge USA	Females = 53% Mean age 14.4 Low SES School classes I = 52; C= 39 6-week follow-up	**Intervention**: Students received 30 classroom sessions on biological factors, importance of abstinence, vocational goal setting, family values and family communication. Parents invited to 3 evening sessions of communication exercises, values exploration, adolescent sexuality, pregnancy and STD **Control:** Usual instruction	**Initiation of sexual activity** Reduced initiation but not statistically significant F: OR 0.76 (95% CI: 0.17, 3.39) M: OR 0.15 (95% CI: 0.02, 1.2)	Small number of classrooms and students and short-term follow up, so low statistical power. Large proportion of comparison group students started intercourse during the 6-month period (50%).
Sex education in classrooms				
Handler[128] 1987 Peer Power Project USA	Black females Mean age 13.3 years Majority lower income single parent family Pupils I = 26; C =27 12-month follow-up	**Intervention**: Peer-led programme 1 hr per week during school year covering factual information, decision-making skills, goal setting, communication and career goals. Links to clinics and supportive adult. **Control**: No Intervention Contraceptive use and pregnancy lower but not statistically significant.	**Initiation of sexual activity** F: OR 1.21 (95% CI: 0.33, 4.41) **Contraceptive use** F: OR 0.16 (95% CI: 0.01, 1.83) **Pregnancy** F: OR 0.60 (95% CI: 0.07, 4.49)	Small sample size, so low statistical power. Contradictory results on sexual activity, contraceptive use and pregnancy.
Philliber & Allen[52,129] 1992 Teen Outreach Program USA	Females = 70%, 40% blacks, 13% Hispanics Ages 11–21 years Pupils in 65 schools I = 79; C = 89 9 & 12 month follow-up	**Intervention**: Weekly sessions (during and after school) delivered by mentor covering self understanding and values, human development, communication skills, issues related to parenthood, family relationships, and community resources. Combined with voluntary community service. **Control**: Usual sex education	**Pregnancy rates** RCT showed no significant effect on pregnancy. F: OR 1.6 (95% CI: 0.21, 12.4) However, larger controlled trial showed significant reduction. OR 0.39 (95% CI: 0.2, 0.78)	Small sample, so low statistical power. RCT part of a larger (n>5,000) non-randomised controlled trial which shows more dramatic results but which is less rigorous.
Slade[130] 1989 Life Outcome Perceptions USA	Females 100% Ages 15–19 Grades 10–12 Pupils I = 48; C = 40 2-month follow-up	**Intervention**: 1- hour session focusing on negative impact of early childbearing on vocational goals, desired lifestyle and on unplanned child **Control**: Usual sex education	Reduction in sexual activity and pregnancy but not statistically significant. **Sexual behaviour** F: OR 0.63 (95% CI: 0.06, 6.64) **Use of contraception** F: OR 0.86 (95% CI: 0.38, 1.95)	Small sample size and short-term follow-up, so low statistical power
Thomas et al[48] 1992 McMaster Teen Program Canada	Grades 7 and 8 Females = 51% Mean age 12.7 years Range of income levels School I = 11 (2062 students) C = 10 (1228 students) 4-year follow-up	**Intervention**: The 10 sessions using role play, and films to discuss development, sexuality, and relationships with others. Skills-building sessions included decision-making and problem solving. No information on contraceptive methods was included **Control**: Conventional sex education curriculum.	Girls more likely to use contraception and be pregnant but of borderline statistical significance. **Initiation of intercourse** F: OR 1.12 (95% CI: 0.9, 1.4) **Use of contraception** F: OR 1.23 (95% CI: 0.95, 1.6) **Pregnancy** F: OR 1.33 (95% CI: 0.98, 1.8)	The content of the treatment intervention did not appear much stronger than that of the control. Some baseline differences
Schools-based programmes delivered by community and youth-serving agencies				
Eisen et al [131,132,79,133] 1990 Teen Talk (Health Beliefs Model-HBM) USA	6 family planning service agencies and 1 school district Female = 54% Low income Classes I = 722; C= 722 pupils 1 year follow-up	**Intervention**: Participants received 12–15 hours of training designed to increase teenagers' awareness of the probability of pregnancy; the consequences of pregnancy; the benefits of delayed sexual activity and consistent effective use of contraception. **Control:** Usual sex education programmes which varied between sites	Reduction in contraceptive use and pregnancy but not statistically significant **Initiation of intercourse** F: OR 1.11 (95% CI: 0.68, 1.81) **Contraceptive Use** F: OR 0.56 (95% CI: 0.27, 1.19) **Pregnancy** F: OR 0.70 (95% CI: 0.28, 1.74)	

Table 3 Continued

Study, year programme and country	Study population, unit of randomisation, sample size and follow-up interval	Programme description	Findings: Outcomes Odds ratios (95% confidence intervals)	Comments
Schinke, et al[134] 1981 USA	All nulliparous females Low SES Individuals I = 44; C = 49 6–12-month follow-up	**Intervention**: 14 1-hour sessions on problem solving , rehearsing implementing decisions, written agreements **Control**: Not clearly stated	Reduction in unprotected intercourse and non statistically significant increase in contraceptive use. **Incidence of unprotected intercourse (**12 months) OR 0.17 (95% CI: 0.17, 0.5) **Habitual contraceptive use** (12 months) OR 1.8 (95% CI: 0.6, 1.6)	Small sample size so low statistical power. The magnitude of the results were large and consistent over the three time periods.
Smith[49 50] 1990 Teen Incentive Model USA	Females = 74% Mean age 15.1 Grade 9 Low SES Individuals I = 60; C = 60 6–12-month follow-up	**Intervention** Phase 1: 8 weekly small group sessions focusing on self-esteem and general skills and sexuality topics. Phase 2: A 6 week career mentorship programme. Phase 3: role-playing to rehearse skills. **Control**: No programme	No statistically significant differences **Sexual intercourse** F: OR 1.61 (95% CI: 0.27, 9.76) M: OR 0.06 (95% CI: 0.0, 2.08) **Contraceptive use** F: OR 1.12 (95% CI: 0.31, 4.12) M: OR 2.7 (95% CI: 0.43, 17.2)	Small sample size and short follow up, so low statistical power.
Walker et al [135] 1992 Summer Training and Education Program (STEP) USA	5 cities Females = 53% Age 14–15 years Low SES Academically behind Individuals N = 4800 5-year follow-up	**Intervention** 36 sessions covering life-skills education on sexual behaviour, drug use, careers and community involvement. Focus on decision-making and responsible behaviour. 90 hours of work at minimum wage, 90 hours of academic instruction and 5–15 hours of support during the school years **Control**: Summer jobs	**Pregnancy** No statistically significant difference 4 yrs: F: OR 0.87 (95% CI: 0.63, 1.19) 5 yrs : F: OR 1.2 (95% CI: 0.89, 1.63)	Despite large sample sizes, and long-term follow-up no differences found. Effect may be diluted due to control group receiving a programme.
One-to-one education and counselling in community health and family planning clinics				
Baker[60] 1990 USA	Unmarried sexually active female first time attenders at a family planning clinic. Aged 15–18 Minority racial groups living in female-headed households Individuals I = 23; C = 24 6-month follow-up	**Intervention** One 5.5 hour session providing factual information, building and rehearsing problem-solving and communication skills **Control:** Usual care	More likely to use contraception and non statistically significant reduction in sexual activity and pregnancy **Sexual initiation** F: OR 0.43 (95% CI: 0.12, 1.50) **Birth control use** F: OR 26.2 (95% CI: 1.37, 502) **Pregnancy** F: OR 0.3 (95% CI: 0.04, 2.12)	Small sample, so low statistical power. Intensive programme requiring young women to agree to five-hour programme.
Danielson et al[62] Date not given Health Counselling for Males USA/Canada	Males = 100% 15–18 years Middle SES Individuals I = 541; C = 526 12-month follow-up	**Intervention** A slide show on anatomy, STDs, and contraception and a visit with a health care practitioner focused upon contraception, reproductive goals, health risks, and the patient's interests **Control**: Usual care	More likely to use contraceptives **Sexual initiation** M: OR 0.82 (95%CI: 0.59, 1.15) **Contraceptive use** M: OR 1.48 (95%CI: 1.03, 2.18)	The results indicated greater use occurred mostly among those who initiated sex after study began.
Hanna[136] 1988 USA	Single female first time attenders at contraceptive clinic Ages 16–18 Individuals I = 17; C = 21 3-month follow-up	**Intervention**: Nurse–client transactional intervention to identify anticipated perceived contraceptive benefits and barriers and to develop a contraceptive adherence regimen **Control:** Information on birth control using written and video information	**Contraceptive use** Increased use of contraceptives of borderline statistical significance. F: OR 3.29 (95% CI: 0.85, 12.75)	Very small sample and short-term follow-up, so low statistical power.
Herceg-Baron et al[137] 1986 USA	Females under 16 years (31%) to 17 years SES not reported Individuals I (1) = 93; I (2) = 61; C = 198 6 & 15-month follow-up	**First Intervention**: Participants were asked to attend 6 weekly counselling sessions with family member. **Second Intervention**: Participants received 2–6 telephone calls from clinic staff during the 4–6 weeks following the initial clinic visit **First control** No intervention 3 interviews **Second control**: No intervention 1 interview	No statistically significant difference in contraceptive use or pregnancy **Contraceptive use** F: OR 0.75 (95% CI: 0.47, 1.19) **Pregnancy** F: OR 0.96 (95% CI: 0.52, 1.78)	The proportion of patients in the family support group that actually brought a family member was very low (30%). Participants received only 2.3 sessions each.

Table 3 Continued

Study, year programme and country	Study population, unit of randomisation, sample size and follow-up interval	Programme description	Findings: Outcomes Odds ratios (95% confidence intervals)	Comments
Jay et al [138] Adolescent Gynaecology clinic USA	Females Ages 14–19 Lower SES Individuals I = 26; C = 31 4-months follow-up	**Intervention**: Peer contraceptive counselling **Control**: Nurse contraceptive counselling	**Pregnancy** Reduction in pregnancy but not statistically significant. F: OR 0.69 (95% CI: 0.09, 5.63)	Small sample and shor-term follow-up, so low statistical power.
Sex and AIDS education for parents and their families				
Miller et al [139] Date not given Facts and Feelings USA - Utah	Sex - not specified Ages 12–14 Upper-middle SES mainly Mormons Families I (1) = 126; I (2) = 132; C = 290 3 & 12-month follow-up	**Intervention 1**: Home-based video and mailed newsletters **Intervention 2**: Home-based videos only **Control:** No intervention The written material suggested questions and topics for discussion. Phone calls were made bi-weekly to encourage use of the materials	**Sexual behaviour** Changes over time for all groups. No statistically significant difference between the groups (p = 0.66) as measured by group x time repeated measures analysis of variance.	Only 3–5% of the youths in any group initiated intercourse during follow up. Thus, it was difficult to assess impact. The only significant effect was on the quality of communication with parents about sex.

is calculated to save £377 per unwanted pregnancy avoided. GP provision of oral contraception was estimated to save £466 per unplanned pregnancy avoided when compared to no service. The economic benefit–cost ratio of family planning provision is even higher if the economic implications of health gains other than avoided unplanned pregnancy are included and if the averted costs generated by the children arising from unplanned pregnancies are included.[75] In summary, the costs of providing contraceptive and counselling services are far less than the health and social costs of unplanned pregnancy.

C.2 The effectiveness of different ways of delivering contraceptive services: Contraceptive services are available from a wide range of providers. Surveys show that there is great variation in the types of services provided, their management and accessibility and how well they are equipped.[76-80] Staff often expressed a need for further training and practical support.

Studies show an association between conception rates and the level and type of contraceptive services available locally.[81] The effect of these services in terms of use and pregnancy rates appears to be stronger when they are provided by clinics[82,83] or youth-oriented clinics.[84,85] However, simply expanding the supply of contraceptive services without a corresponding increase in demand, for example, by education, has not always been effective.[86]

The literature searches revealed a complete lack of UK-based controlled evaluations of the effectiveness or cost-effectiveness of different approaches to the delivery of contraceptive services to young people.

UK studies have been restricted to less reliable before and after studies of conception rates,[87-89] audits of service utilisation, qualitative studies of users and potential users.[90,91] In addition a number of studies have attempted to evaluate the effect of publicity on awareness and use of contraceptive services.[92,93] Two recent UK reviews provide valuable information on contraceptive service delivery.[41,42]

This body of research provides some useful insights on the needs for and use of contraceptive services by young people. However, there is not the sort of clear evidence of the effectiveness of different approaches to contraceptive counselling and contraceptive provision which could provide a firm basis for decision-making.

A review of descriptive UK studies which examined factors likely to influence the effectiveness of services was carried out.[2] 88 primary studies of young people's needs, use, or experience of contraceptive services were identified.

They show that many young people, boys in particular, have low levels of knowledge about reproduction, contraception and contraceptive services.[94-96] Sources of information about contraception include parents, siblings, school, peers, and the media but rarely health care professionals[94]

In the absence of clear evidence it seems sensible to develop services in the light of the more descriptive studies. These indicate that services should take into account' in a systematic way, local circumstances and needs.[97] A recent national survey of providers of sexual health services however, found that few agencies undertake systematic local needs assessments before the development of services.[42]

In order to attract young people to use services, they need to be well-advertised, easily accessed outside school-hours (opening times and location), informal and, for under 16-year-olds, confidential.[98] They should be developed in

collaboration with key statutory agencies, relevant voluntary groups and community groups; should be broad based, and staffed by people trained to work with young people.[96,99-102]

C3 Emergency contraception: Hormonal emergency contraception may have an important role in the prevention of pregnancy with this age group because of the nature of teenagers' sexual activity which can be unplanned and sporadic.[103] However, research with teenagers has found that many young people are poorly informed about its method of use.[96,104] The traditional name -"morning after pill"- may have contributed to the confusion as it implies the need to start treatment immediately rather than up to 72 hours for oral contraception or 5 days for IUD insertion.[105] In addition, concerns by women and GPs about the perceived health risks have been identified as a reason for not using the method.[106] This suggests, that in addition to the need for more publicity, programmes are needed for educating teenagers, GPs and others to allay their fears about the absolute risks.[107] GPs and family planning clinics, when providing emergency contraception, can take the opportunity to discuss future contraceptive needs.

D. Preventing adverse health and social outcomes

Given that half of under 16- year-olds and two-thirds of 16–19-year-olds continue with their pregnancies, it is important to explore ways in which health, educational, and social services can intervene effectively to promote the health and well-being of teenage parents and their children. Examples of approaches to alleviating some of the adverse health outcomes associated with teenage pregnancy include the provision of antenatal care and support, social and financial support during the child's early years, and education support for both child and teenage mother.

D.1 Antenatal care: A number of reliable studies have shown that good antenatal care is associated with improved pregnancy outcomes for teenagers, as well as older women.[108,109] However, teenage girls' ambivalence about their pregnancy or fear of discovery may delay or prevent their uptake of antenatal care.[110] Together with the fact that young women are more likely to smoke during pregnancy, this may contribute to the increased risk of poor health outcomes.[13,111]

A recent meta-analysis of antenatal care programmes for pregnant teenagers, found consistent evidence for the effectiveness of comprehensive programmes in reducing poor maternal outcomes.[11] These may also save resources for health, education and social services.

D.2 Social support and parenting: Two recent reviews of the RCTs of home visiting and psychological support for disadvantaged mothers concluded that such programmes have the potential to reduce significantly the incidence of babies having incomplete immunisation, suffering from severe nappy rash, hospitalisation during the first year of life, childhood injury, or being suspected victims of child abuse.[112, 113]

Home-based parenting support programmes have been found to be effective in improving the teenage mother's interaction with her child and/or enhancing the infants development.[114]

In the UK there are a number of voluntary organisations and programmes which provide support for young families under stress such as Homestart and Newpin. However, there is no evidence from rigorous studies of their long-term effect on health and social outcomes.[115-117]

Many teenage parents live in disadvantaged communities and in low-quality accommodation. There is evidence that poor housing has an adverse effect on health which may be alleviated by improvements in housing.[118]

D.4 Pre-school education and support: Parenting skills programmes or support to continue formal education have been shown to improve teenage mother/child interaction, and enhance child development.[114] Early education programmes of good quality can improve longer term outcomes for disadvantaged children. A meta-analysis of evaluations of pre-school programmes for low income families found that they performed better at school.[119]

Long term evaluations of Project Head Start, a US project aimed at breaking 'the cycle of poverty' by providing pre-school education to children from disadvantaged communities, have reported gains in children's cognitive ability, self esteem, school attainment, motivation and social behaviour.[120,121]

D.5 Parental education support: In addition to day care, there are a number of approaches which provide the opportunity to continue formal education. These include free-standing programmes which offer young teenagers general curriculum education together with education courses relevant to childbearing and parenting (and in some cases also provide child care); supplementary programmes provided within the mainstream school system which provides courses relevant to teen parents into the school programme, and home one-to-one tutoring. A recent survey found that 60% of LEAs provided special centres for schoolgirl mothers.[122] In the UK there have been no evaluations of the effectiveness of these different approaches.

E. Implications for health services

- Because of the complex range of individual, social and economic factors, multi-faceted approaches involving local people, education, health, and social services are important. The challenge is to combine a strategic approach without losing the genuine commitment of participating staff.[123] The requirement for local authorities to take into account related activities of other agencies when developing 'children's service plans' may assist a more integrated approach. The use of the Children Act may also help release resources for children at risk.

- General anti-poverty strategies are likely to influence rates of teenage pregnancies and help reduce adverse outcomes. Also specific interventions including the provision of supplementary nutrition, social support, education opportunities and pre-school education, are likely to be effective. In addition, improving the housing conditions of some teenage parents and their children may be important.

Education

- School-based sex education plays an important role in the prevention of teenage pregnancy, and is most effective when linked with contraceptive services and skills building. Young people's perceived barriers to using services might be overcome through clinic staff or GP visits to schools and youth settings, or through school visits to the contraceptive service.

- Within health care settings, education programmes targeted at young women presenting for emergency contraception or with negative pregnancy tests may improve effective contraceptive use.

- Inter-agency collaboration might include the development of prevention programmes targeted at young people at increased risk of pregnancy such as school non-attenders, 'looked after' or runaway teenagers who are hard to access. Specific interventions might include education programmes in hostels or counselling in a health care setting which would require collaboration between statutory and non-statutory agencies such as Barnardos, and the YMCA.

- Parenting skills programmes or support to continue formal education should be developed.

- Early education programmes of good quality which can improve longer-term outcomes for disadvantaged children should be developed.

Contraceptive services

- Contraceptive services should be developed in the light of an assessment of the needs of the community it serves. Needs assessment should consider local demographic details, the location of current services, and data on service utilisation. It should also take into account the views of parents, teachers and health professionals, and be carried out in collaboration with health, education and social services.

- There is insufficient reliable research on which to base standards for auditing contraceptive services at a district level.

- Contraceptive service providers should ensure and publicise easy access (e.g. outside school hours and at weekends) and confidentiality for young people, following the guidance issued by the BMA and other organisations.

- Hormonal emergency contraception should be made more easily available. General Practices, for example, could advertise to their practice population and help reduce anxiety about its use and repeat use.

Antenatal care and social support

- Specialised antenatal care programmes for pregnant teenagers involving, for example, GPs, district nurses, health visitors and social workers are likely to improve health outcomes.

- Health visitors and social workers should consider providing targeted support for teenagers and their families during and after pregnancy. Programmes involving home visits and support from other young mothers may also be beneficial.

- Home-based parenting schemes for teenagers who may be reluctant to attend clinics may be helpful.

Implications for research

- A co-ordinated programme of rigorous research is needed to evaluate the effectiveness of the different approaches to contraceptive service delivery in reducing unintended pregnancy among young people.

- Research is also needed to evaluate the long term effects of social support programmes on the social, health and educational outcomes of both mother and child. This should also consider programmes of support for pregnant or parenting teens to continue formal education.

- More information on protective factors, which reduce risk of pregnancy, may be obtainable at relatively low cost by secondary analysis of existing cohort studies combined with qualitative studies.

F. Resources available

A number of directories of services for young people have been published. These include Aggleton and colleagues' directory of young people's sexual health services[124] and Di Salvo and Skuse's directory of services for pregnant teenagers and young parents.[125]

A publication from the Family Planning Association which will provide guidance for those planning and purchasing contraceptive services as part of sexual health provision for young people will be available later this year. The document will draw together existing knowledge about the characteristics which increase service accessibility and acceptability, and provide a checklist of factors to be considered in the planning, provision and promotion of services for young people, and in the development of purchaser-provider contracts.[126]

References

1. NHS Centre for Reviews and Dissemination. *Undertaking systematic reviews of research on effectiveness. CRD guidelines for those carrying out or commissioning reviews.* CRD Report 4, NHS Centre for Reviews and Dissemination, 1996.
2. NHS Centre for Reviews and Dissemination. *Preventing and reducing the adverse effects of unintended teenage pregnancies.* NHS Centre for Reviews and Dissemination, (forthcoming).
3. Office for National Statistics. *Birth Statistics.* FM1 no. 23, HMSO, 1996.
4. Johnson A, Wadsworth J, Wellings K, Field J, Bradsay S. *Sexual attitudes and lifestyles, British survey.* London: Blackwell Scientific, 1994.
5. Department of Health. *Health of the Nation: a strategy for health in England.* HMSO, 1992.
6. Office of Population Censuses & Surveys. *Public Health Standard Dataset.* Office of Population Censuses & Surveys, 1993.
7. Phoenix A. *Young mothers* Oxford: Polity Press, 1991.
8. Hudson F, Ineichen B. *Taking it Lying Down: Sexuality and teenage pregnancy* Basingstoke: MacMillan Publishing, 1991.
9. Oz S, Fine M. A comparison of childhood backgrounds of teenage mothers and their non-mother peers: a new formulation. *J Adolesc* 1988;11:251-261.
10. Elliott H, Beazley J. A medical study of pregnancy in Beazeley, Liverpool. *J Obstet Gynaecol* 1980;1:139-143.
11. Scholl TO, Hediger ML, Belsky DH. Prenatal care and maternal health during adolescent pregnancy: a review and meta-analysis. *J Adolesc Health* 1994;15:444-56.
12. Leppert P, Namerow P, Baker D. Pregnancy outcomes among adolescent and older women receiving comprehensive prenatal care. *J Adolesc Health Care* 1986;7:112-117.
13. Konje JC, Palmer A, Watson A, Hay DM, Imrie A, Ewings P. Early teenage pregnancies in Hull. *Br J Obstet Gynaecol* 1992;99:969-973.
14. Wolkind S, Kruk S. Teenage pregnancy and motherhood. *J R Soc Med* 1985:112-116.
15. Wolfe B, Perozek M. *Health and medical care costs to society of teen pregnancy: Children from birth to age 14.* Discussion paper 1072, Institute for Research and Poverty, University of Wisconsin, 1995.
16. Wellings K, Wadsworth J, Johnson A, Field J, Field B, Petruckevick A, et al. *Teenage sexuality, fertility and life chances. A report for the Department of Health using data from the National Survey of Sexual Attitudes and Lifestyles.* London School of Hygiene & Tropical Medicine, 1996.
17. Kiernan K. *Transition to parenthood: young mothers, young fathers - associated factors and later life experiences. Welfare State Programme Discussion Paper 113.* London School of Economics, 1995.
18. Burt MR. Estimating the public costs of teenage childbearing. *Fam Plann Perspect* 1986;18:221-226.
19. McGuire A, Hughes D. *The economics of family planning services. A report prepared for the Contraception Alliance* London: Family Planning Association, 1995.
20. Maskey S. Teenage pregnancy; doubts, uncertainities and psychiatric disturbance. *J R Soc Med* 1991;84:723-725.
21. Upchurch DM, McCarthy JL. The timing of the first birth and high school completion. *American Sociological Review* 1990;55:224-34.
22. Simms M, Smith C. *Teenage mothers and their partners: a survey in England and Wales.* HMSO, 1986.
23. Williams S, Forbes J, Mellwaine GM, Rosenberg K.. Poverty and teenage pregnancy. *BMJ* 1987;294:20-21.
24. Murphy A. Cardiff Birth Survey. *Journal of Epidemiology and Community Health* 1982;36:17-21.
25. Russell JK. *Early Teenage Pregnancy* Edinburgh: Churchill Livingstone, 1982.
26. McAnarney ER, Hendry L. Adolescent pregnancy and its consequences. *JAMA* 1989;262:74-7.
27. Burghes L, Brown M. *Single lone mothers: problem, prospects and policies.* London: Family Policy Studies Centre, 1995.
28. Di Salvo P. Intergenerational Patterns of Teenage Fertility in England and Wales [MSc Thesis]. London School of Hygiene and Tropical Diseases, 1992.
29. Furstenberg FF, Brooks Gunn J, Morgan SP. Adolescent mothers and their children in later life. *Fam Plann Perspect* 1987;19:142-151.
30. Clewell BC, Brooks Gunn J, Benasich A.A. Evaluating child related outcomes of teenage parenting programs. *FAMR* 1989;38:201-209.
31. Geronimus AT, Korenman S. The socio-economic consequences of teen childbearing reconsidered. *Q J Econ* 1992;107:1187-214.
32. Zimmerman S. State level public policy choices as predictors of state teen pregnancies. *FAMR* 1988;37:315-321.
33. Smith T. Influence of socioeconomic factors on attaining targets for reducing teenage pregnancies. *BMJ* 1993;306:1232-5.
34. Wilson SH, Brown TP, Richards RG. Teenage conception and contraception in English regions. *J Pub Health Med* 1992;14:17-25.
35. Garlick R, Ineichen B, Hudson F. The UPA score and teenage pregnancy. *Public Health* 1993;107:135-9.
36. David HP, Morgall JM, Osler M, Rasmussen NK, Jensen B. United States and Denmark: different approaches to health care and family planning. *Stud Fam Plann* 1990;21:1-19.
37. DiCenso A. Systematic overviews of the prevention and predictors of adolescent pregnancy. [PhD]. University of Waterloo, 1995.
38. Hayes CD, (ed). *Risking the future: adolescent sexuality, pregnancy, and childbearing.* Washington, DC: National Academy Press, 1987.
39. Moore KA, Sugland B, Blumenthal C, Glei D, Snyder N. *Adolescent pregnancy prevention programs: interventions and evaluations.* Child Trends, 1995.
40. Moore KA, Miller BC, Glei D, Morrison DR. *Adolescent sex, contraception, and childbearing: a review of recent research.* Child Trends Inc., 1995.
41. Peach E, Harris J, Bielby E. *Teenage pregnancy - a community issue. A literature review.* Nuffield Institute for Health, University of Leeds, 1994.
42. Peckham S, Ingham R, Diamond I. *Teenage pregnancy: Prevention and programmes.* Institute for Health Policy Studies, University of Southampton, 1996.
43. Christopher FS, Roosa MW. An evaluation of an adolescent pregnancy prevention program: Is "just say no" enough? *FAMR* 1990;39:68-72.
44. Jorgensen SR. Project taking charge; an evaluation of an adolescent pregnancy prevention program. *FAMR* 1991;40:373-80.
45. Barth RP, Fetro JV, Leland NL, Volkan K. Preventing adolescent pregnancy with social and cognitive skills. *J Adolesc Res* 1992;7:208-232.
46. Howard M, McCabe JB. An information and skills approach for younger teens: postponing sexual involvement program. In: Miller B, Card J, Paikoff R, Peterson J, (eds). *Preventing Adolescent Pregnancy: Model Programs and Evaluations.* Newbury Park, CA: Sage Publications, 1992:83-109.
47. Mellanby AR, Phelps FA, Crichton NJ, Tripp JH. School sex education: an experimental programme with educational and medical benefit. *BMJ* 1995;311:414-7.
48. Thomas BH, Mitchell A, Devlin C, Goldsmith C, Singer J, Watters D. The small group sex education at school: The McMasters Team Program. In: Miller B, Card J, Paikoff R, Peterson J, (eds). *Preventing Adolescent Pregnancy: Models Programs and Evaluations.* Newbury Park, CA: Sage Publications, 1992:28-52.
49. Smith MA. Teen incentives program: evaluation of a health promotion model for adolescent pregnancy prevention. *Journal of Health Education* 1994;25:24-29.
50. Smith MAB. The Teen Incentive Program: A Research and Evaluation Model for Adolescent Pregnancy Prevention. Columbia University, 1990.
51. Nicholson HJ, Postrado LT. A comprehensive age phased approach: Girls Incorporated. In: Miller B, Card J, Paikoff R, Peterson J, (eds). *Preventing Adolescent Pregnancy: Models Programs and Evaluations.* Newbury Park, CA: Sage Publications, 1992:110-138.
52. Philliber S, Allen JP. Life options and community service: Teen Outreach Program. In: Miller B, Card J, Paikoff R, Peterson J, (eds). *Preventing Adolescent Pregnancy: Models Programs and Evaluations.* Newbury Park, CA: Sage Publications, 1992:139-155.
53. Koo HP, Dunteman GH, George C, Green Y, Vincent M. Reducing adolescent pregnancy through a school- and community-based intervention: Denmark, South Carolina revisited. *Fam Plann Perspect* 1994;26:206-11.
54. Zabin LS, Hirsch MB, Smith EA, Streett R, Hardy JB. Evaluation of a Pregnancy Prevention Program for Urban Teenagers. *Fam Plann Perspect* 1986;18:119-26.
55. Vincent ML, Clearie AF, Schluchter MD. Reducing adolescent pregnancy through school and community-based education. *JAMA* 1987;257:3382-6.
56. Kisker EE. The effectiveness of family planning clinics in serving adolescents. *Fam Plann Perspect* 1984;16:212-218.
57. Ralph N, Edgington A. An evaluation of an adolescent family planning program. *J Adolesc Health Care* 1983;4:158-62.
58. Kirby D, Waszak C, Ziegler J. Six School-Based Clinics: Their Reproductive Health Services and Impact on Sexual Behavior. *Fam Plann Perspect* 1991;23:6-16.
59. Jackson P, Plant Z. Youngsters get an introduction to sexual health clinics. *Nursing Times* 1996;92:34-36.
60. Baker C. Self-efficacy training: its impact upon contraception and depression among a sample of urban adolescent females [Ph.D]. Seton Hall University, 1990.
61. Winter L, Breckenmaker LC. Tailoring family planning services to the special needs of adolescents. *Fam Plann Perspect* 1991;23:24-30.
62. Danielson R, Marcy S, Plunkett A, Wiest W, Greenlick MR. Reproductive health counseling for young men: what does it do? *Fam Plann Perspect* 1990;22:115-121.
63. Oakley A, Fullerton D, Holland J. Behavioural interventions for HIV/AIDS prevention. *AIDS* 1995;9:479-86.
64. Kirby D. *A review of educational programs designed to reduce sexual risk-taking behaviors among school-age youth in the United States.* U.S. Congress Office of Technology Assessment, 1995.

65. Peersman G, Oakley A, Oliver S, Thomas J. *Review of effectiveness of sexual health promotion interventions for young people.* Social Science Research Unit, University of London, 1996.
66. St Lawrence JS, Jefferson KW, Banks PG, Cline TR. Cognitive behavioral group intervention to assist substance dependent adolescents in lowering HIV infection risk. *AIDS Edu Prev* 1994;6:425-435.
67. Jemmott LS. AIDS risk among Black male adolescents: implications for nursing interventions. *J Pediatr Health Care* 1993;7:3-11.
68. Rotheram-Borus MJ, Koopman C, Haignere C, Davies M. Reducing HIV sexual risk behaviors among runaway adolescents. *JAMA* 1991;266:1237-1241.
69. Oakley A, Fullerton D, Holland J, Arnold S, France-Dawson M, Kelley P, et al. Sexual health education interventions for young people: a methodological review. *BMJ* 1995;310:158-62.
70. Kirby D, Short L, Collins J, Rugg D, Howard M, Miller B, et al. School-based programs to reduce sexual risk behaviors: a review of effectiveness. *Public Health Rep* 1994;109:339-61.
71. Frost JJ, Forrest JD. Understanding the impact of effective teenage pregnancy prevention programs. *Fam Plann Perspect* 1995;27:188-95.
72. Stout J, Rivara F. Schools and sex education: does it work? *Pediatrics* 1989;83:375-9.
73. Wight D. Does sex education make a difference? *MRC News* 1996;Spring:29-32.
74. Trussell J, Leveeque J, Koenig J, London R, Borden S, Henneberry J, et al. The economic value of contraception: a comparison of 15 methods. *Am J Pubic Health* 1995;85:494-503.
75. Hughes D, McGuire A. The cost-effectiveness of family planning service provision. *Journal of Public Health Medicine.* 1996;18:189-196.
76. Cooper P, Diamond I, High S, Pearson S. *The provision of family planning services by Family Planning Clinics: a social survey in Wessex.* Department of Social Statistics, University of Southampton, 1992.
77. Cooper P, Diamond I, High S, Pearson S. *The provision of family planning services by General Practitioners: a social survey in Wessex.* Department of Social Statistics, University of Southampton, 1992.
78. Family Planning Association. *Sexual health and family planning services in general practice: report of a quantitative research survey in England and Wales.* Family Planning Association, 1993.
79. Thompson E, Chapple J. Quality contraception or sexual health care? a survey of family planning clinic managers in one health region. *Br. J Fam Plan* 1993;19:232-5.
80. Pitts M, Burtney E, Dobraszczyc U. 'There is no shame in it anymore': how providers of sexual health advice view young people's sexuality. *Health Educ Res* 1996;11:1-9.
81. Lundberg S, Plotnick RD. Adolescent premarital childbearing: do economic incentives matter? *J Lab Econ* 1995;13:177-200.
82. Allaby MK. Reviewing family planning services: a method for population based outcome related needs assessment. *Br. J Fam Plan* 1993;18:102-105.
83. Allaby MA. Contraceptive services for teenagers: do we need family planning clinics? *BMJ* 1995;310:1641-1643.
84. Clements S, Diamond I, Ingham R, Stone N. *Teenage conceptions in the Isle of Wight.* Centre for Sexual Research, University of Southampton, 1996.
85. Stone N, Clements S, Ingham R, Diamond A. *Modelling the spatial distribution of teenage conception rates within Wessex. Report for the Regional R & D Sexual Health Programme.* Centre for Sexual Health Research, University of Southampton, 1996.
86. Hughes M, Furstenberg FFJ. The impact of an increase in family planning services on the teenage population of Philadelphia. *Fam Plann Perspect* 1995;27:60-65,78.
87. Allen I. *Family Planning and Pregnancy Counselling Projects for Young People.* London: Policy Studies Institute, 1991.
88. Withnell S. *An evaluation of the young people's drop-in at Newport Pagnall Health Centre: the first twelve months.* Buckinghamshire Health Authority, 1994.
89. Wilson S, Daniel S, Pearson J, Hopton C, Madeley R. An evaluation of a new teenage clinic and its impact on teenage conceptions in Nottingham from 1986 to 1992. *Contraception* 1994;50:77-86.
90. West J, Hudson F, Levitas R, Guy W. *Young people and clinics: Providing for sexual health in Avon.* Department of Sociology, University of Bristol, 1995.
91. Cooper P, Diamond I, Gould C, High S, Schlamm E. *The use, users and sources of contraception in the UK: A literature review.* Department of Social Statistics, University of Southampton, 1992.
92. Hall C, Milner P. Advertising emergency contraception using local radio: an evaluation. *Health Educ J* 1996;55:165-174.
93. Knox H, Kubba A. Radio advertising of family planning services in an inner city district - a pilot study. *Br. J Fam Plan* 1995;20:130-131.
94. Winn S, Roker D, Coleman J. Knowledge about puberty and sexual development in 11-16 year olds: implication for health and sex education in schools. *Educational studies* 1995;21:187-201.
95. Balding J. *Young People in 1994. Exeter:.* Schools Health Education Unit: University of Exeter, 1995.
96. Wareham V, Drummond N. Contraception use among teenagers seeking abortion - a survey from Grampian. *Br. J Fam Plan* 1994;20:76-8.
97. Ubido J, Ashton J. Small area analysis: abortion statistics. *J Pub Health Med* 1993;15:137-143.
98. BMA. *Confidentiality and people under 16.* BMA, GMSC, HEA, Brook Advisory Centre, FPA and RCOG, 1993.
99. Cooper P, Diamond I, High S. Choosing and using contraceptives: integrating qualitative and quantitative methods in family planning. *Journal of the Market Research Society* 1993;35:325-339.
100. Pearson V, Owens M, Philips D, Gray D, Marshall M. Teenage pregnancy: a comparative study of teenagers choosing termination of pregnacy or antenatal care. *J R Soc Med* 1995;88:384-388.
101. Hill MR. Do family planning facilities meet the needs of the sexually active teenager? *Br. J Fam Plan* 1987;13:143-51.
102. Penlington E, Tatman M. *Health needs of adolescents in Coventry. Child & Family Health Services, Coventry Healthcare NHS Trust, 1995* 1995.
103. Royal College of Obstetricians and Gynaecologists. *Report of the RCOG working party on unplanned pregnancy.* Royal College of Obstetricians and Gynaecologists, 1991.
104. Graham A, Green L, Glasier AF. Teenagers' knowledge of emergency contraception: questionnaire survey in south east Scotland. *BMJ* 1996;312:1567-1569.
105. Reader FC. Emergency contraception. *BMJ* 1991;302:801.
106. Ziebland S, Maxwell K, Greenhall E. 'Its a mega dose of hormones, isn't it?' why women may be reluctant to use emergency contraception. *Br. J Fam Plan* 1996;22:84-86.
107. Faculty of Family Planning and Reproductive Health Care. *Emergency contraception, guidelines for doctors.* Royal College of Obstetricians and Gynaecologists, 1995.
108. Singh S, Torres A, Forrest J. The need for prenatal care in the United States; evidence from the 1980 national natality survey. *Fam Plann Perspect* 1985;17:118-124.
109. Silva M, Cabral H, B Z. Adolescent pregnancy in Portugal: effectiveness of continuity of care by an obstetrician. *Obstet Gynecol* 1993;81:142-146.
110. Stevens-Simon C. Care of pregnant teenagers in school. *J Sch Health* 1992;62:304-309.
111. Kokotailo P, Adger HJ, Duggan A, Repke J, Joffe A. Cigarette, alcohol, and other drug use by school-age pregnant adolescents: prevalence, detection, and associated risk factors. *Pediatrics* 1992;90:328-334.
112. Hodnett E. Support from caregivers for socially disadvantaged mothers. In: Enkin MW, Keirse MJNC, Renfrew MJ, Neilson JP, (eds). *Pregnancy and Childbirth Module of The Cochrane Database of Systematic Reviews, [updated 06 September 1996].* Available in The Cochrane Library [database on disk and CDROM]: The Cochrane Collaboration, Issue 3. Oxford: Update Software, 1996: Available from: BMJ Publishing Group, London.
113. Roberts I, Kramer M, Suissa S. Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *BMJ* 1996;312:29-33.
114. Panzarine S. Teen mothering: behaviors and interventions. *J Adolesc Health Care* 1988;9:443-8.
115. Oakley A, Rajan L, Turner H. *An evaluation of NEWPIN. Report of work carried out 1994-5.* Social Science Research Unit, University of London, 1995.
116. Rajan L, Turner H, Oakley A. *A study of Homestart.* Social Science Research Unit, University of London, 1996.
117. Shinman SM. *Family Health and Home-Start. Information for Commisioners and Purchasers of Family Support Services.* London: Home-Start UK, 1996.
118. NHS Centre for Reviews and Dissemination. *Review of the effectiveness of health promotion interventions aimed at reducing inequalities in health.* NHS Centre for Reviews and Dissemination, (forthcoming).
119. Darlington RB, Royce JM, Snipper AS, Murray HW, Lazar I. Preschool programs and later school competence of children from low-income families. *Science* 1980;208:202-204.
120. McKey HR, Condelli L, Ganson H, Barrett B, McConkey C, Plantz M. *The impact of Head Start on children, families and communities.* The Head Start Bureau, Administration for children, youth and families., Washington, DC: CSR incorporated, 1985.
121. Sylva K. School influences on children's development. *Journal of Child Psychology and Psychiatry and Allied Professions* 1994;35:135-170.
122. Dawson N. Educational provision for pregnant schoolgirls and schoolgirl mothers. *Teenage Parenthood Network* 1994;13:22-4.
123. Bloxham S. A case study of inter-agency collaboration in the education and promotion of young people's sexual health. *Health Educ J* 1996;55:389-403.
124. Aggleton P, Chalmers H, Daniel S. *Promoting young people's sexual health. A compendium of family planning service provision for young people.* London: Health Education Authority, 1996.
125. Di Salvo P, Skuse T. *The really helpful directory: Services for pregnant teenagers and young parents.* Brighton: Trust for the Study of Adolescence and The Maternity Alliance, 1993.
126. Walsh J. Personal Communication, 1996.
127. Jorgensen SR, Potts V, Camp B. Project taking charge - 6-month follow-up of a pregnancy prevention program for early adolescents. *FAMR* 1993;42:401-6.
128. Handler A. An evaluation of a school-based education pregnancy prevention program [PhD]. University of Illinois, 1987.
129. Allen JP, Kuperminc G, Philliber S, Herre K. Programmatic prevention of adolescent problem behaviors: the role of autonomy, relatedness, and volunteer services in the Teen Outreach Program. *Am J Community Psychol* 1994;22:617-638.
130. Slade LN. Life-outcome perceptions and adolescent contraceptive use [PhD]. Emory University, 1989.
131. Eisen M, Zellman GL, McAlister AL. A health belief model-social learning theory approach to adolescents' fertility control: findings from a controlled field trial. *Health Educ Q* 1992;19:249-62.
132. Eisen M, Zellman GL, McAlister AL. Evaluating the impact of a theory-based sexuality and contraceptive education program. *Fam Plann Perspect* 1990;22:261-71.
133. Eisen M, Zellman GL. A health beliefs field experiment: teen talk. In: Miller BC, Card JJ, Paikoff BL, Peterson JL, (eds). *Preventing adolescent pregnancy: model programs and evaluations.* Newbury Park, CA: Sage Publications, 1992:220-264.
134. Schinke SP, Blythe BJ, Gilchrist LD, Burt GA. Primary prevention of adolescent pregnancy. *Social Work with Groups* 1981;4:121-35.
135. Walker G, Vilella-Velez F. *Anatomy of a Demonstration.* Philadelphia: Public/Private Ventures, 1992.
136. Hanna KM. Effect of nurse-client transaction on female adolescents' contraceptive perceptions and adherence [Ph.D.]. University of Pittsburgh, 1990.
137. Herceg-Baron R, Furstenberg FFJ, Shea J, Harris K. Supporting teenagers' use of contraceptives: a comparison of clinic users. *Fam Plann Perspect* 1986;18:61-6.
138. Jay MS, DuRant RH, Shoffitt T, Linder CW, Litt IF. Effect of peer counselors on adolescent compliance in use of oral contraceptives. *Pediatrics* 1984;73:126-131.
139. Miller BC, Norton MC, Jenson GO, Lee TR, Christopherson C, King PK. Impact evaluation of facts and feelings - a home-based video sex-education curriculum. *FAMR* 1993;42:392-400.

The Research Team:

This bulletin is based on a review carried out by researchers at the University of York. A full version of this review can be purchased as a CRD report from the Publications Office at the NHS Centre for Reviews and Dissemination, University of York.

The review, analysis and production was carried out by:

- Rumona Dickson
- Deirdre Fullerton,
- Alison Eastwood
- Trevor Sheldon
- Frances Sharp
- Information Staff of CRD

The *Effective Health Care* bulletins are based on a systematic review and synthesis of research on the clinical effectiveness, cost-effectiveness and acceptability of health service interventions. This is carried out by a research team using established methodological guidelines, with advice from expert consultants for each topic. Great care is taken to ensure that the work, and the conclusions reached, fairly and accurately summarise the research findings. The University of York and the University of Leeds accept no responsibility for any consequent damage arising from the use of *Effective Health Care*.

Acknowledgements:

Effective Health Care would like to acknowledge the helpful assistance of the following, who commented on text:

- John Ashton, NHS Executive North & West
- Mark Baker, N Yorkshire HA
- Jenny Carpenter, Health Care Directorate, NHS Executive
- Judith Corlyon, National Children's Bureau
- Michael Drummond, University of York
- Jane Emminson, Wolverhampton Health Executive
- Alison Evans, Wakefield HA
- Anna Glasier, Edinburgh Healthcare NHS Trust
- Alison Hadley, Brook Advisory Centre
- Janet Harris, University of Hull
- Anthony Hopkins, Royal College of Physicians
- Allen Hutchinson, East Riding HA
- Liz Kernohan, Bradford HA
- Douglas Kirby, ETR Associates
- Aidan MacFarlane, Oxfordshire HA
- Kathie Marfell, Bradford HA
- Liza Miller, Social Worker
- Paul O'Brien, Parkside Health NHS Trust
- Stephen Peckham, Institute for Health Policy Studies, University of Southampton
- Caroline Ray, Sex Education Forum
- Helen Roberts, Barnardos Policy and Development Unit
- Adrian Sieff, DoH
- Connie Smith, Parkside Health NHS Trust
- Bob Smith, Wakefield HA
- Sarah Stewart Brown, Health Services Research Unit, University of Oxford
- Joan Walsh, Family Planning Association, London
- Kay Wellings, London School of Hygiene & Tropical Medicine
- Daniel White, MRC Medical Sociology Unit, Glasgow
- Glennis Whyte, Leeds HA

Effective Health Care Bulletins

Vol. 1

1. Screening for osteoporosis to prevent fractures
2. Stroke rehabilitation
3. The management of subfertility
4. The treatment of persistent glue ear in children
5. The treatment of depression in primary care
6. Cholesterol: screening and treatment
7. Brief interventions and alcohol use
8. Implementing clinical practice guidelines
9. The management of menorrhagia

Vol. 2

1. The prevention and treatment of pressure sores
2. Benign prostatic hyperplasia
3. Management of cataract
4. Preventing falls and subsequent injury in older people
5. Preventing unintentional injuries in children and young adolescents
6. The management of breast cancer
7. Total hip replacement
8. Hospital volume and health care outcomes, costs and patient access

Subscriptions and enquiries:

Effective Health Care bulletins are published in association with Churchill Livingstone. The Department of Health funds a limited number of these bulletins for distribution to decision makers. Subscriptions are available to ensure receipt of a personal copy. 1997 subscription rates, including postage, for bulletins in Vol. 3 (6 issues) are: £42/$63 for individuals, £68/$102 for institutions. Individual copies of bulletins from Vol. 1 and Vol. 2 are available priced £5/$8 and from Vol.3 priced £9.50/$15. Discounts are available for bulk orders from groups within the NHS in the UK and to other groups at the publishers discretion.

In addition, paying subscribers to the new series are entitled to purchase a complete set of the bulletins from Vol. 1 (Nos. 1–9) for £25, from Vol. 2 (Nos 1–8) for £35 and from both Volumes for £40, including a binder in each instance.

Please address all orders and enquiries regarding subscriptions and individual copies to Subscriptions Department, Pearson Professional, PO Box 77, Fourth Avenue, Harlow CM19 5BQ (Tel: +44 (0) 1279 623924, Fax: +44 (0) 1279 639609). Cheques should be made payable to Pearson Professional Ltd. Claims for issues not received should be made within three months of publication of the issue.

Enquiries concerning the content of this bulletin should be addressed to NHS Centre for Reviews and Dissemination, University of York, York YO1 5DD; Fax (01904) 433661 email revdis@york.ac.uk

The NHS Centre for Reviews and Dissemination is funded by the NHS Executive and the Health Departments of Scotland, Wales and Northern Ireland; a contribution to the Centre is also made by the University of York. The views expressed in this publication are those of the authors and not necessarily those of the NHS Executive or the Health Departments of Scotland, Wales or Northern Ireland.

Printed and bound in Great Britain by Latimer Trend & Company Ltd., Plymouth. Printed on acid-free paper. ISSN: 0965-0288