Preventing unintended pregnancy: the cost-effectiveness of three methods of emergency contraception

Trussell J, Koenig J, Ellertson C, Stewart F

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Three strategies for the prevention of an unintended pregnancy after sexual intercourse: (1) emergency contraceptive pills (one dose within 72 hours after unprotected intercourse and another dose 12 hours later); (2) minipills (one dose within 48 hours after unprotected intercourse and another dose 12 hours later); or (3) the copper-T intrauterine device (IUD) (only as an emergency contraceptive inserted up to 7 days after unprotected intercourse and then removed). The strategies in question were studied in the framework of two different protocols for delivering emergency contraception: (1) provision following unprotected intercourse, (2) advance provision of emergency contraceptive pills.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Women requiring emergency contraception.

Setting
General practice. The economic study was carried out in the USA.

Dates to which data relate
Effectiveness data were based on published studies from the period 1990 to 1996. No dates were reported for resource use data since they were based on assumptions made by the authors. The price years were 1991 and 1993.

Source of effectiveness data
Effectiveness data were derived from a review of the literature.

Outcomes assessed in the review
The following outcomes were assessed in the review: the effectiveness of emergency contraceptive pills, minipills, and IUD; percentage of unintended pregnancies which are unwanted; incidence of uterine perforation for the copper-T IUD; and annual probability of failure during typical use of contraceptive methods other than condoms.

Study designs and other criteria for inclusion in the review
One randomized trial comparing minipills and emergency contraceptive pills and a review of 10 clinical trials addressing the effectiveness of emergency contraceptive pills were identified. No further information was given.
regarding the designs of other studies included in the review.

Sources searched to identify primary studies
Not reported.

Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
A total of 7 studies, including one randomised trial and one study consisting of a review of 10 clinical trials were included in the review.

Methods of combining primary studies
Not reported.

Investigation of differences between primary studies
Not reported.

Results of the review
The results were as follows:

effectiveness of emergency contraceptive pills, 74%;

effectiveness of minipills, comparable with emergency contraceptive pills, 74%;
effectiveness of IUD, 99%;
percentage of unintended pregnancies which are unwanted, 31%;
incidence of uterine perforation for the copper-T IUD, 0.06%; and
annual probability of failure during typical use of contraceptive methods other than condoms, 0.21.

Measure of benefits used in the economic analysis
The number of pregnancies avoided per 1000 women treated was the benefit measure used in the economic analysis.

Direct costs
Costs were discounted. Some quantities were reported separately from the costs. Cost items were reported separately. Cost analysis covered the costs of treatment (including office visit, drugs, insertion of IUD, IUD device, and treatment of uterine perforation) and the costs of unintended pregnancy. The perspective adopted in the cost analysis was that of the service providers. The costing was based on two health care delivery systems: private managed care and publicly funded programmes. Resource use data were based on the authors' assumptions. The sources of cost data were Medstat Systems, Inc (Ann Arbor, Mich) covering the payment data from large employers from 45 major metropolitan areas for private managed care and fee schedules and statistics for Medi-Cal, the California Medicaid programme for publicly
funded programmes. The cost analysis was based on two sets of assumptions regarding the costs of unintended births; in
the first set of assumptions (averted-birth model), the full costs of unintended births, both unwanted and mistimed,
were considered; while in the second set of assumptions (delayed-birth model), it was assumed that women with timing
failures (69% of total unintended pregnancies) would choose to become pregnant 2 years later. The dates to which the
price data referred were 1991 and 1993.

**Indirect Costs**
Not considered.

**Currency**
US dollars ($).

**Sensitivity analysis**
A set of one-way sensitivity analyses was performed on the frequency of the use of emergency contraceptive pills (after
all and after three quarters of all detectable unprotected intercourse), the costs of office visits, and the number of pills
prescribed.

**Estimated benefits used in the economic analysis**
The number of pregnancies per 1000 women treated was 19 with emergency contraceptive pills versus 72 with the
policy of no intervention, leading to a total of 53 pregnancies avoided. Minipills were reported to have comparable
effectiveness with emergency contraceptive pills. The number of pregnancies per 1000 women treated with IUD was 1
at most, yielding a total of 71 pregnancies avoided.

**Cost results**
The discount rate was 5%. In the framework of provision following unprotected intercourse, the strategy of using
emergency contraceptive pills (ECPs) was associated with a cost saving of $142 (averted-birth model) and $29 (delayed-
birth model) in the managed care setting versus $119 (averted-birth) and $6 (delayed birth) for minipills and -$123 (net
cost and not saving; averted-birth) and -$275 (delayed birth) for IUD, respectively. The corresponding values in the
public payer setting were $54 and $6 for ECPs versus $29 and -$19 for minipills and -$53 and -$117 for IUD. In the
framework of advance provision of emergency contraceptive pills, cost saving ranged from $263 when male condom
was used as a normal contraceptive method to $498 when female condom was used (based on the assumptions of
averted-birth model in managed care settings). This compared to $72 and $165 in the delayed-birth model. The
corresponding values in public payer settings were $99 (male condom) and $205 (female condom) the averted-birth
model versus $19 (male condom) and $65 (female condom) in the delayed-birth model.

**Synthesis of costs and benefits**
Costs and benefits were not combined since the methods of emergency contraception were associated with cost savings
and positive benefits (extended dominance). Sensitivity analysis showed that the use of minipills could become cost-
effective even in least favourable assumptions if the cost of office visits were eliminated.

**Authors' conclusions**
Emergency contraception is cost-effective whether provided when the emergency arises or in advance to be used as
needed.

**CRD COMMENTARY - Selection of comparators**
The reason for the choice of 'do nothing' as the comparator was clear. However, it was not explicitly stated in the paper.
Validity of estimate of measure of benefit
It is difficult to judge the internal validity of the estimates of the benefit measure as insufficient details about the methods of the literature review were provided.

Validity of estimate of costs
Some quantities were reported separately from the costs and adequate details of methods of cost estimation were given. As a result of underestimation of direct and social cost of unintended births, as the authors acknowledged, the internal validity of the cost results cannot be guaranteed. A 5% discount rate was used in the analysis, which might differ from the rate used in other countries. Cost results may not be generalisable to other settings or countries.

Other issues
The authors’ conclusion may not to be fully justified given the lack of information presented about the methods of the literature review, and the absence of extensive sensitivity analyses. It is difficult to judge whether data have been used selectively. The issue of generalisability to other settings or countries was not addressed. Appropriate comparisons were made with other studies. Incremental cost-effectiveness analysis could have been applied to compare the three methods with each other.

Implications of the study
Greater use of emergency contraception could reduce the considerable medical and social costs of unintended pregnancies.

Source of funding
Supported in part by grants from The Andrew W Mellon Foundation and the Summit Charitable Foundation.

Bibliographic details

PubMedID
9224172

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Contraceptives, Oral, Hormonal /economics; Contraceptives, Postcoital /economics; Cost-Benefit Analysis; Emergencies; Female; Humans; Male; Managed Care Programs; Pregnancy; Pregnancy, Unwanted; Public Sector; United States

AccessionNumber
21997008229

Date bibliographic record published
31/10/2000

Date abstract record published