

# **1 INTRODUCTION AND METHODOLOGY**

## **1.1 Introduction**

Induced abortion is one of the commonly performed gynaecological procedures in Singapore and the world over. In Singapore, every year there are on an average 40,000 to 50,000 deliveries. At the same time there are 13,000-15,000 induced abortions being carried out. In other words, approximately one fourth of the pregnancies are being terminated at different gestation for various indications and by different methods. These procedures are not without risks and complications. Therefore, the clinical practice guidelines have been developed in relation to care and safety of women seeking abortion.

## **1.2 Aim of the guidelines**

Clinical guidelines are systematically developed statements which assist clinicians and patients in making decisions about appropriate treatment for specific conditions.<sup>1</sup> The aim of this guidelines is to ensure that all women considering induced abortion have access to a service of uniformly high quality. It is hoped that the guidelines will be implemented across all relevant healthcare sectors and will promote a consistent standard, regardless of the sector in which an individual woman is managed.

## **1.3 Who has developed the guidelines**

The guidelines were developed by a working group of Obstetricians and Gynaecologists from all the restructured hospitals and the private hospitals. The group was convened by the Chapter of Obstetricians and Gynaecologists, Academy of Medicine, Singapore. The workgroup was of the opinion that individual interests did not conflict with the guideline development process.

## **1.4 Target group**

These guidelines have been developed for all practising Obstetricians and Gynaecologists in Singapore and may serve as a reference for other professional groups who share in caring for women considering induced abortion.

## **1.5 Methods used in the development of these guidelines**

- **Literature search strategy (Appendix 1)**
- **Levels of evidence and grades of recommendations**

The definition of the types of evidence used in this guideline originate from the US Agency for Health Care Policy and Research<sup>2</sup> (Table 1).

Recommendations were based on, and explicitly linked to the evidence that supports them. Recommendations were derived from available research evidence using consensus methods. Where there were areas without available research evidence, consensus was again used.

**Table 1: Levels of evidence**

Level	Type of Evidence
Ia	Evidence obtained from meta-analysis of randomised trials.
Ib	Evidence obtained from at least one randomised controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study, without randomisation.
IIb	Evidence obtained from at least one type of well-designed quasi-experimental study.
III	Evidence obtained from well designed non-experimental descriptive studies such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and / or clinical experiences of respected authorities.

*The recommendations were then graded according to the level of evidence upon which they were based.*

**Table 2: Grades of recommendation**

Grade	Recommendation
<b>A</b> (Evidence levels Ia, Ib)	Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.
<b>B</b> (Evidence levels IIa, IIb, III)	Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.
<b>C</b> (Evidence level IV)	Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality.
<b>✓</b> (Good practice points)	Recommended best practice based on the clinical experience of the guideline development group.

## **2 ABORTION LAW AND REGULATION IN SINGAPORE**

### **2.1 The abortion act**

In Singapore, termination of pregnancy was first legally approved to be carried out only in government hospitals in early 1970. Present day regulation of termination of pregnancy is based on the Termination of Pregnancy Act first approved in 1974 and further revised in 1985 and 1999 respectively. In this regulation only a licensed medical practitioner with the necessary qualifications is allowed to perform termination of pregnancy up to 24 weeks gestation in an approved institution.

- **Authorised medical practitioner**

- a. A medical practitioner who after being registered under the Medical Registration Act and has had twenty four months experience or such period as the Health Minister may determine in an Obstetrics and Gynaecological unit of a hospital recognised by the Minister may apply to the Minister for an authorisation to carry out treatment to terminate any pregnancy which is not more than 16 weeks duration.
- b. A medical practitioner who holds the degree of M.Med (O&G) or a member or fellow of the Royal College of Obstetricians & Gynaecologists may apply to the Minister for an authorisation to carry out treatment to terminate any pregnancy which is not more than 24 weeks.

- **Medical practitioner in restructured hospitals**

Each medical practitioner practising in a restructured hospital who applies to the Minister for authorisation to carry out treatment to terminate pregnancy shall be approved to carry out treatment for termination of pregnancy at that restructured hospital only.

- **Medical practitioner in private practice**

Each medical practitioner in private practice who applies to the Minister for authorisation to carry out treatment to terminate pregnancy shall be approved to carry out treatment for the termination of pregnancy at only one specific clinic. However, where such an authorised medical practitioner is also accredited to work in a hospital approved to carry out treatment for the termination of pregnancy, the medical practitioner may also perform such treatment at that approved hospital.

- **Approved institution**

An approved institution must maintain its premises in a reasonable state of cleanliness and to provide a qualified medical practitioner, a nurse and a trained counsellor. Where general anaesthesia is to be induced, an anaesthetist must be engaged during the procedure of termination of the pregnancy.

The guidelines on requirements for premises to be used for the treatment to terminate a pregnancy are available from the Health Ministry. The approval of any institution, hospital, maternity home, clinics and other places as approved institution shall be made to the Minister on an approved form.

- **Mandatory counselling**

Every approved institution shall have amongst its personnel at least one doctor or nurse who has undergone a course of training in termination of pregnancy counselling conducted by the Director of Medical Services.

Pre-abortion counselling must be provided for each woman, married or single who:

- a. is a Singapore citizen or permanent resident.
- b. has passed the primary school leaving examination
- c. has at least some secondary education and
- d. has less than three children

The Act requires the pregnant women to sign a declaration that she has been counselled and that at least 48 hours should lapse after pre-abortion counselling before the pregnant woman can give her written consent to treatment.

It is mandatory to refer an unmarried girl below 16 years of age for pre-abortion counselling at the Institute of Health Counselling Centre (IOH) when she seeks treatment to terminate pregnancy. A certificate of Attendance (COA) will be issued to her by IOH. No termination of pregnancy can be performed unless the girl produces the COA.

Each authorised medical practitioner shall provide counselling to a woman who has her pregnancy terminated. Such counselling should be given on the day when the abortion procedure is carried out.

All authorised medical practitioners must complete and submit the report on request for the treatment to terminate pregnancy to the Director of Medical

Services within 30 days of the pre-treatment of pregnancy counselling if no treatment to terminate a pregnancy is carried out on a pregnant woman or within 30 days of the post-termination of pregnancy counselling if treatment to terminate pregnancy is carried out on the pregnant women.

## **2.2 Person qualified to undergo termination of pregnancy in Singapore**

- a. a citizen of Singapore or the wife of a citizen of Singapore.
- b. a holder or the wife of a holder of a work permit pass or employment pass (excluding temporary work permit).
- c. a person who has been resident in Singapore for at least 4 months.  
If a person does not qualify under any of the above three criteria, termination of pregnancy cannot be performed even on medical grounds eg for gross fetal malformation unless it is immediately necessary to save the life of the pregnant woman.

## **2.3 Indications for abortion**

- a. unwanted pregnancy as requested by the pregnant mother for whatever reason.
- b. abnormal fetus not compatible with life irregardless of gestational age.
- c. medical condition that will endanger the life of the pregnant mother irregardless of gestational age.
- d. mental disability that will affect the mental / physical health of the pregnant mother.

## **3 ORGANISATION OF SERVICES**

### **3.1 Recommendations**

The recommendations in this section are all good practice points. They are based on the consensus view of the workgroup and practices in other countries.<sup>1</sup>

- Abortion services should have in place strategies to provide information to both women and healthcare professions in the choices available with the service and in routes of access to the service.
- Abortion information and support should be available for those who consider but do not proceed to abortion.

- ✓ In the absence of specific medical or social contraindications, induced abortion may be managed on a day-case basis.

### **3.2 Evidence for recommendations**

The aim of an abortion service is to provide high quality, efficient, effective and comprehensive care which respects the dignity, individuality and rights of women to exercise personal choice over their treatment.

Day case care is recognised as a cost effective model of service provision. The availability of abortion as a day-case procedure can minimise disruption to the lives of women and their families.

Reasons why women might require to undergo induction abortion as in-patients rather than day-cases include:

- medical problems requiring anaesthetic assessment prior to procedure.
- social indication such as lack of an adult companion at home.
- patient choice.
- planned day-cases requiring overnight stay because of surgical or medical problem.

## **4 INFORMATION FOR WOMEN**

### **4.1 Information**

It is important that all verbal information shared in the initial consultation is backed up by good, accurate important written information that is easy to understand and well presented. It has generally been found that patients want to receive written information about medical and surgical interventions and that patients given written information are more likely to express satisfaction with the patient-doctor relationship<sup>3-5</sup>. Consideration should also be given to providing the information in languages to suit racial representation.

Professionals involved in abortion care should be equipped to provide women with information relating to the following topics:

- abortion is generally safe and complications are uncommon.
- description of methods of abortion available appropriate at her particular gestation.

- c. immediate complications including:
  - haemorrhage requiring blood transfusion.
  - uterine perforation which may require immediate abdominal surgery.
  - cervical lacerations which may require suturing.
  - anaesthetic complications.
- d. complications in the early weeks following abortion including:
  - incomplete abortion requiring re-evacuation.
  - continuing pregnancy.
  - pelvic infection.
  - short-term emotional distress.
  - ectopic pregnancy.
- e. long term effects of abortion (which are rare or unproven) including:
  - infertility.
  - psychological sequelae.

The following represents a summary based on a literature review of currently available evidence relating to significant sequelae of, and putative associations with interval abortion.

- B** Haemorrhage at the time of abortion is rare. It complicates around 1.5/1000 abortions overall. The rate is lower for early abortions (1.2/1000 at < 13 weeks; 8.5/1000 at > 20 weeks).<sup>6</sup>
- B** Uterine perforation at the time of surgical abortion is rare. The incidence is of the order of 1-4 per 1000<sup>6-15</sup>. The rate is lower for abortions performed early in pregnancy and performed by experienced clinicians.
- B** Cervical trauma: the rate of damage to the external cervical os at the time of surgical abortion is no greater than 1%.<sup>7, 9, 11, 16, 17</sup>

- B** Failed abortion: all methods of first trimester termination carry a risk of failure to terminate the pregnancy, thus necessitating a further procedure. The rate for surgical abortion is around 2.3/1000<sup>18</sup> and for medical abortion around 6.0/100<sup>19</sup>.
- B** Post abortion infection: genital tract infection of varying degrees of severity, including pelvic inflammatory disease, occurs in up to 10% of cases.<sup>19-25</sup> The risk is reduced when prophylactic antibiotics are given or when lower genital tract infection has been excluded by bacteriological screening.<sup>26-31</sup>
- B** Future reproductive outcome: there are no proven associations between induced abortion and subsequent infertility<sup>32-35</sup> or preterm delivery.<sup>36-39</sup>
- B** Psychological sequelae: only a small minority of women experience any long term adverse psychological sequelae after abortion. Early distress, although common is usually a continuation of symptoms present before the abortion. Conversely, long- lasting negative effects on both mother and children are reported where abortion has been denied.<sup>40</sup>

## **5 PRE-ABORTION MANAGEMENT**

### **5.1 Blood tests**

#### ***Recommendations***

- C** Pre-abortion assessment should include:
- determination of ABO and Rhesus blood groups.
  - haemoglobin concentration measurement if clinically indicated.
- B** It is not cost effective routinely to cross-match women undergoing termination of pregnancy.

#### ***Evidence for recommendations***

Routine pre-operative testing found that haemoglobin is lower than 10gm/dl in less than 5% of patients.<sup>41</sup> However due to the nature of surgical abortion and the possibility of excessive blood loss, routine haemoglobin estimations are ideal.<sup>41</sup>

Pre-abortion ascertainment of the woman's ABO and Rhesus blood group should be carried out in order that Anti-D can be instituted to rhesus negative women undergoing induced abortion.<sup>42</sup>

Abortion statistics in United Kingdom reveal that in 1998, only 0.2% of women required blood transfusion. It concluded that it is not cost-effective to request cross-matched blood routinely to women undergoing abortion.<sup>43</sup> This would also be the situation in Singapore where a blood bank is available in close proximity and the most cost-effective strategy for those very rare instances where blood transfusion is required is simply to initiate cross-matching on the basis of a newly submitted specimen of the woman's blood as when the need arises.

## **5.2 Ultrasound screening**

### ***Recommendations***

- C** Ultrasound scanning is not considered to be an essential pre-requisite of abortion in all cases. However, when surgical abortion is being considered < 7 weeks gestation and where gestation is in doubt or where extrauterine pregnancy is suspected, ultrasound scanning should be done.

### ***Evidence for recommendations***

Evidence from observational studies indicate that while ultrasound may be useful in pre-abortion assessment, its use was not mandatory in all cases. However, there must be access to appropriate ultrasound facilities if it is necessary to establish gestational age, viability and site.<sup>44-46</sup>

## **5.3 Prevention of infective complications**

### ***Recommendations***

- A** Abortion care should encompass a strategy for minimising the risk of post abortion infective morbidity. In high risk patients, clinicians should consider prophylactic antibiotics or screening for lower genital organisms with treatment of positive cases.

### ***Evidence for recommendations***

Genital tract infection, including pelvic inflammatory disease (PID) is a recognised complication of abortion. Incidence rates among the control groups in trials of prophylactic antibiotics for abortion suggest that infective complications occur in up to 10% of cases.<sup>20-25</sup> Post abortion infection may result in the long term sequelae of tubal infertility or ectopic pregnancy<sup>20</sup> as well as carry morbidity in the immediate post abortion period.

Sawaya et al<sup>26</sup> in a meta- analysis of randomised trials demonstrated that the

use of antibiotic prophylaxis at the time of abortion is associated with a reduction in the risk of subsequent infective morbidity by around 50%. Other authors have suggested that bacteriological screening of the lower genital tract before abortion with treatment of those found to be carrying genital tract organisms would be a more appropriate strategy.<sup>21, 27-31</sup>

Penny et al<sup>47</sup> compared prophylaxis and a 'screen and treat' strategy in terms of both clinical and cost effectiveness in a randomised trial. The results indicated that universal prophylaxis treating is at least as effective as a policy of 'screen and treat' in minimising short term infective sequelae of abortion and can be provided at a cost of less than half of screening with treatment and follow-up of positive cases.

Metronidazole and Doxycycline is effective prophylaxis against chlamydia trachomatis and bacterial vaginosis<sup>48</sup>.

## **6 FIRST TRIMESTER TERMINATION OF PREGNANCY**

### **6.1 Methods for women presenting at under 7 weeks gestation**

#### *Recommendations*

- B** Early surgical abortion is an appropriate method for gestations of < 7 weeks where there is preabortion ultrasound confirmation of a viable intrauterine pregnancy, confirmation of products of conception at aspiration or ultrasound confirmation of complete evacuation after the procedure. In such instances, products of conception need not necessarily be sent for histological examination.
- B** \*Medical abortion using mifepristone plus prostaglandin or misoprostol (prostaglandin E1 analogue) alone is an appropriate method for gestations of < 8 weeks.
- B** Misoprostol (a prostaglandin E<sub>1</sub> analogue), given vaginally is a cost-effective alternative for all abortion procedures for which the E<sub>1</sub> analogue, gemeprost is conventionally used (early medical abortion, cervical priming, mid-trimester medical abortion).

*\* However currently mifepristone is unavailable for use in Singapore*

#### ***Evidence for recommendations***

Surgical vacuum aspirations performed at less than 7 weeks gestation are three times more likely to fail to remove the gestation sac than those performed between 7-12 weeks<sup>48-49</sup> (Level IIb). Thus for women presenting at less than 7

weeks gestation, an alternative recommended technique should ideally be chosen.

Medical abortion may be considered at these earlier stages of pregnancy <sup>50</sup> (Level IIb). Combined mifepristone/prostaglandin regimens are recommended. <sup>51</sup> Mifepristone or RU486 administered as a single 600mg oral dose followed 36-48 hours by a prostaglandin analogue such as gemeprost 1mg vaginally is recommended in the manufacturer's data sheet. However evidence from a randomised trial (Level Ib) indicates that a dose of 200mg has similar efficacy when compared with 400mg or 600mg. <sup>52</sup>

The conventional PGE<sub>1</sub> analogue gemeprost is a 1mg pessary used for mid-trimester abortion is effective for early medical abortion and cervical priming. A series of studies has demonstrated that misoprostol, an alternative E<sub>1</sub> analogue, is also effective in all these contexts. <sup>53-59</sup> Moreover, misoprostol is also more effective if administered vaginally rather than orally. <sup>53-59</sup> This indeed is useful as misoprostol costs around Singapore \$0.80 per dose as compared to Singapore \$51 per dose for gemeprost; secondly misoprostol can be stored at room temperature without refrigeration.

The use of misoprostol tablets for abortion procedures by the vaginal route constitutes an unlicensed indication and route of administration. However the EC Pharmaceutical Directive 65/65/EEC <sup>60</sup> specifically permits doctors to use licensed medicine for indications or in doses or by routes of administration outside the recommendations given in the licence. This is endorsed in recent articles in Drug and Therapeutic Bulletin 61 and Prescriber's Journal <sup>62</sup>. Patients should be properly informed before a drug is prescribed for an unlicensed indication. This would be of particular importance if there is even a small risk of ongoing pregnancy.

In many countries, RU 486 or mifepristone will never be available due to stringent government control. In Singapore, Singh et al <sup>63</sup> in a recent study have demonstrated the efficacy of intravaginal misoprostol alone given for medical abortion up to 8 weeks. A loading dose of 800µg misoprostol was given vaginally. This was followed by three further doses of 400µg of misoprostol at three hourly intervals. With this regime of intravaginal misoprostol over nine hours, medical abortion was achieved in 96% of the women with minimal side effects. There was also a significant drop in the mean and median serum beta hCG levels at two weeks post abortion.

Creinin and Edwards <sup>64</sup> in a personal series (Level III) of early surgical abortions have reported a complete abortion rate of over 99% in 2399 procedures performed at <6 weeks gestation using a rigorous published protocol. This includes ultrasound confirmation of gestational sac, inspection of aspirate

products and follow-up by serum beta hCG estimation. However other than this study, there have been no other randomised controlled trials comparing early surgical abortion with the contemporary methods of medical abortion.

## **6.2 Methods for women presenting between 7 and 14 weeks gestation**

### ***Recommendations***

- B** Vacuum aspiration is an appropriate method at gestations of 7-14 weeks, though individual specialists may prefer to offer medical abortion at gestation above 12 weeks. Products of conception removed in a confirmed viable intrauterine pregnancy need not necessarily be sent for histological examination.
- B** Suction termination can be done safely under local or general anaesthesia.
- A** Medical abortion using combined regimens continues to be an appropriate method for women in the 7-9 weeks gestation band.
- B** Medical abortion using misoprostol alone is an appropriate method for women up to 8 weeks gestation.

### ***Evidence for recommendations***

In current practice, surgical vacuum aspiration is the standard method at gestations of 7-12 weeks. However there is evidence that medical abortion is also effective at these gestations especially in the 7-9 weeks band.<sup>63, 65</sup>

The method of choice at gestation of 12-14 weeks varies according to the preferences and expertise of the clinician. Surgical abortion by conventional vacuum aspiration, without the need for specialised instruments, can be undertaken up to 14 weeks gestation. Alternatively medical abortion using mifepristone/prostaglandin is appropriate at all gestations after 12 weeks.

In cases where a viable intra-uterine pregnancy is confirmed by ultrasound scan before termination of pregnancy, the products of conception removed at vacuum aspiration need not necessarily be sent for histological examination.

A number of observational and partially randomised studies have investigated the safety of vacuum aspiration performed with either local or general anaesthesia. Evidence to date seem to suggest that local anaesthesia appears to be safe, efficacious, less expensive with a relatively lower risk of complications when compared to procedures performed under general anaesthesia.<sup>66-68</sup>

## **7 PRE-OPERATIVE CERVICAL PREPARATION FOR SURGICAL TERMINATION OF PREGNANCY**

### **7.1 Recommendations**

- B** Cervical priming is beneficial before surgical vacuum aspiration and therefore should be considered when clinically indicated such as when difficulty in cervical dilatation is expected eg nulliparae or higher gestation.
- A** Prostaglandin analogues are the most effective cervical priming agents currently and are able to reduce short term complications of vacuum aspiration.
- A** Gemeprost is the commercially available prostaglandin pessary. Misoprostol, a prostaglandin E<sub>1</sub> analogue is shown to be a cost effective alternative. The vaginal route for misoprostol is preferred over the oral route due to lower incidence of side effects and increased effectiveness.

### **7.2 Evidence for recommendations**

Cervical dilatation is a critical step in surgical vacuum aspiration. Technically difficult dilatations are associated with increased risks of haemorrhage, incomplete evacuation and uterine perforation. <sup>69</sup> (Level III)

Risk factors include young patient age for cervical damage <sup>70</sup> (Level III) and increasing gestation for uterine perforation. <sup>71</sup> (Level III)

Cervical priming prior to surgical termination reduces the risks of cervical injury and uterine perforation <sup>70-72</sup> by making the cervix softer and easier to dilate and is therefore recommended, for the high risk groups.

Several randomised trials have demonstrated that routine cervical priming with prostaglandins significantly reduces the risk of short term complications of vacuum aspiration. <sup>73-77</sup>

Gemeprost is the conventional PGE<sub>1</sub> analogue that is currently commercially available. Misoprostol, an alternative E<sub>1</sub> analogue is set to substitute gemeprost as a cost effective alternative. <sup>57,78-87</sup> The vaginal route for misoprostol is preferred over the oral route due to lower incidence of side effects and increased effectiveness for larger pregnancies. <sup>84-87</sup>

### ***Published regimens for cervical priming***

- Gemeprost 1 mg vaginally, 3 hours prior to surgery.
  - Misoprostol 400µg (2 x 200µg tablets), 3 hours prior to surgery either vaginally (preferred) or orally.
- \* Regimens are unlicensed as discussed above and patients should be counselled that due to the potential of fetal teratogenesis, it is not recommended to continue with a pregnancy once misoprostol has been administered.

## **8 SECOND TRIMESTER TERMINATION OF PREGNANCY**

### **8.1 Recommendations**

**B** \* For women beyond 12 weeks gestation, medical abortion with mifepristone followed by prostaglandin has been shown to be safe and effective.

**A** Mid-trimester abortion by dilatation and evacuation (D&E), preceded by cervical preparation, is safe and effective when undertaken by specialists with access to the necessary instruments.

**B** Surgical evacuation of the uterus is not required routinely following mid-trimester medical abortion. It should be undertaken if there is clinical evidence that the abortion is incomplete.

*\* However currently mifepristone is not available for use in Singapore*

**✓** Locally most clinicians would use prostin or gemeprost pessaries or intramniotic carboprost.

### **8.2 Evidence for recommendations**

Second trimester medical abortion with mifepristone followed by a prostaglandin is effective and is associated with shorter induction-abortion intervals than methods using prostaglandin alone, or supplemented by oxytocin infusion.<sup>88-89</sup> The gestation at which specialists adopt medical rather than surgical abortion will vary with individual preference and expertise. Some may choose to use medical methods for all women at gestations above 12 weeks, whereas others will have the experience and technical competence to perform surgical abortion up to 14 weeks gestation.

Medical abortion remains a method of choice and generally combined mifepristone/prostaglandin regimens are recommended below.<sup>59, 89-109</sup>

In the non availability of mifepristone, Dinoprostone, a PGE<sub>2</sub> analogue (Prostin) approved by the Food and Drug Administration in the United States as an abortifacient may be considered.<sup>110-111</sup> The recommended dosing regimen of Prostin for second trimester termination is 3mg administered as an intravaginal pessary every 3 to 4 hours with a maximal exposure of 24 hours. This results in a mean induction-to-delivery intervals of 9 to 14 hours.<sup>97-109</sup> Gemeprost, PGE<sub>1</sub> analogue may also be used and the induction to delivery interval ranges from 15 to 17 hours.<sup>95, 98, 108, 112</sup> As mentioned earlier, for all abortion procedures for which gemeprost is conventionally used including mid-trimester pregnancy termination, misoprostol given vaginally provides a cost-effect alternative. Intra-amniotic Carboprost, a PGE<sub>2</sub> alpha analogue is also known to be effective. For gestations up to 18 weeks the usual dose is 1mg; for gestations between 18-22 weeks the dose is 1.25mg and for gestations beyond 22 weeks the dose is 1.5mg. These doses could be repeated 24 hours later to a maximum of 2 doses.

Surgical evacuation of the uterus is not required routinely following mid-trimester medical abortion. In a large series of 500 cases of mid-trimester abortion<sup>113</sup> only 9.4% of cases needed surgical evacuation following medical abortion.

Contemporary methods of mid-trimester medical abortion have not been compared with dilatation and evacuation (D&E) by means of a randomised trial. However, it has been demonstrated by a small randomised control trial<sup>90</sup> and a large observational study<sup>91</sup> that D&C is safer than older instillation methods of mid-trimester medical abortion. It is stressed that D&E can be undertaken only by gynaecologists who have been trained in the technique, have the necessary instruments and have a case-load sufficient to maintain their skills. For gynaecologists lacking the necessary expertise and case-load, mid-trimester medical abortion may be appropriate.

Hysterotomy or hysterectomy is rarely indicated because of the increased risk, but may be required after failed medical abortion when D&E cannot be safely performed eg multiple obstructing myomas, with pelvic peritoneal malignancy or after an abdominal cerclage.

## **9 MANAGING COMPLICATIONS OF ABORTION**

### **9.1 Recommendations**

- Oxytocics are effective in reducing intra-operative blood loss.
- In cases of suspected uterine perforation, laparoscopy is the investigation of choice.

## 9.2 Evidence for recommendations

Two randomised controlled trials have looked at the role of oxytocics during surgical abortion have shown a significant reduction in immediate blood loss<sup>114,115</sup> Syntometrine appears to be more effective than oxytocin or ergometrine alone.<sup>114</sup>

The rate of serious sequelae as a result of uterine perforation is generally low and thus a conservative approach would be satisfactory.<sup>9-11</sup> However when a serious complication is suspected, laparoscopy would confirm the presence of a perforation and may be of use in deciding whether a more formal surgical laparotomy is needed. If bowel injury is excluded, one should continue with the termination of pregnancy under laparoscopic guidance.

In all cases meticulous attention should be paid to post-operative complications and suspicion of infective sequelae treated promptly.

## 10 AFTER CARE

### 10.1 Recommendations

- B** Anti-D Ig G should be given to all non-sensitised Rhesus negative women following abortion, whether by surgical or medical methods and regardless of gestational age.
- ✓** After an abortion, women must be informed of the symptoms they may experience and a list of those that would make an urgent medical consultation necessary. Clinical assessment and emergency gynaecological admission must be available when necessary.
- C** Referral for further counselling should be available for the small minority of women who experience long term postabortion distress. Risk factors are ambivalence before the abortion, lack of supportive partner, or a psychiatric history.
- B** During the first follow-up following abortion, future contraception should be discussed with each patient and contraceptive supplies offered if required. The chosen method of contraception should be initiated immediately following abortion.
- B** Sterilisation can safely be performed at the time of induced abortion.
- A** In suitable cases, it is safe and effective to insert an IUCD for contraceptive use immediately following induced abortion.

## **10.2 Evidence for recommendations**

The audit and guidelines sub-committee of the RCOG recommends that Rhesus negative women be given anti-D IgG immunoprophylaxis following abortion.<sup>116</sup> The recommended dose is 250iu before 20 weeks gestation and 500iu thereafter. A 500iu dose gives protection for fetomaternal haemorrhage of up to 4ml. It is recommended that the Kleihauer's test be performed to estimate the size of fetomaternal haemorrhage and if necessary additional immunoprophylaxis be administered.<sup>116</sup>

A follow-up appointment within two weeks is a requirement for early medical abortion. Early follow-up as a routine for all women following abortion is advocated.<sup>117</sup> Two weeks is the time period during which immediate complications of abortion will present and during which any problems with contraception should be resolved.

Ovulation occurs within a month of first trimester abortion in over 90% of women.<sup>118</sup> It is essential therefore that contraception be commenced soon following abortion.

Sterilisation can be carried out safely at the time of induced abortion. However it is questionable whether such operations should be carried out in pregnant women.<sup>119</sup> Apart from the potential increased risk of failure, the possibility of feelings of regret has been cited as a reason for performing sterilisation as an interval procedure.<sup>120</sup> In one randomised control trial<sup>121</sup> where women had requested sterilisation at the time of abortion, women were randomised to sterilisation in combination with abortion, or an interval procedure. Some 32.6% of women randomised to the interval procedure failed to attend suggesting a change of mind once they had been able to distance themselves from the abortion itself.<sup>123</sup> This study emphasises the need for careful counselling at the time of sterilisation requested at the time of abortion.

Evidence from randomised studies<sup>122-124</sup> showed that IUCD insertion following induced abortion was an effective form of contraception. There was no significant increase in post abortive infection rates associated with the insertion of an IUCD and similarly, the devices were tolerated. However in the presence of prolonged bleeding and confirmation of retained products of conception, IUCD will have to be removed and reinserted after evacuation of the uterus.

## **11 REFERENCES**

1. NHS Executive. Clinical Guidelines - Using clinical guidelines to improve patient care within the NHS. 1996. Crown.

2. Sackett D L, Richardson W S, Rosenberg W, Haynes R B. Evidence-Based Medicine: How to practice and teach EDM. Edinburgh: Churchill Livingstone, 1998.
3. Edwards M H. Satisfying patients' needs for surgical information. *British Journal of Surgery* 1990; 77:463-5.
4. Hawkey G M, Hawkey C J. Effect of information leaflets on knowledge in patients with gastrointestinal diseases. *Gut* 1989;30:1641-6.
5. Dixon M. Assertions about patient information are not supported [letter; comment]. *BMJ*. 1995;311:946.
6. Office for National Statistics. OFNS- Office for National Statistics Legal Abortion in England and Wales 1998. London.1998.
7. Andolsek L, Cheng M, Hren M, Ocrinc-Oven M, Ng A, and Ratnam S. The safety of local anaesthesia and outpatient treatment: a controlled study of induced abortion by vacuum aspiration. *Studies in family planning* 1977;8: 118-124.
8. Lindell G, Flam F. Management of uterine perforations in connection with legal abortions. *Acta Obstetricia et Gynecologica Scandinavica*. 1995;74:373-5.
9. Hakim-Elahi E, THM M, and Burnhill MS. Complications of first trimester abortion: a report of 170,000 cases. *Obstetrics and Gynecology* 1990;76: 129-135.
10. Kaali SG, Szigetvari IA, and Barttfai GS. The frequency and management of uterine perforation during first trimester abortions. *American Journal of Obstetrics and Gynecology* 1989;161(2): 406-408.
11. Heisterberg L, Kringelbach M. Early complications after induced first-trimester abortion. *Acta Obstetricia et Gynecologica Scandinavica*. 1987;66: 201-4.
12. King TM, Atienza MF, Burkman RT. The incidence of abdominal surgical procedures in a population undergoing abortion. *American Journal of Obstetrics & Gynaecology*. 1980;137: 530-3.
13. Hodgson JE and Portmann KC. Complications of 10,453 consecutive first trimester abortions: a prospective study. *American Journal of Obstetrics & Gynaecology*. 1974;120: 802-807.

14. Nathanson BN. Ambulatory abortion: experience with 26,000 cases. *New England Journal of Medicine* 1972;286: 403-407.
15. Beric BM, Kupresanin M. Vacuum aspiration, using pericervical block, for legal abortion as an outpatient procedure up to the 12th week of pregnancy. *Lancet* 1971;2: 619-21.
16. Schulz K F, Grimes D A and Cates W Jr. Measures to prevent cervical injury during suction curettage abortion. *Lancet* 1983; 1182-1184.
17. Ferris L, McMMain-Klein and Colodorey N. Factors associated with immediate abortion complication. *Canadian Medical Association Journal* 1996;154: 1677-1685.
18. Kaunitz AM, Rovira EZ, Grimes DA, Schulz KF. Abortions that fail. *Obstetrics & Gynaecology*. 1985;66:533-7.
19. Ashok P W, Penney G C, Flett G M M, and Templeton A. An effective regimen for early abortion: a report of 2000 consecutive cases. *Human Reproduction* 1998;13(10): 2962-2965.
20. Sonne-Holm S, Heisterberg L, Hebjoorn S. Dyring-Andersen K, Andersen JT, Hejl BL. Prophylactic antibiotics in first-trimester abortions: a clinical, controlled trial. *American Journal of Obstetrics & Gynaecology*. 1981;139: 693-8.
21. Krohn K. Investigation of the prophylactic effect of tinidazole on the postoperative infection rate of patients undegoing vacuum aspiration. *Scandinavian Journal of Infectious Diseases-Supplementum*. 1981;26: 101-3.
22. Westrom L, Svensson L, Wolner-Hanssen P, Mardh PA. A clinical double-blind study on the effect of prophylactically administered single dose tinidazole on the occurrence of endometritis after first trimester legal abortion. *Scandinavian Journal of Infectious Disease-Supplementum*. 1981:26: 104-9.
23. Heisterberg L, Petersen K. Metronidazole prophylaxis in elective first trimester abortion. *Obstetrics & Gynecology*. 1985;65: 371-4.
24. Heisterber L, Gnarpe H. Preventive lymecycline therapy in women with a history of pelvic inflammatory disease undergoing first-trimester abortion: a clinical, controlled trial. *European Journal of Obstetrics, Gynecology & Reproductive Biology*. 1988;28: 241-7.
25. Darj E, Strain E B and Nillsson S. The prophylactic effect of doxycycline on

postoperative infection rate after first trimester abortion. *Obstetrics and Gynecology* 1987;70(5) 755-758.

26. Sawaya GF, Grady D, Kerlikowske K, Grimes DA. Antibiotics at the time of induced abortion: the case for universal prophylaxis based on a meta-analysis. *Obstetrics and Gynecology* 1996;87(2) 884-90.
27. Westergaard L, Philipsen T, Scheibel J. Significance of cervical chlamydia trachomatis infection in postabortal pelvic inflammatory disease. *Obstetrics and Gynecology* 1982;60: 322-5.
28. Qvigstad E, Skaug K, Jerve F, Fylling P and Ulstrup J C. Pelvic inflammatory disease associated with chlamydia trachomatis infection after therapeutic abortion. *British Journal of Venereal Disease* 1983;59: 189-192.
29. Morton K, Regan L, Spring J, Houang E. A further look at infection at the time of therapeutic abortion. *European Journal of Obstetrics, Gynecology & Reproductive Biology* 1990;37: 231-6.
30. Hamark B, Forssman L. Postabortal endometritis in chlamydia-negative women - association with preoperative clinical signs of infection. *Gynecologic & Obstetric Investigation*. 1991;31: 102-5.
31. Larsson PG, Platz-Christensen JJ, Thejls H, Forsum U, Pahlson C. Incidence of pelvic inflammatory disease after first-trimester legal abortion in women with bacterial vaginosis after treatment with metronidazole: a double-blind, randomized study. *American Journal of Obstetrics & Gynecology* 1992;166(1): 100-3.
32. Daling JR, Spadoni LR, Emanuel I. Role of induced abortion in secondary infertility. *Obstetrics & Gynecology*. 1981;57:59-61.
33. Daling JR, Weiss NS, Voigt L, Spadoni LR, Soderstrom R, Moore DE et al. Tubal infertility in relation to prior induced abortion. *Fertility & Sterility*. 1985;43:389-94.
34. Hernadi Z, Smid I, Lampe L. Impact of pregnancy termination on subsequent fertility. *Acta Medica Hungarica*. 1986;43: 155-60.
35. Tzonou A, Hsieh CC, Trichopoulos D, and Aravandinos D. Induced abortions, miscarriages, and tobacco smoking as risk factors for secondary infertility. *Journal of Epidemiology & Community Health* 1993;47(1): 36-39.

36. Berkowitz GS. An epidemiologic study of preterm delivery. *American Journal of Epidemiology*. 1981;113:81-92.
37. Martius JA, Steck T, Oehler MK, and Wulf KH. Risk factors associated with preterm (<37+0 weeks and early preterm birth (<32+0 weeks) univariate and multivariate analysis of 106,345 singleton births from 1994 statewide perinatal survey of Bavaria. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 1998;80(2): 183-189.
38. Dalaker K, Lichtenberg SM, Okland G. Delayed reproductive complications after induced abortion. *Acta Obstetrica et Gynecologica Scandinavia*. 1979;58: 491-4.
39. Merik O, Nygren KG, Bergstrom R, and Gunsjo A. Outcome of delivery subsequent to induced vacuum aspiration abortion in parous women. *American Journal of Epidemiology* 1982;116(3): 415-429.
40. Dagg P K. The psychological sequelae of therapeutic abortion - denied and completed. *American Journal of Psychiatry* 1991;148(5): 579-585.
41. Munro J, Booth A and Nicholl J. Routine pre-operative testing: a systematic review. *Health Technology Assessment* 1997;1(2).
42. Lee D, Contreras M, Robson SC, Rodeck CH, Whittle MJ. Recommendations for the use of anti-D immunoglobulin for Rh prophylaxis. *British Blood Transfusion Society and the Royal College of O&G. Trans Med* 1999; 9: 93-7.
43. Department of Health, Procedures for the approval of independent sector places for the termination of pregnancy. 1999. London, Department of Health.
44. Goldstein SR, Snyder JR, Watson C and Danon DO. Combined sonographic pathologic surveillance in elective first trimester termination of pregnancy. *Obstetrics & Gynecology* 1988;71(5): 747-749.
45. Kaali SG, Szigetvari IA, Csakany GM, and Barad DH. Updated screening protocol for abortion services. *Obstetrics & Gynaecology* 1990;76(1): 137-139.
46. Burnhill MS, Armstead JW. Reducing the morbidity of vacuum aspiration abortion. *International Journal of Obstetrics and Gynaecology* 1978;16: 204-9.
47. Penney GC, Thomson M, Norman J, Mckenzie H, Vale L, Smith R et al. A randomised comparison of strategies for reducing infective complications of

- induced abortion. *British Journal of Obstetrics & Gynaecology*, 1998;105: 599-604.
48. Royal College of Obstetricians & Gynaecologists. *The Care of Women Requesting Induced Abortion*. London: RCOG 2000 (Evidence-based Guideline No. 7).
  49. Kunitz AM, Rovira EZ, Grimes DA, Schulz KF. Abortions that fail. *Obstetrics & Gynecology*. 1985;66: 533-7.
  50. Henshaw R C, Templeton A A. Antiprogestones. In John Studd, ed. *Progress in Obstetrics and Gynaecology* 1998;259-77.
  51. Bygdeman M. Termination of pregnancy up to 8 or 9 weeks. In Baird DT, Grimes DA, Van Look PFA, eds. *Modern methods of inducing abortion* 1995;39-53. London.
  52. WHO. Termination of pregnancy with reduced doses of mifepristone. World Health Organisation Task Force on Post-ovulatory Methods of Fertility Regulation. *British Medical Journal* 1993;307: 532-537.
  53. el-Refaey H, Rajasekar D, Abulla M, Calder L and Templeton A. Induction of abortion with mifepristone (RU486) and oral or vaginal misoprostol. *New England Journal of Medicine* 1995;332(15): 983-987.
  54. Penney G C, McKessock L, Rispin R, El-Refaey H, Templeton A. An effective, low cost regimen for early medical abortion. *The British Journal of Family Planning* 1995;21: 5-6.
  55. Aubeny E, Peyron R, Turpin CL, Renault M, Targosz V, Silvestre L et al. Termination of early pregnancy (up to 63 days of amenorrhea) with mifepristone and increasing doses of misoprostol [corrected] [published erratum appears in *Int J Fertil Menopausal Stud* 1996 Jan-Feb;41(1):56]. *International Journal of Fertility & Menopausal Studies*. 1995;40(2): 85-91.
  56. Baird DT, Sukcharoen N, Thong KJ. Randomized trial of misoprostol and cervagem in combination with a reduced dose of mifepristone for induction of abortion. *Human, Reproduction*. 1995;10: 1521-7.
  57. el-Rafaey H, Calder L, Wheatley DN, Templeton A. Cervical priming with prostaglandin E1 analogues, misoprostol and gemeprost [published erratum appears in *Lancet* 1994 Jun 25; 343(8913):1650]. *Lancet*. 1994;343: 1207-9.
  58. Jain JK, Mishell DR, Jr. A comparison of intravaginal misoprostol with

prostaglandin E2 for termination of second-trimester pregnancy. *New England Journal of Medicine* 1994;331: 290-3.

59. el-Rafaey H, Templeton A. Induction of abortion in the second trimester by a combination of misoprostol and mifepristone: a randomized comparison between two misoprostol regimens. *Human Reproduction*. 1995;10:475-8.
60. EC Pharmaceutical Directive. The approximation of provisions laid down by law, regulation or administrative action relating to proprietary medicinal products. *Official Journal of European Communities* 1965;22:369-5.
61. Termination of pregnancy. *Drugs and Therapeutics Bulletin* 1998;36(2): 13-15.
62. Ferner RE. Prescribing licensed medicines for unlicensed indications. *Prescribers' Journal* 1995;73-78.
63. Singh K, Fong Y F and Dong F. A viable alternative to surgical vacuum aspiration: repeated doses of intravaginal misoprostol over 9 hours for medical termination of pregnancies up to 8 week. *British Journal of Obstetrics and Gynaecology* 2002; 109: 1-6.
64. Creinin M D, Edwards J. Early Abortion: Surgical and Medical Options. *Current Problems in Obstetrics, Gynecology and Fertility* 1997;20:6-32.
65. Ashok PW, Flett GM, Templeton A. Termination of pregnancy at 9-13 weeks amenorrhoea with mifepristone and misoprostol. *Lancet* 1998;352: 542-3.
66. De-Jonge ETM, Pattison RC, Makin JD and Venter CP. Is ward evacuation for uncomplicated incomplete abortion under systemic analgesia safe and effective? A randomised clinical trial. *South African Medical Journal* 1994;84(4): 481-483.
67. MacKay HT, Schulz K F and Grimes DA. Safety of local verses general anesthesia for second trimester dilatation and evacuation abortion. *Obstetrics & Gynecology* 1985;66(5): 661-665.
68. Grimes D A, Schulz K F, Cates W Jr and Tyler C W. Local verses general anesthesia: Which is safer for performing suction curettage abortion. *American Journal Obstetricians Gynecology* 1979;135(8): 1030-1035.
69. Moberg PJ. Uterine perforation in connection with vacuum aspiration for legal abortion. *Int J Gynaecol Obstet* 1976;14(1): 77-80.

70. Schulz KF, Grimes DA, Cates W. Measures to prevent cervical injury during suction curettage abortion. *Lancet*. 1983;1(8335): 1182-5.
71. Grimes DA, Schulz KF, Cates WJ. Prevention of uterine perforation during curettage abortion. *JAMA*. 1984;251(16): 2108-11.
72. Forman A, Ulmsten U, Banyai J, Wingerup L and Uldbjerg N. Evidence for a local effect of intracervical prostaglandin E<sup>o</sup>-gel. *American Journal Obstetrics Gynecology* 1982;(8)5: 456-462.
73. Henshaw R C, Templeton A A. Pre-operative cervical preparation before first trimester vacuum aspiration: a randomized controlled comparison between gemeprost and mifepristone (RU 486). *British Journal of Obstetrics and Gynaecology* 1991;98: 1025-30.
74. Kajanoja P, Mandelin M, Ylikorkala O and Felding C. A gemeprost vaginal suppository for cervical priming prior to termination of first trimester pregnancy. *Contraception* 1984;29(3): 251-261.
75. Mackenzie IZ, Jackson C, McKinley C and Miller J. Cervical priming before first trimester aspiration abortion: a single blind study comparing gemeprost 1mg and prostaglandin E<sub>2</sub> 10mg pessaries. *Journal of Obstetrics and Gynaecology* 1990;10: 513-517.
76. Urquhart DR, Templeton A A. Mifepristone (RU486) for cervical priming prior to surgically induced abortion in the late trimester. *Contraception* 1990;42: 191-9.
77. Osmer R, Rath W, Conrad A, Kuhn W. A randomized double blind study of a new ready-for use prostaglandin gel (Org 2436) for cervical ripening prior to first trimester pregnancy termination. *Zentralblatt fur Gynakologie*. 1990; 112: 545-54.
78. Fong YF, Singh K, Prasad RN. A comparative study using two dose regimens (200 microg or 400 microg) of vaginal misoprostol for pre-operative cervical dilatation in first trimester nulliparae. *Br J Obstet Gynaecol* 1998; 105:413-7.
79. Henry AM, Haukkamaa M. Comparison of vaginal misoprostol and gemeprost as pre-treatment in first trimester pregnancy interruption. *Br J Obstet Gynaecol* 1999; 106: 540-3.
80. Maclsaac L, Grossman D, Balistreri E, Darney P. A randomized controlled trial of laminaria, oral misoprostol, and vaginal misoprostol before abortion. *Obstet Gynecol*. 1999;93: 766-70.

81. Ngai SW, Tang Os, Lao T, Ho PC Ma HK. Oral misoprostol versus placebo for cervical dilatation before vacuum aspiration in first trimester pregnancy. *Human Reproduction*. 1995;10:1220-2.
82. Ngai SW, Yeung KC, Lao T, Ho PC. Oral misoprostol versus vaginal gemeprost for cervical dilatation prior to vacuum aspiration in women in the sixth to twelfth week of gestation. *Contraception* 1995;51: 347-50.
83. Ngai SW, Yeung KC, Lao T, Ho PC. Oral misoprostol versus mifepristone for cervical dilatation before vacuum aspiration in first trimester nulliparous pregnancy: a double blind prospective randomised study. *British Journal of Obstetrics and Gynaecology* 1996;103: 1120-3.
84. Lawrie A, Penney GC, Templeton A. A randomised comparison of oral and vaginal misoprostol for cervical priming before suction termination of pregnancy. *British Journal of Obstetrics & Gynaecology* 1996;103: 1117-9.
85. Singh K, Fong YF, Prasad RN, Dong F. Randomized trial to determine optimal dose of vaginal misoprostol for preabortion cervical priming. *Obstet Gynecol*. 1998; 92(5):795-8.
86. Singh K, Fong YF, Prasad RN, Dong F. Vaginal misoprostol for pre-abortion cervical priming: is there an optimal evacuation time interval? *Br J Obstet Gynaecol*. 1999;106(3):266-9.
87. Singh K, Fong YF. Preparation of the cervix for surgical termination of pregnancy in the first trimester. *Hum Reprod Update* 2000; 6:442-8.
88. Rodger M W and Baird D T. Pretreatment with mifepristone (RU 486) reduces interval between prostaglandin administration and expulsion in second trimester abortion. *British Journal of Obstetrics & Gynaecology* 1990;97: 41-45.
89. Webster D, Penney GC, Templeton A. A comparison of 600 and 200mg mifepristone prior to second trimester abortion with the prostaglandin misoprostol. *British Journal of Obstetrics & Gynaecology* 1996;103: 706-9.
90. Frydman R, Fernandez H, Pons JC, Ulmann A. Mifepristone (RU 486) and therapeutic late pregnancy termination: a double-blind study of two different doses. *Human Reproduction*. 1988;3: 803-6.
91. Ho PC, Tsang SS, Ma HK. Reducing the induction to abortion interval in termination of second trimester pregnancies: a comparison of mifepristone with laminaria tent. *British Journal of Obstetrics & Gynaecology* 1995;102: 648-51.

92. Jain JK, Mishell DR Jr. A comparison of misoprostol with and without lamaria tents for induction of second-trimester abortion. *American Journal of Obstetrics & Gynecology* 1996;175: 173-7.
93. el-Rafaey H, Hinshaw K and Templeton A. The abortifacient effect of misoprostol in the second trimester. A randomized comparison with gemeprost in patients pre-treated with mifepristone (RU 486). *Human Reproduction* 1993;8(10): 1744-1746.
94. Dickinson J E, Godfrey M and Evans S F. Efficacy of intravaginal misoprostol in second-trimester pregnancy termination: a randomized controlled trial. *Journal of Maternal and Fetal Medicine* 1998;7(3): 115-119.
95. Nuutila M, Toivonen J, Ylikorkala O, Halmesmaki E. A comparison between two doses of intravaginal misoprostol and gemeprost for induction of second-trimester abortion. *Obstetrics and Gynecology*. 1997;90: 896-900.
96. Eng N S and Guan A C. Comparative study of intravaginal misoprostol with gemeprost as an abortifacient in second trimester missed abortion. *Australia and New Zealand Journal of Obstetrics and Gynaecology* 1997;37(3): 331-334.
97. Ho P C, Chan Y F and Lau W. Misoprostol is as effective as gemeprost in termination of second trimester pregnancy when combined with mifepristone: a randomise comparative trial. *Contraception* 1996;53(5): 281-283.
98. Wong K S, Ngai C S, Chan K S and Tang L C. Termination of second trimester pregnancy with gemeprost and misoprostol: a randomized double-blind placebo-controlled trial. *Contraception* 1996;54(1): 23-25.
99. Ghorab MN and El-Helw B A. Second trimester termination of pregnancy by extra amniotic prostaglandin F2 ( or endocervical misoprostol. A comparative study of 1001 patients. *Acta Obstetricia et Gynaecologica Scandinavica* 1995;77(4): 429-432.
100. Yapaar E G, Senoz S and Urkukur M. Second trimester pregnancy termination including fetal death. *European Journal of Obstetrics, Gynecology & Reproduction Paris*. 1996;69(2): 97-102.
101. Owen J, Hauth JC. Vaginal misoprostol vs. concentrated oxytocin plus low-dose prostaglandin E2 for second trimester pregnancy termination. *Journal of Maternal-Fetal Medicine* 1999;8:48-50.

102. Kjolhede P, Dahle L O, Matthiesen L, Ryden G and Ottosen C. An open prospective randomized study of dinoprost and gemeprost in second trimester legal abortions. *Acta Obstetrica et Gynaecologica Scandinavica* 1994;73: 316-320.
103. Cameron IT, Baird DT. The use of 16, 16-dimethyl-trans delta2 prostaglandin E1 methyl ester (gemeprost) vaginal pessaries for the termination of pregnancy in the early second trimester. A comparison with extra-amniotic prostaglandin E2. *British Journal of Obstetrics & Gynaecology* 1984;91: 1136-40.
104. Andersen LF, Poulsen HK, Sorensen SS, Christensen BM, Sponland G, Skejeldestad FE. Termination of second trimester pregnancy with gemeprost vaginal pessaries and intra- amniotic prostaglandin PGF2 (. A comparative study. *European Journal of Obstetrics, Gynecology & Reproductive Biology* 1989;31: 1-7.
105. Waldron KW, Renou PM, Lolatgis N, Morris ND, Mamers PM, Oldham J et al. Second-trimester termination with 16, 16-dimethyl-PGE1 -methyl ester (gemeprost), compared with a regimen that included intra- amniotic PGF2 ( and hypertonic saline. *Reproduction, Fertility & Development* 1990;2:495-8.
106. Mink D, Heiss C, Rothbrust S and Schmidt W. A comparison of dinoprostone gel and gemeprost suppositories for induction of abortion in the second and third trimester. *Zentralblatt fur Gynakologie* 1995;117(5): 263-268.
107. Armatage RJ, Luckas MJ. A randomized trial of 2 regimens for the administration of vaginal prostaglandins (gemeprost) for the induction of midtrimester abortion. *Australian & New Zealand Journal of Obstetrics & Gynaecology*. 1996;36: 296-9.
108. Thong K J, Baird D T. Induction of second trimester abortion with mifepristone and gemeprost. *British Journal of Obstetrics & Gynaecology*. 1993;100: 758-61.
109. Thong K J and Baird D T. An open study comparing two regimens of gemeprost for the termination of pregnancy in the second trimester. *Acta Obstetrician et Gynecologia Scandinavica* 1998;77.
110. American College of Obstetricians and Gynaecologist. Methods of midtrimester abortion. Technical Bulletin no. 109, October 1987.
111. Rakhshani R, Grimes DA. Prostaglandin E2 suppositories as a second trimester abortifacient. *J Reprod Med*. 1988; 33:817-820.

112. Blumenthal PD, Castleman LD, Jain JK. Abortion by labour induction. In: Paul M, Lichtenberg ES, Borgatta L, Grimes DA, Stubblefield PG, eds. *A Clinician's Guide to Medical and Surgical Abortion*. New York, NY: Churchill Livingstone, 1999: 139-154.
113. Ashok P W and Templeton A A. Non-surgical midtrimester termination of Pregnancy: a review of 500 consecutive cases. In press. 1999.
114. Garrioch D B, Gilbert J R and Planteuin O M. Choice of ecboic and the morbidity of day-case terminations of pregnancy. *British Journal of Obstetrics & Gynaecology*. 1988;88: 1029-1032.
115. Ali PB, Smith G. The effect of syntocinon on blood loss during first trimester suction curettage. *Anaesthesia* 1996;51: 483-5.
116. RCOG - Royal College of Obstetricians & Gynaecologists and Robson S. Use of Anti-D Immunoglobulin for Rhesus Prophylaxis. 1999. London, RCOG.
117. Birth Control Trust. Model Service Specification: Services for Women Requesting Abortion 1992/3. 1991. Birth Control Trust.
118. Cameron IT, Baird DT. The return to ovulation following early abortion: a comparison between vacuum aspiration and prostaglandin. *Acta Endocrinologica*. 1988;118: 161-7.
119. Medico-Legal Committee of the Royal College of Obstetricians & Gynaecologists. How to Avoid Medico-Legal Problems 1992;61-73. RCOG.
120. Penny GC, Glasier A, Templeton AA. Laparoscopic sterilisation among gynaecologists in Scotland. *British Journal of Obstetrics & Gynaecology*. 1997;104: 71-7.
121. Cheng MC, Cheong SC, Chew SC. Safety of postabortion sterilisation compared with interval sterilisation. *Lancet* 1979;2:682-5.
122. Aral K, Zorlu CG, Cobanoglu O, Gokmen O. IUD (TCu380A) insertion following induced first trimester abortion. *Advances in Contraception* 1993;9: 251-5.
123. Bitsch M, Jakobsen AB, Prien-Larsen JC, Frolund C, Sederberg-Oslen J. IUD (Nova-T) insertion following induced abortion. *Contraception* 1990;42:315-22.
124. WHO Task Force on Intrauterine Devices for Fertility Regulation. IUD insertion

following termination of pregnancy: a clinical trial of the Tcu 220C, Lippes Loop D, and Copper 7. Studies in family planning 1983;14:98-108.

## **12 WORKSHOP MEMBERS**

<i>Chairperson</i>	Dr Kuldip Singh
<i>Members</i>	Dr Ching Kwok Choy Dr Chua Hong Liang Dr Ilancheran A Dr Lim Teck Beng Dr Mitra Ratna Dr Tan Hak Koon Dr Yeap Min Li

### **Literature Search Strategy (Appendix 1)**

The aim of the literature review was to identify and synthesize relevant evidence within the published literature, thus enabling clinical practice recommendations to be based on evidence wherever possible.

Searches were carried out for each topic of interest. The electronic database, MEDLINE (CD Ovid version) was searched for the period of January 1966 to date. The searches were performed using relevant medical subject headings, terms and text words. The Cochrane Library was searched to identify systemic reviews, meta-analyses and controlled clinical trials. Reference lists of non-systemic review articles and studies obtained from the initial research were identified and hand-searched to identify articles not indexed.

- **Reviewing the literature**

A preliminary scouting of titles and abstracts were undertaken and full papers were obtained if relevant to the topic. Articles not relevant to the subject in question were rejected, as were articles where relevant outcomes were not reported. For all the subject areas, published systematic reviews or meta-analyses have been used if available. If these did not exist, randomised controlled trials were sought. For subject areas where a body of systematic review and or randomised trial evidence was available, studies of less relevant designs were not systematically sought. Where there were no relevant published randomised controlled trials, other appropriate experimental or observational studies were sought.

- **Synthesising the evidence**

Identified articles were assessed methodologically and the best available evidence

was used to form and support the recommendations. If a good systematic review, meta-analysis or randomised controlled trial existed in relation to a topic, studies of a weaker design were ignored. The evidence was synthesised using qualitative methods. These involved summarising the contents of identified papers in the form of evidence tables and agreeing to brief statements that accurately reflect the evidence.

- **Peer review**

Successive drafts of the guideline were written and discussed by the guideline workshop. Thereafter a formed peer review process was undertaken. Each member of the group suggested names of individuals and the drafts guideline was submitted to these individuals for appraisal and comments. The comments by the peer reviewers were taken into consideration by the guideline group before generation of the final guideline.

## SUMMARY OF RECOMMENDATIONS

### 3 ORGANISATION OF SERVICES

- ✔ Abortion services should have in place strategies to provide information to both women and healthcare professions in the choices available with the service and on routes of access to the service.
- ✔ Abortion information and support should be available to those who consider but do not proceed to abortion.
- ✔ In the absence of specific medical or social contraindications, induced abortion may be managed on a day-case basis.

### 4 INFORMATION FOR WOMEN

- B Haemorrhage at the time of abortion is rare. It complicates around 1.5/1000 abortion overall. The rate is lower for early abortions (1.2/1000 at <13 weeks; 8.5/1000 at >20 weeks).
- B Uterine perforation at the times of surgical abortion is rare. The incidence is of the order of 1-4 per 1000. The rate is lower for abortions performed early in pregnancy and performed by experienced clinicians.
- B Cervical trauma: the rate of damage to the external cervical os at the time of surgical abortion is no greater than 1%.
- B Failed abortion: all methods of first trimester termination carry a risk of failure to terminate the pregnancy, thus necessitating a further procedure. The rate for surgical abortion is around 2.3/1000 and for medical abortion around 6.0/1000.
- B Post abortion infection: genital tract infection of varying degrees of severity, including pelvic inflammatory disease occurs in up to 10% of cases. The risk is reduced when prophylactic antibiotics are given or when lower genital tract infection has been excluded by bacteriological screening.
- B Future reproductive outcome: there are no proven association between induced abortion and subsequent infertility or preterm delivery.
- B Psychological sequelae: only a small minority of women experience any long term adverse psychological sequelae after abortion. Early distress, although common, is usually a continuation of symptoms present before the operation. Conversely, long lasting negative effects on both mother and children are reported when abortion has been denied.

## **5 PRE ABORTION MANAGEMENT**

### **5.1 Blood tests**

- C** Pre abortion assessment should include:
  - determination of ABO and Rhesus blood groups.
  - haemoglobin concentration measurement if clinically indicated.
- B** It is not cost effective routinely to cross-match women undergoing termination of pregnancy.

### **5.2 Ultrasound scanning**

- C** Ultrasound scanning is not considered to be an essential pre-requisite of abortion in all cases. However, when surgical abortion is being considered < 7 weeks gestation and where gestation is in doubt or where extrauterine pregnancy is suspected, ultrasound scanning should be done.

### **5.3 Prevention of infective complications**

- A** Abortion care should encompass a strategy for minimising the risks of post abortion infective morbidity. In high risk patients, clinicians should consider prophylactic antibiotics or screening for lower genital organisms with treatment of positive cases.

## **6 FIRST TRIMESTER TERMINATION OF PREGNANCY**

- B** Ideally abortion services must be able to offer a choice of recommended methods for all relevant gestation periods.

### **6.1 Methods for women presenting at under 7 weeks gestation**

- B** Early surgical abortion is an appropriate method at gestation of < 7 weeks when there is preabortion ultrasound confirmation of a viable intrauterine pregnancy, confirmation of products of conception at aspiration or ultrasound confirmation of complete evacuation after the procedure. In such instances, products of conception need not necessarily be sent for histological examination.
- B** \*Medical abortion using mifepristone plus prostaglandin, or misoprostol (prostaglandin E<sub>1</sub> analogue) alone is an appropriate method for gestations of < 8 weeks.
- B** Misoprostol (a prostaglandin E<sub>1</sub> analogue), given vaginally is a cost-effective alternative for all abortion procedures for which the E<sub>1</sub> analogue, gemeprost is

conventionally used (early medical abortion, cervical priming and mid-trimester medical abortion).

*\* However currently mifepristone is unavailable for use in Singapore.*

## **6.2 Methods for women presenting between 7-14 weeks gestation**

- B** Vacuum aspiration is an appropriate method at gestations of 7-14 weeks, though individual specialists may prefer to offer medical abortion at gestation above 12 weeks. Products of conception removed in a confirmed viable intrauterine pregnancy need not necessarily be sent for histological examination.
- B** Suction termination can be done safely under local or general anaesthesia.
- A** Medical abortion using combined regimens continues to be an appropriate method for women in the 7-9 weeks gestation band.
- B** Medical abortion using misoprostol alone is an appropriate method for women up to 8 weeks gestation.

## **7 PRE-OPERATIVE CERVICAL PREPARATION FOR SURGICAL TERMINATION OF PREGNANCY**

- B** Cervical priming is beneficial before surgical vacuum aspiration and therefore should be considered when clinically indicated such as when there is difficulty in cervical dilatation is expected eg nulliparae or higher gestation.
- A** Prostaglandin analogues are the most effective cervical priming agents currently and are able to reduce short term complications of vacuum aspiration.
- A** Gemeprost is the commercially available prostaglandin pessary. Misoprostol, a prostaglandin E<sub>1</sub> analogue is shown to be a cost effective alternative. The vaginal route for misoprostol is preferred over the oral route due to lower incidence of side effects and increased effectiveness.

### ***Published regimens for cervical priming***

\* gemeprost 1mg vaginally, 3 hours prior to surgery.

\*\* misoprostol 400mg (2 x 200µg tabs) 3 hours prior to surgery either vaginally (preferred) or orally.

Regimens are unlicensed as discussed above and patients should be counselled that due to the potential of fetal teratogenesis, it is not recommended to continue with a pregnancy once misoprostol has been administered.

## 8 SECOND TRIMESTER TERMINATION OF PREGNANCY

- B** \* For women beyond 12 weeks gestation, medical abortion with mifepristone followed by prostaglandin has been shown to be safe and effective.
- B** Surgical evacuation of the uterus is not required routinely following mid-trimester medical abortion. It should be undertaken if there is clinical evidence that the abortion is incomplete.
- A** Mid-trimester abortion by dilatation and evacuation (D&E), preceded by cervical preparation, is safe and effective when undertaken by specialists with access to the necessary instruments.

*\* However currently mifepristone is unavailable for use in Singapore.*

- Locally most clinicians would use prostin or gemeprost pessaries or intramniotic carboprost.

## 9 MANAGING COMPLICATIONS OF ABORTION

- Oxytocics are effective in reducing intra-operative blood loss.
- In cases of suspected uterine perforation, laparoscopy is the investigation of choice.

## 10 AFTERCARE

- B** Anti-D IgG should be given to all non-sensitised rhesus negative women following abortion, whether by surgical or medical methods and regardless of gestational age.
- After an abortion, women must be informed of the symptoms they may experience and a list of those that would make an urgent medical consultation necessary. Clinical assessment and emergency gynaecological admission must be available when necessary.
- C** Referral for further counselling should be available for the small minority of women who experience long term post abortion distress. Risk factors are ambivalence before the abortion, lack of supportive partner, or a psychiatric history.
- B** During the first follow-up following abortion, future contraception should be discussed with each patient and contraceptive supplies offered if required. The chosen method of contraception should be initiated immediately following abortion.

- B** Sterilisation can safely be performed at the time of induced abortion.
- A** In suitable cases, it is safe and effective to insert an IUCD for contraceptive use immediately following induced abortion.