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## REVIEW ARTICLE

# Cervical priming with misoprostol prior to transcervical procedures

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### Recommended Dosage

A single dose of misoprostol 400 µg vaginally or sublingually 3 hours before the procedure (surgical termination of pregnancy, uterine evacuation, D&C, hysteroscopy, IUD insertion)

### KEYWORDS

Misoprostol;  
Cervical priming;  
Routes of administration;  
Dose

### Abstract

Cervical priming with misoprostol has shown to facilitate transcervical procedures and to reduce side-effects. Cervical priming is recommended by several evidence-based guidelines prior to surgical abortion, dilatation and curettage, hysteroscopy and intrauterine device insertion. It is effective in pregnant as well as in non-pregnant women while the results in post-menopausal women are conflicting. Misoprostol is the best suited prostaglandin for a number of reasons: it has a short half-life, few side effects, it is stable at room temperature, it is relatively cheap and the dosage can easily be adjusted according to the clinical need. Various doses, routes, and time intervals between misoprostol application and the intervention have been evaluated. A single dose of 400 µg given sublingually or vaginally 3h before the intervention has given the best efficacy with the least side effects. Higher doses or longer intervals do not improve the effect on the cervix. Pain is a frequent side effect, but usually responds well to NSAIDs. Other side effects are rare.

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## 1. Introduction

Cervical priming refers to dilating or softening of the cervix by mechanical or medical means prior to an intervention. The term refers to pregnant or non-pregnant women in this chapter, but does not include induction of labor at term[1].

*When used prior to surgical abortion, cervical priming has been shown to result in a shorter operation time, reduced*

*blood loss and easier mechanical dilatation [2,3]. It may also reduce the incidence of complications during the procedure and is therefore recommended in a number of guidelines [4,5].*

It was shown that misoprostol is also effective at priming in non-pregnant women [6].

*Priming prior to hysteroscopy in pre-menopausal women resulted in an increased cervical dilatation and a lower rate of cervical laceration [7].*

The results in peri- and postmenopausal women are conflicting [8,9]. Published data are also limited on misoprostol

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prior to IUD insertion. However, anecdotal reports suggest that it is useful for women with tight cervixes or as a routine.

Cervical priming is especially helpful as a means of pain reduction, and can be used either in addition to, or instead of, local anesthesia. In one study of women undergoing surgical termination of pregnancy, priming with vaginal misoprostol (with no additional analgesics) was compared to a paracervical block (with no priming). This study showed that women who received misoprostol reported significantly less pain at the time of mechanical dilatation of the cervix [10].

But priming has also advantages in procedures performed under general anesthesia as the anaesthetic does not need to be as deep. In addition priming is helpful in difficult clinical indications like in nulliparous women who have previously undergone a cervical cone biopsy, large or multiple fibroids or for surgical abortions beyond 9 weeks amenorrhoea in nulliparous women and beyond 12 weeks in multiparous women [4].

Misoprostol has several advantages over other priming agents such as osmotic dilators [11–14], other prostaglandins [2,5,15–17] and mifepristone.

Mifepristone, a reversible progesterone receptor blocker, is more effective than misoprostol for cervical priming, however it needs a longer time interval between administration of the tablets and the procedure (>24 h), and it is more expensive than misoprostol alone [18,19]. Furthermore mifepristone is not widely available and therefore not legally accessible to most providers.

A recent study on cervical priming also showed that misoprostol was superior to dinoprostone, another prostaglandin widely used for cervical priming [20].

Many studies have evaluated a range of routes of administration, doses and different time intervals with misoprostol as cervical primer. Most studies included women in the first trimester – the evidence is very limited at gestations beyond this.

## 2. Route of administration of misoprostol

Both oral and vaginal administration of 400 µg misoprostol is effective for cervical priming 3 h prior to vacuum aspiration [4]. Some studies found that vaginal administration is more effective than oral [13], while others found no difference between the two routes [19]. Wetting the tablets with water or an acidic medium does not appear to increase efficacy [21].

In another study, sublingual application was also found to be more effective than oral [22,23]. No difference was found between sublingual and vaginal administration (2–4 h interval) [24,25], but significantly more side effects were found in the sublingual group [24,23].

There are fewer studies on different routes of misoprostol administration prior to hysteroscopy [26]. Vaginal administration was used in most studies.

## 3. Dose

Doses between 200 µg and 800 µg were evaluated for the vaginal route prior to surgical abortion. The lowest dose of 200 µg had a significantly lower efficacy. However doses

greater than 400 µg lead to an increase in side-effects [5,27]. It was therefore concluded that 400 µg was the optimal dose [3].

For oral and sublingual administration, there is only limited evidence on doses other than 400 µg [28,29].

Prior to hysteroscopy, 400 µg has been most widely used orally or vaginally. Only two studies evaluated a dose lower than 200 µg given vaginally with good results [20,26].

## 4. Interval

Research has also shown that it is necessary to wait for 3 h after oral or vaginal administration to obtain the priming effect [30]. Even with an increased dose given vaginally or orally, a 3 h wait is recommended [31,32]. In contrast, studies of sublingual application, 400 µg, showed that it is possible to reduce the interval from 3 to 2 h without losing efficacy [33,34,29]. To date there has been no published evaluation of an interval shorter than 2 h after sublingual application.

*Increasing the interval beyond 3 hours or increasing the dose of oral or vaginal misoprostol to more than 400 µg has not improved the effect on cervical dilatation but it has increased side effects [5,27].*

Very few studies have evaluated priming prior to hysteroscopy in pre- or postmenopausal women. In these, longer intervals of around 12 h have been used.

## 5. Indication

There is a good body of evidence in support of misoprostol use for cervical priming in:

- Surgical abortion.
- Dilatation and curettage (D&C) and hysteroscopy in non-pregnant women.

To date there are no published studies of misoprostol prior to the following procedures, but given the benefits for hysteroscopy, it is likely also to be useful prior to:

- IUD insertion.
- Endometrial biopsy.

## 6. Contraindications

- Known allergy to misoprostol.
- Ongoing wanted pregnancy (i.e. in transcervical chorionic villi sampling).

## 7. Precautions

Women with a previous cesarean section with pregnancies beyond the first trimester should be treated with caution.

## 8. Regimen

400 µg misoprostol given vaginally or sublingually 3 h prior to the procedure.

## 9. Course of treatment

The 3 h waiting period from administration to the procedure needs to be integrated in the treatment course. The drug may be administered by the woman herself before she comes to the health facility. Patients should be advised that the treatment might lead to cramps and/or bleeding within minutes of administration. Pain treatment should always be offered. Non-steroidal anti-inflammatory drugs (NSAIDs) such as Ibuprofen and Naproxen do not impair the efficacy of misoprostol for cervical priming [35].

When used for abortion, expulsion may occur in some cases before surgery is performed. The probability of expulsion increases with the interval from administration of misoprostol to the procedure and in cases of missed abortion.

With sublingual administration the tablets should be kept under the tongue until dissolved or at least for 20 minutes and then swallowed.

## 10. Side effects

Expected side effects are bleeding and uterine contractions. The contractions may necessitate pain treatment. The woman should be informed of where to seek help if needed. Other side effects are rare and fully reversible. The following symptoms may occur: diarrhoea, shivering, nausea, vomiting, increased body temperature and skin rash. Some patients report an unpleasant taste of the misoprostol tablets or a short lasting numbness of the tongue if taken sublingually.

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### Conflict of interest

The authors do not have any conflict of interest.

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