Intrauterine devices (IUDs)
Overview
Cu-IUDs, LNG 20-IUS

An advanced slide kit complementing the WHO training tool is available from www.fptraining.org

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### Types of IUD

- **Copper IUDs** (with plastic frame/frameless/ball; containing various amounts of copper)
  ![Copper IUDs](image)

- **Hormonal IUDs** (with plastic frame/frameless, different sizes, containing different amounts of levonorgestrel [LNG])
  ![Hormonal IUDs](image)


Ref 1: In a randomised multicentre study (five clinics), Sivin et al. compared 1124 women using the LNG-IUS with 1120 women using the TCu380Ag. The Pearl Index associated with the 20 μg LNG-IUS was 0.18±0.07 per 100 and that of the TCu380Ag IUD was 0.27±0.08 per 100.

Ref 2: In a review of the literature, Luukkainen et al. reported a Pearl Index of 0.1–0.3 with a duration of LNG-IUS use of over 3 years. The authors showed that the LNG-IUS gave similarly low pregnancy rates in all age groups, and that the failure rate did not depend on the age of the user.

Ref 3: A large European multicentre study included 2758 healthy women randomly allocated to LNG-IUS or copper IUD groups. Ronnerdag et al. reported no pregnancies during 7 years of follow-up in 100 women originally fitted with the LNG-IUS.

The LNG-IUS and the modern generation copper devices (Copper surface 375/380mm2) are highly effective contraceptive methods. The efficacy of CU-T IUDs decreased with a lower copper surface.


Early research suggested an association between PID and IUD use, which led to a dramatic decline in IUD prescriptions. To address these concerns, Farley et al. reviewed the WHO’s IUD clinical trial data to explore the incidence and patterns of PID risk with use of an IUD. The overall rate of PID among 22,908 IUD insertions and during 51,399 woman-years of follow-up was 1.6 cases per 1000 woman-years of use. After adjustment for confounding factors, PID risk was more than six times higher during the 20 days after insertion than at later times, when the risk was low and constant for up to 8 years of follow-up. The authors specified that PID among IUD users is most strongly related to the insertion process and to background risk of STI. Recommendations for insertion technique are given in slides 13 and 14.

1. **Center of Disease Control: Factsheet 2017**

**Gonorrhea symptoms:** Symptoms usually occur within two - 14 days after exposure. However some people never develop noticeable symptoms. Symptoms can be very mild like vaginal yeast or bacterial infection.

Further symptoms include burning sensation while urinating, the need to urinate more frequently, heavier periods/spotting, dyspareunia, pain in the lower abdomen, fever.

**Chlamydia trachomatis symptoms and complications:**
- Most infected people are asymptomatic.
- 5-30% of women with laboratory-confirmed chlamydial infection develop symptoms. However, given the relatively slow replication cycle of the organism, symptoms may not appear until several weeks after exposure in those persons who develop symptoms.
- The bacteria initially infect the cervix, where the infection may cause signs and symptoms of cervicitis (e.g., mucopurulent endocervical discharge, easily induced endocervical bleeding), and sometimes the urethra, which may result in signs and symptoms of urethritis (e.g., pyuria, dysuria, urinary frequency).
- Infection can spread from the cervix to the upper reproductive tract (i.e., uterus, fallopian tubes), causing pelvic inflammatory disease (PID), which may be asymptomatic (“subclinical PID”) or acute, with typical symptoms of abdominal and/or pelvic pain, along with signs of cervical motion tenderness, and uterine or adnexal tenderness on examination.
- Both acute and subclinical PID can cause permanent damage to the fallopian tubes, uterus, and surrounding tissues and infertility.
The aim of this study retrospective cohort study of all IUD insertions carried out at Kaiser Permanente, Northern California, from January 2005 to August 2009 was to evaluate the relationship between *N. gonorrhoeae* and *C. trachomatis* screening strategies and the risk of PID after IUD insertion. PID incidence within 90 days after insertion was compared among women who were and were not screened for *N. gonorrhoeae* and *C. trachomatis*. The study was powered for equivalence with a PID risk difference of −0.006 to 0.006 between two groups considered to be clinically insignificant. The risk difference was calculated by subtracting the proportion of women with PID in one screening group from the proportion of women with PID in the comparison screening group.

Of 57,728 IUD insertions, 47% were unscreened within 1 year of insertion; of screened women, 19% were screened on the day of insertion. The overall risk of PID was 0.54% (95% CI 0.48–0.60%). Non-screening had an equivalent risk of PID as any screening (risk difference −0.0034, 95% CI −0.0045 to −0.0022), and same-day screening was equivalent to pre-screening (risk difference −0.0031, 95% CI −0.0049 to −0.0008). The equivalence persisted when adjusted for age and race and when stratified by age younger than 26 years and older than 26 years.

The authors concluded that the risk of PID in women receiving IUDs was low. The results support IUD insertion protocols in which clinicians test women for *N. gonorrhoeae* and *C. trachomatis* based on risk factors and perform the test on the day of insertion. These findings have potential to reduce barriers to IUD use for women seeking highly effective, long-term, reversible contraception. Evidence level: II.
This systematic review assessed the risk of PID among women with asymptomatic, undiagnosed cervical infection and those at high risk of STIs, comparing women with a copper IUD or an LNG-IUS with women not fitted with a device.

A literature search for relevant articles from January 1984 through January 2016 yielded 2220 articles, of which 10 met the inclusion criteria. Two studies provided direct evidence of PID rates in women with undiagnosed gonococcal or chlamydial (GC/CT) infection or at high risk of STIs initiating IUDs vs other contraceptive methods (level II–2, fair to poor), and neither study found a difference. Eight studies provided indirect evidence (II–2 to II–3, fair to poor). One study found no difference in PID rates between initiators of the copper IUD vs the LNG-IUS. Five studies compared algorithms based on patient factors with laboratory GC/CT screening to predict cervical infection. Based on likelihood ratios, none of these algorithms adequately identified women at high risk of asymptomatic cervical infection who should not undergo IUD placement. Two studies compared IUD placement on the same day as STI screening with delayed placement after screening and found no difference in PID rates.

Limited evidence suggests that IUD placement does not increase the risk of PID compared with no IUD placement among women with asymptomatic, undiagnosed cervical infection or at high risk of STIs. Algorithms based on patient characteristics to identify women with asymptomatic GC/CT may be overly restrictive, leading to missed opportunities for IUD initiation. Historical concerns about higher PID risk among women at risk of STIs who use IUDs may not be relevant with modern devices and STI screening and treatment practices.

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2. Jatlaoui TC et al. The safety of intrauterine contraception initiation among women with current asymptomatic cervical infections or at increased risk of sexually transmitted infections. Contraception 2016; 94: 701–12.

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When is it recommended to screen for STIs, especially asymptomatic Chlamydia or N. gonorrhoea infection, before IUD insertion?

- Women younger than 25 years
- Women with new partners
- Women with multiple partners
- Women with substance abuse
- All women in regions with high chlamydia / N. gonorrhoea prevalence


- According to the 2016 WHO selected practice recommendations for contraceptive use, in healthy women the only examinations and tests that are essential and mandatory before IUD insertion include a pelvic/genital examination and STI risk assessment.
- STI/HIV screening (chlamydia smear) contributes substantially to safe and effective use, but implementation may depend on the public health and/or service context. The risk of not performing the examination or test should be balanced against the benefits of making the contraceptive method available.
- IUD insertion may further increase the risk of PID among women at increased risk of STIs, although limited evidence suggests that this risk is low. Current algorithms for determining increased risk of STIs have poor predictive value.
- Risk of STIs varies by individual behaviour and local STI prevalence. Therefore, while many women at increased risk of STIs can generally have an IUD inserted, some women at increased risk (very high individual likelihood) of STIs should generally not have an IUD inserted until appropriate testing and treatment have occurred.
- Prophylactic antibiotics are not recommended as a matter of principle for IUD insertion. In settings of both high prevalence of cervical gonococcal and chlamydial infections and limited STI screening, such prophylaxis may, however, be considered.
- The IUD user should be counselled to watch for symptoms of PID, especially during the...
first month of use.

- These recommendations apply to healthy women; women with health conditions that warrant antibiotic prophylaxis for invasive procedures (e.g. women with cardiac valve disorders) may also need antibiotic prophylaxis for IUD insertion. **As there is no evidence for the provision of prophylactic antibiotics prior to insertion of the LNG-IUS, these recommendations are based on evidence for the copper IUD.**

- Women should be informed about changes in their menstrual bleeding patterns: heavier or longer menstrual bleeding than with normal menstrual periods in copper IUD users, and amenorrhea or spotting and light bleeding in LNG-IUS users. However, heavier or longer menstrual bleeding may occur during the first 3–6 months of both copper IUD and LNG-IUS use. It is not usually harmful, and bleeding typically becomes lighter over time.

According to WHO MEC 2015, benign ovarian tumours (including cysts) are category 1 for both types of devices, although LNG-IUS use increases the likelihood of occurrence of functional ovarian cysts.
Nearly all trials used modern IUC. Most effectiveness evidence was of moderate quality, having come from single trials. Lidocaine 2% gel, misoprostol and most NSAIDs did not help reduce pain. Some lidocaine formulations, tramadol and naproxen had some effect in reducing IUC insertion-related pain in specific groups. Further research is needed to identify more effective interventions.
Insertion of an intrauterine contraceptive device
Adhering to the proper insertion method and using a sterile technique decrease the risk of infection, uterine perforation and expulsion. Data indicate that antibiotic prophylaxis does not prevent infections acquired at the time of insertion, but some guidelines recommend antibiotic prophylaxis when a device is removed and replaced with another.

Insertion procedures vary, depending on the device, and practice kits are available so clinicians can learn how to properly insert each device. There are general guidelines that the clinician should also follow before opening the package:

1. Confirm that the patient wishes to use the device.
2. Perform a bimanual examination to assess the position of the uterus and rule out pelvic infection.
3. Place the speculum in the vagina.
4. Clean the cervix and vagina with Betadine or a similar antiseptic solution.
5. Place a tenaculum on the anterior lip of the cervix.
6. Explore the uterus with a uterine sound.

Pain may occur during the insertion procedure, due to a vasovagal reaction, the need for cervical dilation, difficulty with insertion, or uterine perforation. Consider using ibuprofen or another NSAID to control such pain.
IUD insertion
Patient information

Pain: *You may feel discomfort, such as heavy menstrual cramps*

The provider:
- Performs a pelvic examination
- Cleans the cervix and vagina with an antiseptic
- Inserts a small rod into the uterus to measure the depth of the uterus
- Inserts the IUD through the vagina and into the uterus using a small applicator

* For The LNG 20 IUS the hormonal method should be continued for 7 days after insertion.
IUDs can be inserted immediately after first trimester, spontaneous or induced, abortions. No difference was found in risk of complications for immediate vs delayed insertion of an IUD after abortion. Expulsion was greater when an IUD was inserted following a second trimester abortion vs a first trimester abortion.

**Immediate postpartum copper IUD insertion**, particularly when insertion occurs immediately after delivery of the placenta, is associated with lower expulsion rates compared with delayed postpartum insertion.
Early insertion following a medical termination of pregnancy (MTOP) is safe, and the rate of IUD expulsion is low. Most adverse events possibly delaying IUD insertion occur early. Based on timing of adverse events in the control group, IUD insertion approximately 2 weeks after completed MTOP seems optimal.

In a randomised trial to compare early and delayed IUD insertion following medical abortion (Ref 3), the authors explored whether endometrial thickness and initial IUD position were associated with IUD expulsion. Women who expelled their IUD \((n=15)\) had slightly thicker endometria \((p=0.007)\) and slightly lower baseline IUD positions \((p=0.03)\) than those who retained their IUD, but no clear cut-offs emerged in the receiver-operating characteristic curve analysis.
Frequency of expulsion

**Complete expulsion:** IUD observed in the vagina and/or not visible in the uterine cavity during routine ultrasound, or if the woman confirms that the IUD was expelled
- Less frequent in LNG-IUS users compared with copper IUD users
- Most frequent in the first months of IUD use
- Most frequent during menses
- >50% of all complete expulsions in the first 6 months of IUD use (2–8% in all women)

**Partial expulsion:** IUD displaced in the cervical canal and/or partially visible in the vagina
- More or less as frequent as complete expulsions


Ref 1: This retrospective analysis included follow-up data of 107 Multiload 375 users and 107 LNG-IUS users, or evaluation of 1882 cycles with the Multiload IUD and 1749 cycles with the LNG-IUS. The two groups of women were comparable with regard to age, parity and months of follow-up. More women with an LNG-IUS had a history of previous IUD dislocation, hypermenorrhoea and dysmenorrhoea. The IUD users had regular follow-up visits 6 weeks after insertion and then 6 monthly. Using TVUS the distance between the top of the vertical arm of the IUD and the junction between the endometrium and the uterine cavity (IUD-ED) was measured in the mid-longitudinal plane. A partial expulsion was defined as an IUD-ED >10 mm. Over the entire study period from insertion to a maximum of 60 months, significantly more incorrect positions were observed in the Multiload 375 group.

Ref 2: A prospective comparative study included 114 LNG-IUS users and 81 copper IUD users. The clinical evaluation was compared with the TVUS measurement of IUD position both immediately after insertion and 6 weeks after insertion. Whenever the IUD-ED was >5.0 mm, removal was advised. The results of this study showed that routine use of TVUS to monitor the position of the IUD is not indicated without clinical suspicion of an erroneous position, because the chances of an inadequately positioned IUD are negligible.

* Comment: These findings were based on studies of the LNG-IUS and traditional copper IUDs. Newer, smaller LNG and copper devices (short loop) might be better tolerated in women with a small uterus.
Reinsertion after expulsion

If examination during visits subsequent to insertion reveals that the length of the threads has changed since insertion, and the system is verified as displaced, it should be removed.

The woman should be informed of an increased risk of repeated IUD expulsion if she chooses to continue using IUC.

Reinsertion is possible:

• At the time of IUD removal
• During the next menstrual period (first 7 days for LNG-IUS, and first 12 days for copper IUD)

Appropriate follow-up after IUD insertion

The minimum frequency of follow-up recommended for safe and effective use of IUDs

- After the first menses or 6 weeks following insertion
- Women should be advised to return at any time to discuss side effects or other problems, or if they want to change method
- Women should be advised to return when it is time for IUD removal

Ref 1