

Risk of clinical pelvic inflammatory disease attributable to an intrauterine device

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Use of the intrauterine device (IUD) is avoided because of perceived risk of pelvic inflammatory disease (PID) associated with sexually transmitted infections (STI). Calculation of the risk of clinical pelvic inflammatory disease showed that the estimated risk was low (0-15%), even with a high STI prevalence. This estimated risk argues for making IUDs more available.

Although the intrauterine device (IUD) is a common method of contraception its use varies greatly among countries.¹ The risk of pelvic inflammatory disease (PID) is increased among IUD recipients who are specifically at risk of sexually transmitted infections (STIs).¹ Apprehension about PID, especially in areas such as Africa where STIs may be high, might cause clients, providers, and programme managers to avoid IUDs. But what is the actual risk? I have used evidence from other studies to estimate the risk of PID that is attributable to IUDs.

I calculated the risk of clinical PID that is attributable to the IUDs on the basis of the presumed biological hypothesis: PID results from IUD insertion in the presence of cervical gonorrhoea or chlamydia and occurs within the first few months after insertion. Thus, the absolute risk of PID for any particular insertion is the product of the prevalence of gonorrhoea or chlamydia, multiplied by the probability of contracting PID when an IUD is inserted with these diseases present. Prevalence of these STIs among IUD recipients might be reduced by screening to restrict provision to low-risk clients. Additionally, the risk of PID that is attributable to IUD use is the absolute risk minus the risk of PID that would have occurred without the device.

What data are available to estimate risk? In antenatal and family planning settings in African countries the prevalence of gonorrhoea and chlamydia is around 10%.² Also, in a study in Kenya, investigators showed that simple screening with questions about STI risk identified a group of IUD recipients with about 50% reduced prevalence of gonorrhoea or chlamydia.³ This study might have underestimated the value of screening since it neglected the clients' self screening. If an IUD is inserted in the presence of gonorrhoea or chlamydia, the risk of symptomatic PID ranges from 3·1 to 5·3%.^{4,5} I used 5% risk for the calculation. Finally, the relative risk of PID developing in an IUD user compared with a non-user can be used mathematically to adjust for the risk of PID without the IUD. I used 2·5,¹ which translates into a downward adjustment of 40%. These somewhat high-end assumptions yield an estimate of full clinical PID risk due to IUD use of 0·15%, or less than one in 600 (table). With an overall gonorrhoea or chlamydia prevalence of 20%, the risk would be 0·3%, but would be only 0·075% for prevalence of 5%.

There are some potential caveats with the calculations. First, I addressed only fully symptomatic PID; the IUD may be related to more subtle infections and symptoms. However, the studies of PID risk I used considered broader clinical endpoints in addition to fully symptomatic PID, and even with these endpoints, clinical infections potentially attributable to the IUD remain low. Second, the relation between IUDs and PID might extend beyond cervical infections caused by gonorrhoea or chlamydia to trichomoniasis or bacterial vaginosis. However, this possibility diverges from current recommendations. For example, WHO recommendations generally allow IUDs for clients with straightforward vaginitis without purulent cervicitis.¹ Also, in IUD clinical trials done in

Risk	Value
Prevalence of GC/CT in population	10%
Reduction in prevalence of GC/CT by screening	50%
Risk of PID with IUD if GC/CT present	5%
Absolute risk of PID in IUD user	0·25%
RR of PID in non-IUD user	40%
Absolute risk of PID in a non-IUD user	0·10%
Risk of PID attributable to IUD	0·15%

GC=gonorrhoea, CT=chlamydia, PID=pelvic inflammatory disease, IUD=intrauterine device, RR=relative risk.

Values used in calculations of PID risk

African countries, PID is uncommon^{1,4} despite high prevalence of vaginal infections. Third, I used results from clinical trials with a high quality of care, which may not generalise to all settings. Despite the importance of quality, its variation may not greatly alter the general conclusion. Clinical screening is of little value.³ Of the four values in the calculation, only historical screening for STI risk seems very sensitive to quality of care—and its complete elimination from the calculations increases the calculated risk only to 0·3%.

Fourth, the observation period in the PID incidence studies was short. However, most of the PID risk with the IUDs occurs within the first few months, or even weeks.¹ Fifth, the estimate for the relative risk of PID with an IUD in the presence of infection with gonorrhoea or chlamydia (2·5) could be too low. However, the most extreme assumption that no PID occurs in non-IUD users with gonorrhoea or chlamydia, only increases the attributable risk to 0·25%. Sixth, oral contraceptives, injectables, and condoms protect against symptomatic PID—the IUD does not. In my view, that fact is important for counselling, but should not detract from IUD use by appropriate clients.

On the basis of the data and possible difficulties presented, fully symptomatic PID attributable to IUD use is quite uncommon, even with high STI prevalence. Low STI prevalence favours the use of IUD even more. The assumptions that I have made might overestimate the risk attributable to IUDs. Moreover, African clinical trials corroborate very low rates of PID among IUD recipients.^{1,4} Even if the estimate is off by six-fold, the risk of PID is below 1% in a high STI setting. This low risk differs from the high PID risk perceived by many members of the programme staff.

Although PID risk from IUDs is very low, we need to try to reduce it, by improving risk screening algorithms.³ Managers also need better estimates of STI prevalence among their clientele. Although it has disadvantages, the IUD also offers considerable benefits, including efficacy similar to that of sterilisation, reversibility, and potential use for over a decade.¹ More women should be offered the IUD as a realistic contraceptive choice.

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