



III. COMMUNITY EMPOWERMENT THROUGH COMMUNITY AWARENESS AND MOBILIZATION



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Community mobilization is a newer, but important, component of improving access to postabortion care services. Other sections of this module highlight the need for strengthening political will, upgrading facilities, restructuring services, and training providers in both techniques of providing emergency care and postabortion family planning information and services. Once services are available, communities can be mobilized to know about PAC services and to use the services as well as create demand for quality postabortion care services. Mobilizing communities without adequate services in place is counterproductive.

It is important to acknowledge that PAC has characteristics that set it apart from other components of reproductive health, most notably that abortion is illegal in many countries and most women who seek PAC do so because they have had complications from illegal abortions. In some countries, such as Bolivia, the woman and provider who performed the abortion can be jailed. Community mobilization activities for PAC must be sensitive to such issues.

A combination of fear, rising from the stigma associated with legal and illegal abortion in many communities, and lack of information on how to recognize dangerous complications of abortion, prevent many women from seeking help. Community mobilization strategies must work simultaneously to facilitate community acknowledgment of the problem, foster productive discussion of the issue, and educate women on the signs and symptoms

that necessitate treatment.

According to the USAID PAC Model, effective community awareness and mobilization is needed to empower the community to provide and demand quality effective postabortion care services. The term community is meant to be inclusive of governments, ministries of health and educators, PVOs, NGOs, women's groups, youth leaders, professional organizations, community associations, male leadership, faith-based organizations, traditional birth attendants, community-based distributors, donors, and other stakeholders appropriate to each community. The community is needed to:

- Identify its health needs as it relates to postabortion care;
- Plan for resources necessary to meet identified health needs;
- Mobilize required resources to provide PAC, whether this be policy, development of primary sites for service delivery, monetary, equipment, personnel, transportation, and social marketing to meet its identified needs;
- Determine how to make care accessible in the community;
- Educate its constituents regarding unsafe abortion, the three delays in seeking care and its inherent consequences; postabortion complications; and
- Establish relationships with healthcare providers/facilities on all levels (community/ primary/ secondary/ tertiary) to ensure comprehensive service delivery for postabortion care.



Cornerstones of Social Mobilization	Community	Family	Individual Woman
Focused Action for Postabortion Care <ul style="list-style-type: none"> Goal: To increase the use of emergency treatment and non-emergency services (FP counseling and services, STI evaluation and treatment, HIV counseling and testing) 	Improved community knowledge, norms, and practices Increased community resources Establishment of mechanisms for discussion and action on postabortion care among community members and between community and health services	Improved knowledge and practices related to complication readiness Shared decision-making to support complication readiness	Improved knowledge and practices related to complication readiness
Capacity Building for Postabortion Care <ul style="list-style-type: none"> Goal: Increased skills to promote, support, and monitor PAC programs and policies on a sustained basis and empower individuals, communities and organizations 	Improved commitment and capacity of community leaders/groups to analyze local needs, mobilize people and resources, and carry out actions for complication readiness Increased ability to access resources within and beyond community	Improved collective problem-solving and shared decision-making skills related to complication readiness	Increased confidence to articulate and act on their needs and influence household decision-making related to complication readiness Improved problem-solving skills

A number of opportunities exist to link postabortion care with other services, including safe motherhood, family planning, and HIV/AIDS initiatives. Because the literature related to PAC and community mobilization is scant, this section draws from literature on community mobilization from these fields, using the lessons learned and recommendations as a framework into which PAC could be incorporated.

The Maternal and Neonatal Health (MNH) Program Framework for Social Mobilization uses focused action and capacity building to

target specific safe motherhood outcomes. This framework can be adapted for postabortion care. The perspectives of the community, the family, and individual women are particularly relevant to discussion of PAC mobilization. Men must be involved at each of these levels—in their capacity as community leaders, family members, and partners.

Effective community education and mobilization efforts are context-specific and account for the political situation and community attitudes toward postabortion



care for complications related to miscarriage and incomplete abortion in each setting. Formative research in the community can uncover important perspectives and determine the best ways to address PAC. Access to PAC can be expanded by training community health workers to provide family planning and make referrals, involving male partners about PAC treatment and follow-up care, counseling family members, and mobilizing social support systems with gender-sensitive programs. In addition, special consideration should be given to the needs of adolescent and unmarried women seeking abortion services and postabortion care.



III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Community education efforts can increase the awareness of PAC services and enhance the quality of and access to PAC programs.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>A 1996 operations research study in Ghana found that including a community education component in PAC training and including health educators in PAC activities can increase the number of women receiving postabortion care. Following the training, which was part of a larger project to test the feasibility and safety of training and equipping professional midwives to provide PAC services, 81 percent of the 40 trained midwives participated in community education activities in Eastern Region, Ghana. The private midwives who participated in the training reported feeling more comfortable than the public sector midwives in conducting community education. Those midwives reported that “these health talks increased their visibility in the community, raised awareness of the issue of unsafe abortion, and elevated community members’ respect for their skills in providing comprehensive reproductive healthcare” (Baird et al., 2000: 631–632). Two years after the training, the midwives had seen more than 200 PAC patients. The study involved 80 public and private sector midwives [40 in the intervention group and 40 in the control group (for whom no results were reported)], four physicians who provided backup to the midwives, and health educators who worked at four district hospitals in Eastern Region, Ghana (Baird et al., 2000).</p>	V
<p>Community-based health worker education can increase the number of women using PAC and family planning services.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>A study, in the Suba District in Western Kenya in 2001, shows that training of community-based health workers (CBHWs) can increase both the number of women using postabortion care services in clinical facilities and the proportion of women using contraception. Phase II, implemented over a four year period, follows formative research that identified community attitudes toward unintended pregnancy and unsafe abortion as well as socio-cultural determinants of reproductive health seeking behavior (Mukenge, 2002). COBAC’s midterm evaluation illustrates significant improvement in health-seeking behavior and contraceptive use. In addition, 72 percent of survey respondents indicated that they preferred health facilities over traditional birth attendants. Use of family planning also increased; 63 percent of users obtained non-prescriptive contraceptives from community-based health workers (CBHW), and 3,000 to 5,600 more clients are being served in area facilities. Ninety percent of PAC clients served in clinical facilities had been referred by CBHWs. With the help of trained CBHWs, women spent less time identifying suitable clinics and providers. (Magak and Mulenge, 2003)</p>	V

III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Volunteer health promoters can provide family planning counseling and distribute contraceptive methods, thus, increasing contraceptive acceptance.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>Peru’s Multi-Sectoral Population Project (MSSP) used community volunteers to increase knowledge about reproductive health in 672 rural and peri-urban communities throughout the country. The project is one effort by CARE to improve reproductive health and increase access to family planning. The project evaluation in 1996 determined that volunteers had recruited over 28,300 contraceptive acceptors and enabled more than 1,000 to access long-term methods from MOH health facilities. The volunteer health promoters had organized 4,680 group talks on reproductive issues. The network of 1,000 volunteer health promoters provided information on family planning, sexuality, and reproductive anatomy through individual and group events. Health promoters disseminated information on contraceptives, distributed methods (oral contraceptive pills, condoms, vaginal tablets, and injectables), and referred women to MOH clinics for long-term methods and other services. The authors highlight the importance of one-on-one messengers to the program’s efforts. Reproductive health information was disseminated through community volunteers in a culturally appropriate and sensitive way. Because medical professionals in Peru are not adequately trained in counseling, using community volunteers in outreach efforts proved essential in providing community members accurate information on methods, access to contraceptive supplies, and in linking individuals to health facilities equipped to provide other long-term methods (Schubert et al., 1997). PAC was not mentioned specifically in the report about this program, but PAC could potentially be added to program activities.</p>	<p>V</p>





III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Pre-intervention PAC research shows that involvement of community members can raise awareness of PAC services; identify barriers at the community level (i.e., quality and quantity of services and lack of emergency transport); and, strengthen referral systems by incorporating families and community-based providers.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>A 1999 exploratory study on postabortion care consisting of focus groups and in-depth semi-structured individual interviews in two sites of Nyanza Province, Kenya, concluded that the majority of community members interviewed believe that existing PAC services were inadequate, in both quantity and quality. Many participants believed that no formal PAC services were available in their regions. Others stated public hospitals as a source of postabortion care; however, the respondents perceived that a very limited number of public hospitals existed. A range of respondents cited traditional and community-based providers as the first step when complications arise. These providers are often the first to be consulted by women experiencing complications arising from an abortion. These providers often administer herbal remedies to neutralize the effects of the modern medications. This practice is seen as a follow-up to hospital care. Only a few respondents, typically clinical providers, mentioned postabortion counseling as part of PAC. Furthermore, respondents identified a variety of barriers at the community level to PAC: lack of proper, prompt referral by the community-based providers who receive the majority of complication cases; abandonment by the person who induced the abortion; low quality of care within the hospitals that receive PAC cases; lack of emergency transport; and social pressures and perceptions of bad treatment that inhibit girls from alerting others to their emergency. The authors conclude that education efforts can raise awareness concerning available PAC services. In addition, referral systems must be strengthened by incorporating both families and community-based providers (Rogo et al., 1999).</p>	<p>IV</p>
<p>PAC services are needed even in contexts where abortion is legal.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>A 1999 community assessment in four villages in rural Uttar Pradesh, India, using non-random qualitative data collection techniques found that postabortion care services are needed even where abortion is legal. During the year in which the study took place (April 1999–March 2000) between 8 percent and 10 percent of patients admitted to Kasganj Christian Hospital (5–8 patients per month) were admitted with abortion complications. Data collection revealed that “while there are clear linkages between induced abortions conducted by untrained providers and the severity of complications, postabortion complications were also experienced by some women who went to referral-level providers” (Johnston et al., 2001: 25).</p>	<p>V</p>

III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Community participation and support for community emergency transport systems leads to better care for pregnant women and sustained links between the communities and health facilities.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>An evaluation of the Community Capacity Building and Empowerment initiative, a program designed to address high maternal morbidity and mortality in the Mwanza region of northwestern Tanzania, revealed that by 2001, 12 villages had developed emergency transportation systems, and 10 were functional and had been used by women with obstetric emergencies. The initiative was undertaken by the Community-Based Reproductive Health Project (CBRHP), a joint effort of CARE and the Tanzanian Ministry of Health, developed to address high infant and maternal mortality in two of Tanzania’s poorest districts. The project used qualitative data from group interviews and program data from CBRHP to assess progress in the development and use of community-level transport systems. Fifty-two villages received at least one mobilization visit by master trainers or CARE field staff, follow-up visits to assess their progress on the development of emergency transportation plans, use of participatory problem solving methods, and supportive supervision of VHWs. At baseline, no villages had community-level plans for providing transportation during health emergencies. These emergency transportation systems had also been used by people with other medical emergencies. In the final evaluation, 62 percent of communities reported that emergency transport provisions were the responsibility of the community, a significant improvement from 1997 when the majority of communities believed transport was an individual’s responsibility. The cost of obtaining transport decreased to 1,000 to 8,000 shillings from the prohibitive sum of 10,000 to 80,000 shillings at baseline. Service use also improved; in 1997 only 4 percent of pregnant women attending the district hospital were treated for obstetric complications. By 2001, 15 percent were treated. More women in need of specialized care came to the hospital (Ahluwalia et al., 2003)</p>	<p>V</p>





III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Health action-education campaigns using community health workers can identify pregnant women, provide them with information on danger signs of pregnancy and contraception, and can help increase the numbers of women who seek skilled attendance.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>A health education-action campaign conducted in February 1990 by the Rural Women's Social Education Center (RUWSEC) to improve pregnancy outcome in Tamil Nadu, South India, resulted in an increase in the proportion of hospital deliveries in the catchment area from 22 percent to 45.5 percent. A very high proportion of women who developed complications during pregnancy and delivery were taken to a health facility after the intervention (data not provided). Forty-seven rural hamlets were included in the campaign, encompassing a population of 23,562 people who live in 4,386 households. During the campaign, community health workers from RUWSEC identified pregnant women in the population, carried out health education activities, and provided basic healthcare and advice to the women, encouraging them to use hospital delivery services in the event of an emergency. Over the course of a three-month period, they made repeated household visits to identify pregnant women. Baseline data collected at the first visit included detailed pregnancy histories and information about their socioeconomic background. Health action-education activities followed the initial data collection. Health workers distributed pamphlets outlining risk factors and danger signs during pregnancy, along with manuals illustrating how to assemble a clean birth kit and information about contraception. In order to circumvent widespread illiteracy, health workers read the information out loud with participants. Community health workers also reached out to men, recognizing that they are often the literate members of the household. Later, workshops brought together members of a number of hamlets for discussion surrounding safe motherhood. The workshops simultaneously informed expectant mothers and influenced popular opinion on the importance of safe motherhood efforts (Sundari, 1993). PAC was not mentioned specifically in the report about this program, but PAC could potentially be added to program activities.</p>	IV

III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Multiple community-based educational strategies, including women’s groups and radio messages, can effectively increase knowledge of danger signs in pregnancy.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>Between April 1997 and May 1998, a three-component intervention of the Guatemalan Ministry of Health and MotherCare increased awareness of danger signs during pregnancy, delivery, and the postpartum period in four regions of the country: Quetzaltenango, Sololá, Totonicapán, and San Marcos. Evaluation assessed that among women using health clinics, those who had heard radio messages and who had participated in women’s groups were three and five times more likely, respectively, to have heard about danger signs in pregnancy than women who had not. Among women using the health clinics, the likelihood of having heard of danger signs nearly tripled between 1997 and 1998. Three surveys were conducted: 637 pregnant women were interviewed in 1997; 163 pregnant women using a subset of the same health clinics were interviewed in 1998; and a population-based survey of 638 pregnant and new mothers was conducted in 1999. Data were analyzed using logistic regression to model awareness of danger signs as a function of sociodemographic characteristics, prenatal care utilization, and the IEC interventions. Evidence from both the clinic and population-based surveys suggest that the community-based education campaigns produce dramatic increases in knowledge about danger signs during pregnancy. While women who had heard pregnancy-related radio messages were two to three times as likely to be aware of danger signs in 1997 and 1998 (respectively), the women who participated in women’s groups were over five times more likely to be aware of danger signs than those who had not (Perreira et al., 2002). PAC was not mentioned specifically in the report about this program, but PAC could potentially be added to program activities.</p>	<p>IV</p>





III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Community-based programs can increase women's knowledge of danger signs in pregnancy or delivery, increase use of modern contraceptives, and increase community participation in planning and decision-making for emergency obstetric care.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>An evaluation of the Community Capacity Building and Empowerment initiative, a program designed to address high maternal morbidity and mortality in the Mwanza region of northwestern Tanzania, revealed that women's knowledge of two or more danger signs during pregnancy or delivery increased from 10 percent in 1997 to 56 percent in 2001. The initiative was undertaken by the Community-Based Reproductive Health Project (CBRHP), a joint effort of CARE and the Tanzanian Ministry of Health, developed to address high infant and maternal mortality in two of Tanzania's poorest districts. The evaluation found that 48 percent of the pregnant women had a household birth plan in place (no baseline data available). The number of women with children under age two using modern contraceptives to delay pregnancy more than doubled, from 11 percent at baseline to 24 percent in 2001. In addition, communities were more likely to provide social, financial, and/or technical support for the VHWs. The Community Capacity Building and Empowerment Project promoted problem solving through training, technical assistance, and support for VHWs; developing community-based plans for transportation to health facilities; and increasing participation by community members in planning and decision-making. In addition to working with the communities, CARE Tanzania worked with the MOH to upgrade health centers and hospitals to appropriate levels of obstetric care through staff training and supply provision (Ahluwalia et al., 2003). PAC was not mentioned specifically in the report about this program, but PAC could potentially be added to program activities. See Appendix I, Ahluwalia et al., 2003, for a description of the intervention.</p>	V

III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Community-based women’s savings and credit groups can provide a forum for women to discuss sensitive topics, and community education efforts can increase use of services.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>The Boudha-Bahunipati Family Welfare Project (BBP) in Nepal laid the foundations of community mobilization and involvement from its inception in 1973 until the second stage of reproductive health interventions which began in 1996. At the community level, new women’s savings and credit groups were formed, increasing from less than 10 to 52 across the BBP area. The number of women who received reproductive health services in the eight project sites saw substantial increases from 1,620 women (July 1997–June 1998) to 2,968 women (July 1998–June 1999). During qualitative research, women commented on the connection between reproductive morbidity and mortality and underlying social factors (domestic violence, sexual trafficking, and sexual network patterns). The women’s saving and credit groups identified uterine prolapse, maternal health, alcoholism, gender violence, girls’ education, and women’s low status as the highest-priority issues. Efforts included training of trainers, problem tree analysis to determine the root causes of complicated issues, and the development of action plans to address the highest-priority reproductive health issues. As a complement to system-level changes in the reproductive healthcare delivery systems that were occurring simultaneously, community-based women’s savings and credit groups provided the forum for women to discuss sensitive topics (Arens et al., 2002).</p>	<p>V</p>
<p>Community education and mobilization efforts can increase blood banking and decrease primary postpartum hemorrhage fatality rates.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>Nigeria’s community education and mobilization campaigns about blood donation from 1993–1994 led to increased community understanding of the dangers of postpartum hemorrhage, increased availability of blood for donation, and increased use of blood banks in health facilities. Due to community mobilization efforts, blood availability for transfusion increased from 39 percent in the pre-intervention period to 79 percent in the post-intervention period ($P < 0.001$). Additionally, more than half of the units of blood during the pre-intervention period came from paid donors. After the community mobilization efforts, over 80 percent of the units were from voluntary donors. The primary postpartum hemorrhage rate was 3.6 percent before the intervention. This increased to a rate of 4.8 percent, most likely because after the intervention more women presented at health facilities with postpartum hemorrhage. Even with an increased rate of postpartum hemorrhage, the case fatality rate dropped from 12 percent to 5 percent ($P < 0.05$). (continued...)</p>	<p>IV</p>





III.A. HEALTH PROMOTION FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Community education and mobilization efforts can increase blood banking and decrease primary postpartum hemorrhage fatality rates.</p> <p><input checked="" type="checkbox"/> Enough evidence for action; needs more research: One study.</p>	<p>(continued...) In addition to facility-based improvements in blood banking, the Prevention of Maternal Mortality (PMM) team, based in Calabar, addressed socio-cultural beliefs that had been shown to contribute to maternal deaths from hemorrhage. The first phase of the intervention consisted of 15 education and mobilization campaigns from April 1993 until December 1993. Conducted in English and Efik, the campaigns emphasized blood transfusion as life-saving. They also reinforced that transfusion is possible only if blood is available and encourage members of the community to donate their blood voluntarily. Posters, handbills, and songs spread the message from villages to major markets, schools, and churches (Etuk and Asuquo, 2000). PAC was not mentioned specifically in the report about this program, but PAC could potentially be added to program activities by educating community members on the need to seek emergency care at any time heavy bleeding occurs related to pregnancy.</p>	<p>IV</p>
<p>Community education efforts can help reshape social norms surrounding PAC and knowledge of consequences of unsafe abortion including reliance on traditional healers for PAC services and acceptance of adolescents' use of contraceptives.</p> <p><input checked="" type="checkbox"/> Needs more research: One study.</p>	<p>A study launched in the Suba District in Western Kenya in 2001, shows that community education and mobilization can increase knowledge of the risks of unsafe abortion, promote appropriate PAC, and foster greater acceptance of adolescents' sexuality and the use of contraception. Community education can generate improved policies toward pregnant girls and women. Phase II, being implemented over a four-year period, followed formative research that identified community attitudes toward unintended pregnancy and unsafe abortion in the area (Mukenge, 2002). COBAC's midterm evaluation showed significant changes in community members' attitudes towards unwanted pregnancy, postabortion care, and adolescent sexuality. Community members were increasingly willing to discuss topics that were considered taboo before the intervention. Knowledge of reproductive health and the consequences of unsafe abortion increased significantly, as did individuals' ability to ask question related to sexual and reproductive health. Respondents were less likely to trust traditional healers for abortion complications. At midterm, only 27 percent of respondents indicated that they would trust a traditional healer for PAC services, a complete reversal from the baseline data, which showed that the majority of the community trusted traditional healers for PAC services. Most importantly, the community is no longer categorically opposed to the provision of contraceptives to adolescents. Health providers are reportedly offering more youth-friendly services (Magak and Mukenge, 2004). See Appendix I, Magak and Mukenge, 2004, for a description of the intervention.</p>	<p>V</p>

III.A. REDUCING THE INCIDENCE OF INDUCED AND SPONTANEOUS ABORTIONS CAN REDUCE THE NEED FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>There is a strong association between malaria in pregnancy and an increased risk of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Strong evidence: One study.</p>	<p>Numerous studies have found an association between malaria in pregnancy and an increased risk for spontaneous abortions (Endeshaw, 1991; Nosten et al., 1991; Taha and Gray, 1993 cited in Ticconi et al., 2003).</p> <p><i>Please also refer to Appendix 6 on malaria in the module “What Works: A Policy and Program Guide to the Evidence on Family Planning, Safe Motherhood, and STI/HIV/AIDS Interventions; Module 1: Safe Motherhood Module” by Gay et al., 2003.</i></p>	II
<p>Exposure to environmental contamination including pesticides and fungicides can increase the incidence of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Strong evidence: Two studies and one literature review.</p>	<p>A study in Canada found strong evidence that women’s exposure to pesticides in the three months prior to conception or in the month of conception significantly increased their risk of spontaneous abortion. Preconception exposure to the pesticides glyphosate, atrazine, carbaryl, and 2, 4-D increased relative risk of spontaneous abortion by 20 percent to 40 percent. Risks were even higher for women 35 or older exposed to pesticides and to pesticide mixtures. Older women exposed to both triazines and thiocarbamates before conception had a nearly eight fold increase in the risk of spontaneous abortion over women exposed to triazines only (Arbuckle et al., 2001).</p>	IV
	<p>A study in Turkey found that exposure to the fungicide hexachlorobenzene was strongly correlated with risk of spontaneous abortion. In southeastern Turkey from 1955–1957, women were accidentally exposed to the fungicide hexachlorobenzene (HCB) after eating contaminated seed grain. A retrospective controlled cohort comparison study of three groups was conducted. Group 1 was exposed to HCB; group 2 were controls to the region; and group 3 were controls for the country of Turkey, followed up after 40 years, with 42 women in each group. There was a threefold significant association between concentration of serum HCB and risk for spontaneous abortion. Blood samples were taken for analysis of HCB. Interviews were completed for each woman of their reproductive history (Jarrell et al., 1998).</p>	III





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Summary of Evidence	Supporting Research	Gray Type
<p>Exposure to environmental contamination including pesticides and fungicides can increase the incidence of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Strong evidence: Two studies and one literature review.</p>	<p>A review of literature on environmental contamination and adverse reproductive outcomes found that solvent exposures are associated with an increased risk of spontaneous abortion. Investigators also reported an increased incidence of spontaneous abortions among women in Bhopal, India, who were exposed to the industrial methyl isocyanate (MIC) gas leak (Mehta, 1990 cited in Bhatt, 2000).</p>	<p>III</p>
<p>Smoking and exposure to smoke during pregnancy may increase the risk of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Needs more research: Seven studies and one literature review.</p>	<p>In a study in New York, the risk of having a spontaneous abortion for regular smokers increased by 46 percent for the first 10 cigarettes smoked a day and by 61 percent for the first 20 cigarettes (Chollat-Traquet, 1992).</p>	<p>IV</p>
	<p>Literature reviews indicated that women exposed to environmental tobacco smoke (ETS) during pregnancy increases the risk of pre-term delivery and spontaneous miscarriages. It was found that pregnant women who were exposed to at least seven hours of ETS a day shows a higher risk of pre-term delivery than women without ETS exposure (Windham et al., 2000 cited in Han and Gan, 2003). It was also reported that pregnant women who work in places with exposure to ETS are 1.53 times more likely to have spontaneous abortions or still births (Ahldorg et al., 1991 cited in Han and Gan, 2003).</p>	<p>III</p>

III.A. REDUCING THE INCIDENCE OF INDUCED AND SPONTANEOUS ABORTIONS CAN REDUCE THE NEED FOR PAC

Summary of Evidence	Supporting Research	Gray Type
<p>Smoking and exposure to smoke during pregnancy may increase the risk of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Needs more research: Seven studies and one literature review.</p>	<p>A study conducted in Montreal, Canada, during 1982–1984 interviewed 47,146 women with spontaneous abortions concerning their cigarette, alcohol, and caffeine consumption, and found that if the associations were causal, cigarettes accounted for about 11 percent of all spontaneous abortions (40 percent in women who smoked 20 or more cigarettes per day), alcohol consumption for about 5 percent (45 percent in women drinking 3 or more drinks per day), and coffee for about 2 percent (16 percent in women drinking 10 cups per day) (Armstrong et al., 1992).</p>	III
	<p>A study between 1995–1997 in the U.S. of 400 adolescents and women who had spontaneous abortions either at study entry or during 22 weeks of gestation found that cotinine [defined as “a major metabolite of nicotine that indicates levels of nicotine intake” (Foundation for Blood Research, 2004)] in urine was independently associated with an increased risk of spontaneous abortion. Cotinine was detected in the urine of 34.6 percent of the adolescents and women who had spontaneous abortions and 21.8 percent of those who did not have spontaneous abortions (Ness et al., 1999).</p>	III
	<p>A survey of 256 female hospital employees in the United States (year not specified) found that most of the women were largely unaware of the health risks from smoking that are specific to females. Fifty-two of the participants, or 20 percent, were smokers and 204, or 80 percent, were non-smokers and their ages ranged from 16–65 years old. Only 39 percent of the participants knew smoking may increase spontaneous abortions, 27 percent ectopic pregnancy, 22 percent infertility, 17 percent early menopause, 30 percent osteoporosis, and 24 percent cervical cancer. No significant differences between age, level of education, or smoking status was detected. Approximately 29 percent of women of reproductive age in the USA smoke and between 19 percent and 30 percent of these continue to smoke while pregnant (Roth and Taylor, 2001).</p>	III





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<p>Smoking and exposure to smoke during pregnancy may increase the risk of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Needs more research: Seven studies and one literature review.</p>	<p>A hospital-based, case-control study in Italy of 2,325 women found that smoking more than ten cigarettes per day during the first trimester of pregnancy was significantly associated with an increased risk of spontaneous abortion. Beginning in 1990, data was collected from 782 women admitted into a hospital in Milan having had spontaneous abortions, and from 1,543 randomly selected women (control group) who had delivered healthy infants. Structured questionnaires using self-reporting were given and information on the smoking habits of both the mother and father were recorded along with data on other potential confounding factors such as caffeine and alcohol consumption. Overall, 9.3 percent of the cases of spontaneous abortion were associated with smoking more than ten cigarettes per day during the first trimester of pregnancy. No association was found between smoking prior to conception and miscarriage, nor was any relationship detected between paternal smoking and spontaneous abortion. Furthermore, women reporting having had one or more alcoholic drinks per day during the first trimester of pregnancy, or women that were coffee drinkers, were found to be at a slightly higher risk of miscarriage. However, this increase was not considered to be significant (Chatenoud et al., 1998).</p>	<p>II</p>
<p>High levels of caffeine consumption during pregnancy can increase the risk of spontaneous abortion.</p> <p><input checked="" type="checkbox"/> Needs more research: Two studies.</p>	<p>A study of the relation between caffeine beverage consumption and spontaneous abortion in 2,967 pregnant women in the U.S. between 1988 and 1992 found that drinking more than three cups of tea or coffee was associated with elevated risks of spontaneous abortion (Dlugosz et al., 1996).</p> <p>A case control study regarding spontaneous abortion was conducted in the U.S. between 1986 and 1987 with 607 cases and 1,284 controls, and found that heavy caffeine consumers reporting nausea had a doubled risk for spontaneous abortion in contrast to those who did not report nausea. Heavy caffeine consumers who decreased their caffeine intake early in pregnancy had a risk of spontaneous abortion similar to that of nonconsumers (Fenster et al., 1991).</p>	<p>III</p>