

## Chapter 6 Maternal Mortality

Women do die as a result of induced abortion, despite what we repeatedly hear about the safety of the procedure. A recent survey by the World Health Organization found that induced abortion was the source of anywhere from 1.4 to 48.6 per cent of all maternal mortality, depending on the country. Abortion mortality is highest in Latin America, the Caribbean and some East European countries.<sup>i</sup>

Table 6.1 Abortion mortality by region

Region	abortion deaths as a percentage of all maternal deaths
Developed countries	8.2%
Africa	3.9%
Asia	5.7%
Latin America & Caribbean	12.0%

It is frequently taken for granted that abortion mortality is higher in countries where the procedure is illegal. True, abortion deaths seem to be highest in Latin America, where induced abortion is mostly illegal. But it is lowest in Africa, where it is also mostly illegal. The two countries with the world's lowest maternal mortality are Poland and Ireland, where abortion is also illegal. By contrast, those east European countries where abortion is legal have among the highest abortion mortality in the world.<sup>ii</sup>

One reason why the numbers of deaths are apparently so low in economically advanced countries is that abortion-related maternal mortality is generally underreported. The chief explanation for this is simple: codes in hospitals report only the presenting cause of death, not the underlying reason. In the case of abortion-related death the presenting cause might be hemorrhage, infection, embolism, or ectopic pregnancy. In fact, the reporting systems in Canada, the United States and in the World Health Organization (WHO) are so imprecise that any deaths related to a previous abortion are hard to track. In addition, death certificates are often inaccurately completed and -- either to protect the privacy of the woman and her family, or to avoid a possible lawsuit -- hospital staff and doctors may deliberately avoid coding an abortion-related death.

Another reason for underreporting bias is that many of the statistics provided by the Centers for Disease Control (CDC) in the U.S. come from unreliable hospital and clinic records. Statistics from abortion providers in both Canada and the United States tend to underreport negative findings, presumably so that abortion will be seen as a safe procedure. At highest risk of death related to abortion are African-American and other minority women.<sup>iii</sup>

Recent massive studies in Scandinavia, Britain and the United States study have established that women who undergo induced abortion experience, over the following one to eight years, a death rate as high as four times greater than women who give birth to their children. In addition to this,

the suicide rate associated with childbirth has been found to be as much as six times lower than the suicide rate associated with abortion. The link between abortion and suicide is of particular note and is examined in detail in Chapter 14, "Behavioral Outcomes, Suicide, Healing".

## **Maternal Mortality**

### Causes of Maternal Mortality in Abortions

Causes of maternal death that arise specifically from abortions include hemorrhage, infection, *embolism*, and *cardiomyopathy*. These causes of maternal death are generally underreported in official statistics.

Approximately fourteen per cent of all deaths from *legal abortion* in the United States are due to general anesthesia complications. According to Atrash and colleagues anesthesia-related deaths for legal abortion have not decreased, possibly because "pregnancy increases the sensitivity to the respiratory depressant effects of all these [anesthetic] agents". Furthermore, "an increasing proportion of these [abortion-related deaths] were anesthesia related deaths...resulting from cardiopulmonary arrest".<sup>iv</sup>

In six of the countries formerly part of the Soviet Union – Russia, Ukraine, Belarus, Estonia, Latvia and Lithuania – the very high frequency of abortion contributes to the "deleterious" population decline and maternal mortality remains "unacceptably high". "It is particularly worrying," write Mogilevkina and colleagues, "that induced abortions make up twenty per cent to 35 per cent of all maternal mortality".<sup>v</sup>

### Underreporting of Maternal Deaths

In the United States and Canada, as well as in the World Health Organization (WHO) there is a general and systematic underreporting of maternal deaths – deaths of women during pregnancy or delivery, or in the six weeks following the termination of a pregnancy.

According to recent analyses of mortality statistics using linkage studies, "more than half of such deaths...are probably still unreported".<sup>vi</sup> The death rates identified by these new linkage studies, connecting and cross-referencing various sources of vital statistics data, show that the Centers for Disease Control's Pregnancy-Related Mortality Surveillance System "does not identify all pregnancy-related deaths".<sup>vii</sup> In other words, women have died as a result of pregnancy, but their pregnancy was never connected to official death records.

### Underreporting of Abortion-Related Maternal Deaths

The system used in linkage studies to identify maternal deaths works back from a recorded birth. Because of this, it "cannot identify pregnancy-related deaths that do not generate a record of pregnancy outcome (e.g. ectopic pregnancies...induced or *spontaneous abortions*)".<sup>viii</sup> In any

event, Centers for Disease Control (CDC) reports combine maternal deaths by miscarriages and induced abortions into a single category and these combined numbers are accepted as accounting for all maternal deaths, even though demographic researchers recognize that there is systematic underreporting. (For instance, many maternal deaths from ectopic pregnancies and other causes are not recorded as related to abortion; see Chapter 2.)

Recently, Bégin, a Canadian health researcher, has found that the problem of underreporting of maternal and abortion-related deaths is not limited to the United States (and Canada), but extends also to the World Health Organization (WHO). WHO's claim that legal abortion (an abortion procedure performed by a licensed practitioner) is safe depends on a voluntary system of death certification which has been shown to be inherently unreliable. WHO's statistics come from physicians who are not told that they must *specify* the type of abortion that led to maternal death – spontaneous, induced, legal or illegal.<sup>ix</sup> Physicians are not even told that they must specify that the terminal illness (e.g. sepsis) followed an abortion.

In addition, the CDC Surveillance on Abortion showed 854,122 legal induced abortions in the U.S. in 2002, over a third less than the 1,293,000 reported by the Alan Guttmacher Institute, research arm of Planned Parenthood.<sup>x</sup> In this instance the statistics of a private institute would seem to be more reliable than those of a government agency.

Yet institutions such as the American Medical Association (AMA) use the CDC data. Indeed, the AMA (1992)<sup>xi</sup> insists that the reporting practices on abortion of the Centers for Disease Control are accurate and complete because “the CDC conducts a thorough investigation of each reported abortion-related death to verify the cause and circumstances surrounding the death”.<sup>xii</sup> This statement overlooks the CDC's own admission that it does not report on several states, including the largest of all, California.

Thus it is clear that official mortality figures start from a gross underestimate of the number of actual abortions. More important, a death must first be *identified* as abortion-related before it can be investigated as such. This is precisely how many deaths due to abortion slip through the net.

### How the Reporting System Works

The CDC system depends entirely on whether a report is made in the first place. Unless induced abortion is identified as an immediate cause of death, it will not be investigated or recorded by the CDC. Apart from the underreporting caused by the omission of several jurisdictions from the CDC's information gathering, inaccuracies may creep into the reporting process in several ways:

1. In the United States, 93 per cent of all abortions are performed in free-standing abortion clinics. A woman whose post-abortion condition is life-threatening will be admitted to a general hospital through an emergency department. The attending emergency room doctor will not be the physician who performed the abortion and may not record a subsequent death as resulting from an abortion.

2. If the woman dies, it is not usually the abortion provider but a casualty officer or the family doctor who must complete the death certificate, and it is this information upon which the death may or may not be reported to the CDC.<sup>xiii</sup> Statistics Canada has also noted that “if complications ensue after a patient has been discharged from hospital, the condition is treated as a separate case and does not appear in the original abortion record”.<sup>xiv</sup>
3. Inadequate information may be provided on the physician’s or coroner's report. For example, the death may be noted as related to a previous abortion, but insufficient detail may make it impossible to determine whether the abortion was induced or spontaneous. Canadian Medical Certificates of Death have been found to contain major errors 32.9 per cent of the time.<sup>xv</sup> Is it likely that U.S. death certificates are significantly more accurate? At present, given the politicization of the issue, we can be confident that the records of abortion-related deaths are incomplete.
4. Hospital coding may not reflect the international numbering system. A woman who dies from a hemorrhage may have the event recorded simply as “hemorrhage” but with no code that would connect the bleeding to an earlier induced abortion. Codes such as embolism or cardiomyopathy can stand alone, with no reference to an induced abortion as the cause.
5. Hospital staff may avoid using the full coding in order to protect the privacy of the deceased patient, and/or the family, or to avoid legal or political entanglement.
6. Incomplete, indirect, or subtle coding, if it occurs, may also assist the abortion practitioner who otherwise might run a greater risk of civil liability. Malpractice is a significant issue for all physicians but recent, concerted civil litigation by women injured by abortion has made abortion providers particularly vulnerable.<sup>xvi</sup>

Bégin has reviewed death statistics and the medical coding methods used to attribute death to maternal causes. She found that the Health Records of eighteen American states and four Canadian provinces do not permit deaths to be classified as maternal if they occur more than 42 days after the termination of a pregnancy. Bégin goes on to quote Donna Hoyet, the CDC expert on maternal mortality coding: “unless it specifically states that the death was within 42 days we assume it is not a maternal death...If death occurred 43 days or more after a termination of pregnancy...[we] do not [use] code ICD 630-676 [Pregnancy-abortion related].” If the woman has died, then, from abortion-related complications such as ectopic pregnancy, abortion will not be noted; the only cause of death referred to in this case would be “ectopic pregnancy”.

If death is immediate the death certificate need not specify what kind of an abortion was performed, and if maternal death happens 43 days after an abortion, the death will not be linked to it. Clearly, accurate reporting on maternal abortion-related deaths is not, at present, a reality in

North America.

The situation has been accurately summarized by Jones and Forrest of the Alan Guttmacher Institute. They acknowledge that in the national survey data for the United States between 1976 and 1988, "...abortions are characteristically underreported...Abortion reporting is found to be highly deficient in all the surveys, although the level varies widely. Whites are more likely to report their abortions than nonwhites".<sup>xvii</sup>

#### Doubtful Data

Another problem in obtaining accurate information is that data analyses use different comparative categories. For example, Meyer and Buescher, statisticians with the North Carolina Health and Environmental Statistics Bureau, use one type of reporting in which abortion mortality statistics are presented in terms of the number of live births in the state but not in terms of the number of abortions performed.<sup>xviii</sup> The American Medical Association reported that this approach would exaggerate the danger of pregnancy.

As we have seen, death certificates may not connect the direct cause of death with the preceding abortion event. A death from cardiac arrest may be listed as such, and not as a cardiac arrest due to a reaction to the anesthetic given during an abortion. Jacob found that in the statistics of maternal mortality, the greatest errors in classification occurred for women who had recently undergone an induced abortion.

More to the point, in 1992 the AMA Council on Scientific Affairs reported maternal death rates relying not on the CDC data for post-abortion death rates, but on data from Planned Parenthood.<sup>xix</sup> The CDC now concedes that the overall abortion figures of the Alan Guttmacher Institute (the Research Branch of Planned Parenthood) show significantly more abortions each year than the official numbers, but a recent publication does not discuss death rates. As the largest abortion provider in the United States, Planned Parenthood keeps track of the number of abortions, but is clearly in a conflict of interest in reporting abortion deaths. In any event, the references found in the CDC report are most often from Planned Parenthood. From a reading of the most recent Surveillance Summary, one might infer that all such deaths are accurately recorded. But a recent study by Isabelle Horon demonstrates that in the State of Maryland "half or more deaths were unreported for women who were undelivered at the time of death, experienced a fetal death or [induced] abortion, died more than a week after delivery, or died as a result of a cardiovascular disorder". She goes on to point out that maternal deaths are "substantially underestimated" by those who rely on death certificates alone to identify deaths.<sup>xx</sup>

In light of all we now know about the defects in reporting of maternal mortality it is astonishing that abortion advocates such as David Grimes continue to repeat the now discredited claim that induced abortion carries a lower risk of death for the mother than giving birth to a child.<sup>xxi</sup> Grimes shows not a glimmer of recognition that figures from official agencies for abortions and maternal deaths connected to abortion are incomplete.

### Accurate Statistics from Scandinavia, Britain and the United States

Refusal to recognize that induced abortion is more dangerous to a woman's life than giving birth to a child is inexcusable in light of three large studies from Europe and North America, each one documenting a far higher mortality among women who abort their babies than among those who bring them to term.

The first study was carried out in Finland, one of the few countries in the world that has accurate birth, death, and abortion registries. A study of all Finnish women who died between 1987 and 1994 found the following maternal mortality for every 100,000 registered, ended pregnancies:

Table 6-1  
**Finland: Maternal deaths within twelve months of end of pregnancy per 100,000 women<sup>xxii</sup>**

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Births	26.7
Miscarriages or ectopic pregnancies	47.8
Induced abortions	100.5

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*Source:* Gissler (1997)

In other words the **maternal death rate after abortion was nearly four times greater than the maternal death rate after childbirth.**<sup>xxiii</sup> Add to this the finding that the **suicide rate associated with childbirth was six times lower than the suicide rate associated with abortion.**<sup>xxiv</sup> The findings, reported in prestigious British and Scandinavian medical journals, refute the oft-repeated claim that induced abortion is safer than childbirth. They also illustrate that only large, record-linkage-based studies can enable us to get at the real rate of maternal death from abortion.

Table 6-2  
**Finland: suicide rate per 100,000 women within twelve months of end of pregnancy**

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After birth	5.9
After miscarriage	18.1
After induced abortion	34.7
(Mean annual rate)	11.3

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*Source:* Gissler and colleagues (1996)

Gissler and colleagues cautiously conclude that "Increased risk for a suicide after an induced abortion can...result from a negative effect of induced abortion on mental wellbeing".<sup>xxv</sup>

The comparison of death rates from causes other than suicide is almost as striking. **Women who**

**have an induced abortion are more than three times as likely to die within a year as women who give birth:**

Table 6-3

**Finland: death rate per 100,000 women within twelve months of end of pregnancy (omitting suicide)**

After birth	20.8
After miscarriage	29.7
After induced abortion	65.8

Source: Gissler and colleagues (1997)

In a more recent, expanded study of Finnish women for the period 1987-2000, Gissler and colleagues came up with similar findings: in the one year after the end of pregnancy the mortality per 100,000 women was 28.2 after a birth, 51.9 after a spontaneous abortion, and 83.1 after an induced abortion. Among non-pregnant women the death rate was 57.0 per 100,000. In other words women who aborted had almost exactly a three times greater chance of dying within twelve months of their abortion, than did women who delivered. It should be noted that this later study excluded deaths from injury, among which suicide would be the leading category. Only by excluding such deaths were the authors able to conclude that “the healthy parturient effect is true for pregnant women in general” – not just those who complete their pregnancies.<sup>xxvi</sup>

A study of the incidence of suicide after abortion among British women came up with similar findings. Morgan and colleagues studied a population of 408,000 in Wales between 1991 and 1995, tracking hospital admissions for attempted suicide among post-abortion, post-miscarriage and post-natal women. They concluded that among women who abort “attempted suicide may be a consequence of the pregnancy rather than some underlying mental illness”. For women who miscarried or delivered, risk of suicide dropped after the event, while for women who aborted the risk increased from insignificant prior to the abortion to significant after the procedure. The relative risk of suicide after induced abortion was 3.25; in other words, *women who had induced abortions were 225 per cent more likely to commit suicide than women admitted for normal delivery.*<sup>xxvii</sup>

Another record linkage study, this one in the U.S., has come up with comparable findings. Medical records were linked to death certificates for 173,279 low-income women who underwent a state-funded delivery or induced abortion in 1989 in California. Over the eight-year period of the study (1989-1997), women who aborted were 62 per cent more likely to die from all causes than women who delivered their babies. The age-adjusted risk of death varied according to the cause: for suicide it was 2.54 times higher, for accidents 1.82 times higher, for natural causes 1.44 times higher, for AIDS 2.18 times higher, for circulatory diseases 2.87 times higher, and for cerebrovascular disease 5.46 times higher.<sup>xxviii</sup> It is possible to argue that women who abort are more likely to have the characteristics that shorten their lives, independent of the abortion, than women who bear their children. There may be validity to this line of reasoning,

but what is indisputable is that the discrepancy in the mortality of women who deliver their babies and those who abort them is so wide that it can no longer be maintained that abortion is safer than childbirth.

To summarize, in all three countries (Finland, Britain and the U.S.A.) where large anonymous, record-linkage studies have been conducted it is now established that mortality from suicide, illness, accidents and other causes is substantially higher among women who have abortions than among women who carry their babies to term.

#### Legal Abortion Safer?

It is often said that when abortion becomes legal maternal mortality goes down. Yet in Russia and the U.S., where abortion is available on demand maternal mortality is 67 and 17/100,000 births respectively. By contrast Poland and Ireland, where induced abortion is illegal have maternal mortality of 13 and 5 respectively. Both countries have significantly lower infant mortality rates as well.<sup>xxix</sup>

#### Reliable Demographic Information?

What is also known is that minority women (such as African-Americans) will more likely suffer death while seeking a *legal abortion*. For example, the AMA Council on Scientific Affairs reported, "Death from legal abortion is more common among minority women than white women, women over the age of 35 and those who undergo the procedure during the second trimester."<sup>xxx</sup>

Berg and colleagues analyzed the U.S. Centers for Disease Control Statistics of overall maternal deaths for the period 1987 to 1990 and reported that the death ratio increased from seven per 100,000 births in 1987 to ten per 100,000 in 1990, the majority of this ratio being accounted for by the dramatic increase in the deaths of African-American women.<sup>xxxi</sup> In 1990, the rate of death for African-American women was 26.7 per 100,000 births while in the same period white women had a rate of only 6.5 per 100,000 births.

There may be some doubt, however, about the true final figures because some states were missing from the CDC report. Still, there is no particular reason to believe that if all the data were available, the alarming trend towards increase in African-American maternal mortality would disappear. Berg and colleagues report 1453 maternal deaths from the CDC statistics in the four years from 1987 to 1990. Of these, 81 are attributed to abortion, but induced and spontaneous abortions are lumped together. The report did separate the causes of death of these women (50 per cent from infection, twenty per cent from hemorrhage, and eleven per cent "unknown"). At least 70 per cent of the identified causes of death are known major complications in the post-induced abortion period. The authors note that the mortality rate due to infection rose 36 per cent, with the largest increase in the group of women who died following abortion.



A different study by Ferris and colleagues, which looked at short-term complications after an abortion, provided some useful information, suggesting there are few immediate complications.<sup>xxxii</sup> Studies like this, however, do not report the many possible complications that could lead to death in the weeks following abortion. Berg found that among maternal deaths, at least 43 per cent did not occur until more than one week following the termination of pregnancy, while six per cent of the deaths occurred over six weeks after the abortion, the usual time limit used by statisticians to categorize deaths as maternal.

When the issue of abortion is not the main topic of an article, the mortality figures cited are often more straightforward. Lee P. Shulman cites abortion mortality rates in relation to the type and time of procedure.

Table 6-4  
**Number of deaths for every 100,000 abortions by procedure<sup>xxxiii</sup>**

<i>Procedure</i>	<i>1<sup>st</sup> trimester</i>	<i>2<sup>nd</sup> trimester</i>
Suction Curettage	0.8	N/A
Dilation and Evacuation	5.1	4.9
Instillation	N/A	10.1
Saline Injection	N/A	11.6
Prostaglandin Injection	N/A	6.4
Hysterectomy/Hysterotomy*	40.7	90.8

\*These two figures have been re-calculated from the tables on pages 315 and 320 of Shulman.

#### Mifepristone (RU486): deaths from medical abortion

During the 1990s a new abortifacient drug, mifepristone (also known as RU 486) was developed in France. After extensive testing in a dozen countries it was approved in September 2000 by the Federal Drug Administration for use in the United States. Users were warned that the drug could result in incomplete abortion requiring surgical intervention. In fact the reported failure rate of the drug ranges between 5 and 16 per cent.<sup>xxxiv</sup> In November 2004 the FDA called attention to potentially fatal complications (ruptured ectopic pregnancy and septic shock) associated with its use in terminating early pregnancies. Between 2003 and 2006 a minimum of four American and one Canadian women are known to have died from septic shock after taking the drug. Two of them had *Clostridium sordellii*-related sepsis. All the women were young and healthy, and had undergone apparently successful procedures. It is now recognized that the risk of maternal death with RU 486 is ten times greater than that of a surgical intervention at under eight weeks gestation (one per 100,000 compared to 0.1 per 100,000). At a panel sponsored by the Centers for Disease Control (CDC), the FDA and the National Institutes of Health (NIH) on 11 May

2006 in Atlanta nearly all the scientists agreed that there was evidence that RU 486 suppresses the immune system. A second discussion took place on 17<sup>th</sup> May in Washington before the House Government Reform Subcommittee on Criminal Justice, Drug Policy, and Human Resources. According to the committee's briefing paper, "the FDA has acknowledged the deaths of eight women associated with the drug, nine life-threatening incidents, 232 hospitalizations, 116 blood transfusions, and 88 cases of infection. These and other cases have added up to a total of 950 adverse event reports as of March 31, 2006."<sup>xxxv</sup> In other words a mortality of 1/100,000 is far from the only threat to women's health posed by the abortifacient drug RU 486.

### Abortion-related mortality in the third world

Surgical abortions carried out in ideal hospital conditions in western countries are relatively safe procedures. Elsewhere in the world it is a different story.<sup>xxxvi</sup> The maternal mortality ratio from induced abortion is estimated at 100/100,000 in Africa and 40/100,000 in Latin America and Asia.<sup>xxxvii</sup> Even in those countries such as India, where abortion is completely legal, it can be a dangerous procedure.<sup>xxxviii</sup> In Nepal nine deaths were reported in a study of 1529 abortions, which represents a death rate of 588/100,000. From this the authors concluded that induced abortion was 'a major detrimental factor for maternal mortality.'<sup>xxxix</sup> In the Ivory Coast maternal mortality was around five per cent whether the abortion was self induced or performed by a health worker. This is equivalent to an astounding 5000 per 100,000. It is said that legalizing abortion lowers maternal mortality. Yet in South Africa, where legalization took place in the 1990s, an estimated 500 women die each year from complications arising from legally performed abortions – most due to severe haemorrhaging of the uterus.<sup>xl</sup> In St Petersburg, Russia maternal mortality in the period 1992-2003 was five times greater than in the U.S. and Europe. Deaths from induced abortion, though declining, still constituted 50 per cent of the deaths from sepsis in 2001-03. Recently the abortion deaths ranged between fourteen and seventeen per cent of all maternal deaths – significantly higher than in the rest of Europe.<sup>xli</sup>

### Conclusion

Women continue to die from induced abortion, but this fact is underreported, principally because current methods of gathering and reporting statistics are deficient. Of particular concern in North America is an apparent rise in the death rate of African-American women, combined with the tendency to underreport all abortion deaths. A failure to provide comprehensive and accurate statistics coupled with delays in disseminating available statistics further complicates the problem of reporting abortion-related mortality. It is possible that legal abortion, because of its high prevalence, has now caused more maternal deaths than the previous system of restricted abortion access which was also devoid of accurate documentation. The Finnish method of accurate recording of births, deaths, and abortions shows higher mortality and suicide rates among women who have had abortions compared to those who give birth. It underlines the unreliability of North-American statistics and explodes the myth that abortion is safer for a woman than childbirth.

## Key Points Chapter 6

- Women die from abortion-related problems but, owing to irregular and biased reporting, it is difficult to know how many.
- Reasons for maternal mortality related to abortion are many, including hemorrhage, infection, embolism, ectopic pregnancy, and cardiomyopathy.
- Coding deaths in hospitals and reasons for death on death certificates frequently record only the presenting problem as the cause of death, which results in many abortion-related deaths going unreported.
- The American Medical Association (AMA) relies on the Centers for Disease Control (CDC) for its statistics concerning abortion-related deaths and, given that the CDC uses hospital and clinic records (which underreport maternal deaths from abortion) for its data, the AMA does not recognize the full extent of abortion-related deaths.
- At most risk of abortion-related deaths in the U.S. are African-American and other minority women.
- Large-scale, authoritative Scandinavian, British and American studies have established that women who abort their pregnancies experience much higher mortality than women who bear their babies. These findings refute the oft-heard claim that induced abortion is safer than childbirth.
- There is an urgent need for independent studies of maternal mortality related to abortion, and medical facilities should be required to keep more accurate and informative records so that women may be better served in this area.

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- <sup>i</sup> Khan KS, Wojdyla D, Say L, Gülmezoglu, AM, Van Look PFA. WHO analysis of causes of maternal death: a systematic review. *The Lancet* 2006 28 March;367: 1066-74, pp. 1068, 1072.
- <sup>ii</sup> Khan KS et al (see n. 1), p. 1073; World Mortality Report 2005. United Nations: Department of Economic and Social Affairs [DESA] (NY, 2006), pp. 216 (Ireland), 318 (Poland).
- <sup>iii</sup> Berg CJ, Atrash HK, Koonin LM, Tucker M. Pregnancy-related mortality in the United States, 1987-1990. *Obstetrics and Gynecology* 1996 August;88(2):161-7, p. 161.
- <sup>iv</sup> Atrash HK, Cheek TG, Hogue CJ. Legal abortion mortality and general anesthesia. *American Journal of Obstetrics and Gynecology* 1988 February;158(2):420-4, p. 423, p. 420.
- <sup>v</sup> Mogilevkina I, Markote S, Avakyan Y, Mrochek L, Liljestrand J, Hellberg D. Induced abortions and childbirths: trends in Estonia, Latvia, Lithuania, Russia, Belarussia and the Ukraine during 1970 to 1994. *Acta Obstetrica et Gynecologica Scandanavica* 1996 November;75(10):908-11, p. 910.
- <sup>vi</sup> Berg CJ, 1996 (see n. 3), p. 161.
- <sup>vii</sup> Berg 1996 (see n. 3), p. 166.
- <sup>viii</sup> Jacob S, Bloebaum L, Shah G, Varner MW. Maternal mortality in Utah. *Obstetrics and Gynecology* 1998 February;91(2):187-91, p. 190.
- <sup>ix</sup> Begin I. Mortality and Morbidity Coding in Canada and the World – Pitfalls and Shortcomings. 1999. Ottawa (unpublished paper).
- <sup>x</sup> Strauss LT, Herndon J, Chang J, Parker WY, Bowens SV, Berg CJ. Abortion Surveillance--United States, 2002. *Morbidity and Mortality Weekly Report, Centers for Disease Control, Surveillance Summaries* 54(SS-7), (2005): 1; Finer LB, Henshaw SK. Estimates of U.S. Abortion Incidence in 2001 and 2002. *Alan Guttmacher Institute* (May 18, 2005): 3.
- <sup>xi</sup> Council on Scientific Affairs AMA. Induced termination of pregnancy before and after Roe v Wade. Trends in the mortality and morbidity of women. *Journal of the American Medical Association* 1992 December 9;268(22):3231-9.
- <sup>xii</sup> JAMA 1992. n. 8, p. 3235.
- <sup>xiii</sup> Henshaw SK, Van Vort J. Abortion services in the United States, 1991 and 1992. *Family Planning Perspectives* 1994 May-June;26(3):100-6, 112.
- <sup>xiv</sup> Wadhera S, Millar WJ. Second trimester abortions: trends and medical complications. *Health Reports* 1994;6(4):441-54
- <sup>xv</sup> Myers KA, Farquhar DR. Improving the accuracy of death certification. *Canadian Medical Association Journal* 1998 May 19;158(10):1317-23.
- <sup>xvi</sup> Collett TS. Abortion Malpractice: Exploring the Safety of Legal Abortion. Koterski J, S.J., ed. Fifth University Faculty for Life Conference; 1995 June; Marquette University.:243-72. *Life and Learning*; v. V.
- <sup>xvii</sup> Jones EF, Forrest JD. Underreporting of abortion in surveys of U.S. women: 1976 to 1988. *Demography* 1992 February;29(1):113-26, p. 113.

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<sup>xxviii</sup> Meyer RE, Buescher PA. Maternal mortality related to induced abortion in North Carolina: a historical study. *Family Planning Perspectives* 1994 July-August;26(4):179-80, 191.

<sup>xxix</sup> Henshaw SK, Forrest JD, Van Vort J. Abortion services in the United States, 1984 and 1985. *Family Planning Perspectives* 1987 March-April;19(2):63-70.

<sup>xxx</sup> Horon IL. Underreporting of Maternal Deaths on Death Certificates and the Magnitude of the Problem of Maternal Mortality. *American Journal of Public Health* 2005 Mar; 95(3): 478-82.

<sup>xxxi</sup> Grimes DA, Estimation of Pregnancy-Related Mortality Risk by Pregnancy Outcome, United States, 1991-1999. *American Journal of Obstetrics & Gynecology* 2006 ; 194, p. 92. Grimes attempts to buttress his claim by referring to articles co-authored by himself (refs 13, 14)! He shows not a glimmer of recognition that abortion deaths might be underreported by official agencies.

<sup>xxxii</sup> Gissler M, Kauppila R, Merilainen J, Toukoma H and Hemminki E. Pregnancy-associated deaths in Finland 1987-1994--definition problems and benefits of record linkage. *Acta Obstetrica et Gynecologica Scandinavica* 1997 Aug;76(7):651-7.

<sup>xxxiii</sup> Gissler et al. 1997. See n. 16.

<sup>xxxiv</sup> Gissler M, Hemminki E and Lonnqvist J. Suicides after pregnancy in Finland, 1987-94: register linkage study. *British Medical Journal* 313, no. 7070 (7 December 1996): 1431-4.

<sup>xxxv</sup> Gissler et al. 1996. See n. 18, p. 1434.

<sup>xxxvi</sup> Gissler M, Berg C, Bouvier-Colle M-H, Buekens P. Pregnancy-associated mortality after birth, spontaneous, or induced abortion in Finland, 1987-2000. *American Journal of Obstetrics and Gynecology* 2004; 190, 422-7, pp. 422, 426.

<sup>xxxvii</sup> Morgan CL, Evans M, Peters JR. Suicides after pregnancy. Mental health may deteriorate as a direct effect of induced abortion. *British Medical Journal* 1997 March 22;314(7084):902; discussion 902-3.

<sup>xxxviii</sup> Reardon DC, Ney PG, Scheuren F, Cogle J, Coleman PK, Strahan JD. Deaths associated with pregnancy outcome: A record linkage study of low income women. *Southern Medical Journal* 2002 August; 95(8): 834-41, p. 834.

<sup>xxxix</sup> World Mortality Report 2005 (see n. 2), pp. 334(Russia), 410 (U.S.), 318 (Poland), 216 (Ireland).

<sup>xxxx</sup> Council on Scientific Affairs 1992. See. n. 8.

<sup>xxxxi</sup> Berg et al 1996. See n. 1.

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