

# Maternal deaths due to sepsis: a slow but steady decline

*A summary of findings of data from the triennial assessment of maternal deaths 2017-2019*

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**Abstract**

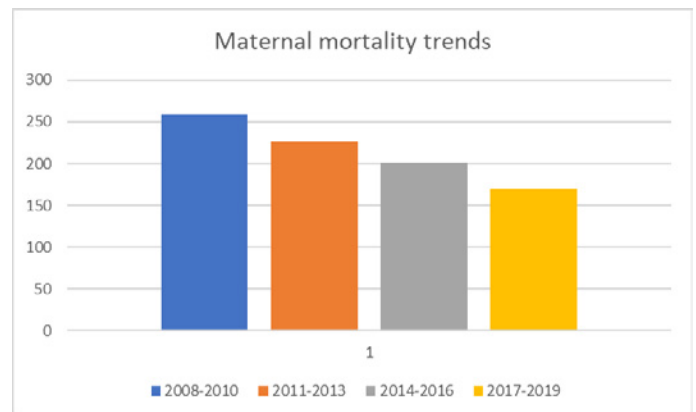
Maternal sepsis has always been amongst one of the direct leading causes of maternal mortality. This paper is focused on deaths due to Pregnancy Related Sepsis in viable pregnancies and highlights the summary of findings on data from the last 3 years (2017-2019 triennium). It documents a slow but steady reduction in maternal deaths from pregnancy related sepsis, from a high of 258 deaths to 170 deaths since 2008 to-date. It further emphasizes areas of concern and makes further recommendations towards improving maternal sepsis outcomes in South Africa. There is still much work to be done, and efforts need to concentrate on improving the health system to further reduce these deaths.

**Summary of findings**

The previous reports including the Saving Mothers Reports consistently use the term “pregnancy-related sepsis” and that deaths from pregnancy related sepsis (PRS) are those caused by infections in the genital tract or in tissues involved in the birth process in viable pregnancies. In an attempt to standardise the definition of deaths associated with maternal sepsis, the WHO defines maternal sepsis as “life-threatening organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion or postpartum”.<sup>1,2</sup> Deaths from septic miscarriage (though a part of new definition) are described elsewhere in the Saving Mothers Report 2017-2019. Between 2017 and 2019, 170 women died as a result of PRS and this is at least 31 deaths less than that in 2014-2016 period and is the lowest amongst all the previous triennial reports. The number of deaths decreased every triennium since 2008-2010 (n=258), 2011-2013 (n=226), 2014-2016 (n=205) and 2017-2019 (n=170) (figure 1). This decline is supported by the institutional maternal mortality ratio (iMMR) which showed the same trends over the last four trienniums. There was also steady decrease in iMMR over the past three years of the last triennium with the lowest at 4.11/100000 live births in 2019

Of these 170 deaths associated with maternal sepsis, 76 women had sepsis after vaginal delivery, 69 after caesarean delivery (CD), of which 18 were associated with bowel trauma during CD and seven deaths were caused by chorioamnionitis. The proportion of deaths after CD fluctuates from 43.8% (2011-2013) to 49.3% in 2014-2016 and then 47.2% for this triennium. The recent findings of an increase in deaths from bowel injury at CD may indicate a

**Figure 1: Triennial maternal mortality trends**



trend of increasing numbers of “difficult” repeat caesarean sections due to intra-abdominal adhesions.

The HIV status was unknown in four % of the women who died compared to nine per cent in 2014-2016 and an increasing percentage of 75.6 was on treatment with ARVs, versus 75.2 % in 2014-2016, 49 % in 2011-2013 and only 20 % in 2008-2010.

Almost all deaths (97.5%) occurred in health facilities, mainly in regional and tertiary facilities. The Free State and North West Provinces had the highest iMMR due to PRS (9.29 and 8.03/100000 live births respectively) whilst Mpumalanga had decreasing trends in iMMR from 12.8 to 4.48 then 4.21/100000 live births in the past three trienniums respectively.

There has been a decline in avoidable deaths as compared to 2014-2016 although avoidable deaths are still a significant issue. Patient avoidable factors included delay in accessing care and this factor was the most important contributor (64.2%). The severity of PRS is often underestimated by healthcare providers and its

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management is inadequate. Avoidable factors associated with healthcare providers were present in 68.8% of cases in district hospitals, 65.4% of cases in regional hospitals and 55.6% in private hospitals. While the rate of PRS deaths has shown a slow but steady decline in recent years, the high proportion of avoidable deaths is of concern. More than 60 % of women who died from complications related to PRS received substandard treatment at district, regional and tertiary levels of care despite the correct diagnosis being made and this suggests possible lack of insight into the clinical management of such patients as supported by lack of appropriately trained doctors and nurses in more than 70% deaths. Lastly, the majority (> 90%) of women with PRS died during the postpartum period.

### Conclusion

Maternal deaths due to PRS in viable pregnancies in South Africa show a slow but steady decline in both numbers and iMMRs since 2008. However there are still provinces with persistently high institutional mortality ratios that need to place more efforts into reducing avoidable factors associated with deaths from PRS.

### Key recommendations

1. Ensure capacity and accessibility of facilities for outpatient postnatal care within six days of delivery in all districts. On discharge from the place of delivery, advise women on signs of infection, and what to do if these are noticed.
2. Strengthen systems to ensure detection and treatment of HIV infection as early as possible in pregnancy, including strategies to ensure initiation of antenatal care as early as possible in gestation (before 14 weeks).
3. Ensure that surgeons and operating theatre staff follow standard precautions before and during caesarean deliveries, including asepsis, good and safe surgical techniques, and routine prophylactic antibiotics. Extended doses of antibiotics must be given in women with risk factors for PRS.
4. Remind and educate clinicians about suspecting and recognising septic shock in ill postpartum women, using forums such as morbidity and mortality meetings, or formal ESMOE training or other training platforms.
5. No woman should be discharged from the hospital if any abnormal vital signs are recorded and immediate readmission is advised in women with any symptoms and signs suggestive

of sepsis.

6. Proper initial triage of these patients and immediate implementation of maternal sepsis' bundles must always be done at all levels of care.<sup>3,4</sup>
7. District hospital clinical protocols must emphasise the recognition of septic shock and the need for early transfer of such women to higher levels of care, after the immediate implementation of sepsis' bundles as outlined in the maternity care guidelines.
8. All regional hospitals, should audit the capacity of staff and facilities to manage women in septic shock. Recommended norms and standards for staff and facilities, including intensive care units, should be followed.
9. Educate all doctors performing repeat CD about precautions for preventing bowel injury. Ensure protocols are in place for intraoperative management of bowel injuries, including general surgical help, and transfer to higher levels of care.

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