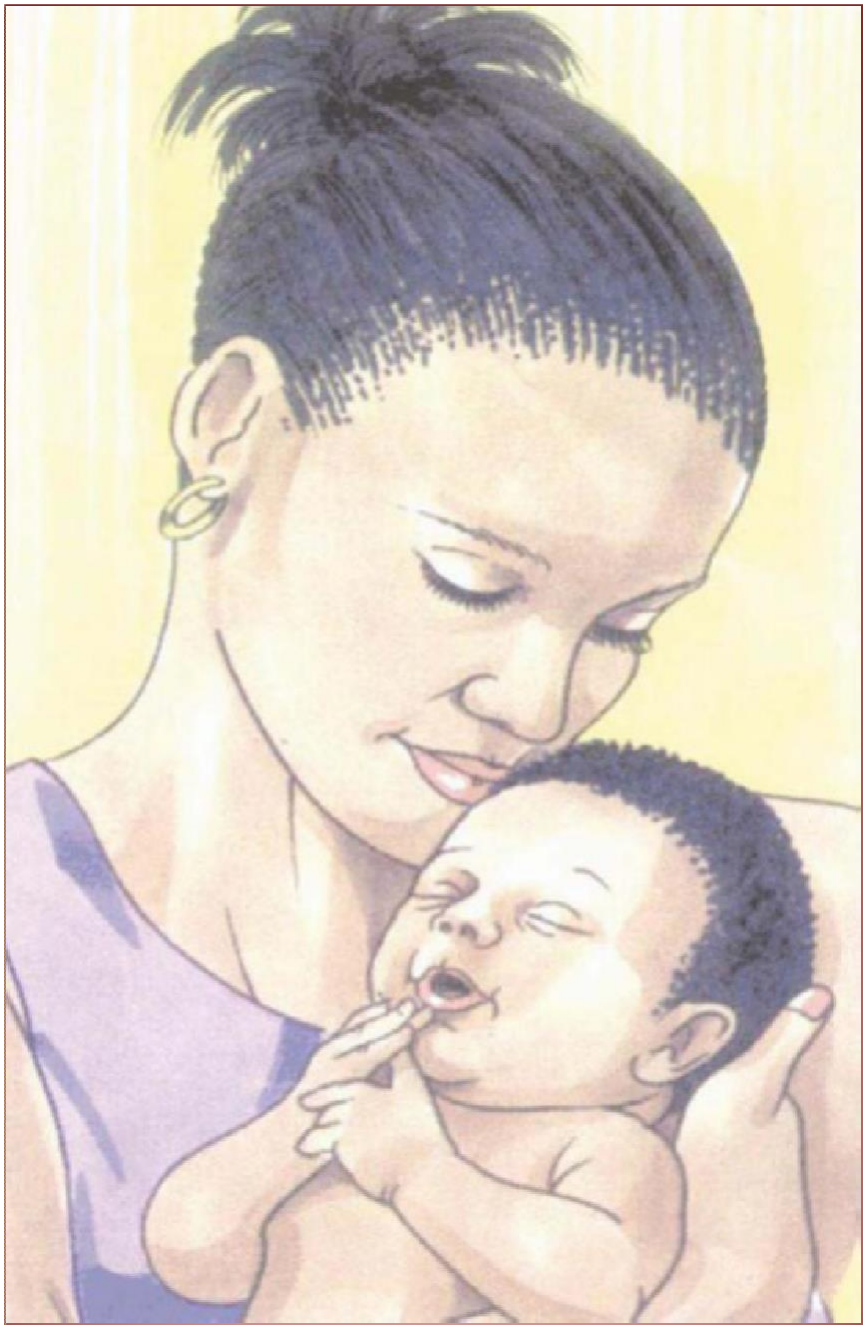


Saving Mothers and Babies 2017-2019: Executive Summary

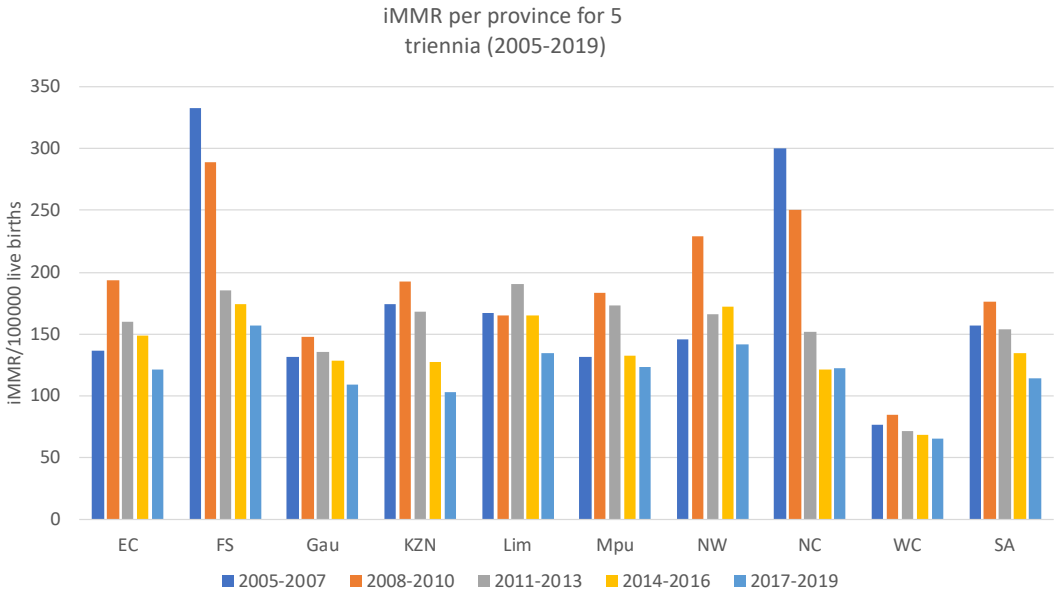
Contents

Abbreviations

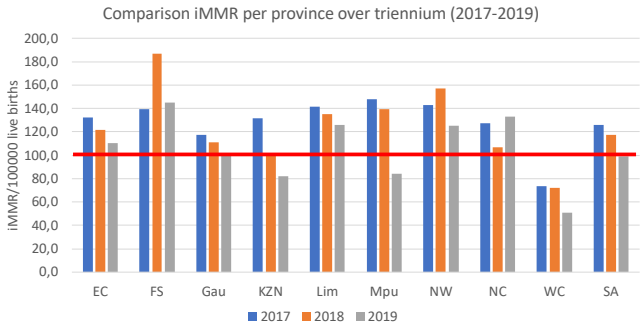
AR	Anaesthetic related
ART	Antiretroviral Therapy
BBA	Born before arrival
BMI	Body mass index
BP	Blood pressure
CD	Caesarean Delivery
CHC	Community Health Centre
CHW	Community health worker
CLEVER	Clinical care; Labour ward management; Eliminate barriers; Verify care; EOST on auto pilot; Respectful care
Clinic	Primary health care clinic
DCST	District Clinical Specialist Teams
DH	District hospital
DHIS	District health information system
ENNDR	Early Neonatal Death Rate
EC	Eastern Cape province
EOST	Emergency obstetric simulation training
ESMOE	Essential Steps in Managing Obstetric Emergencies
FDC	Fixed dose combination
FRANC	First referral for antenatal care
FS	Free State province
GP	Gauteng Province
HHAPI_NeSS	Quality improvement program: Improve Health System, train Health workers, reduce deaths from Asphyxia, Prematurity and Infection, Neonatal Survival Strategy
HIV	Human immune deficiency virus
HPD	Hypertensive disorders in pregnancy
iMMR	In Facility Maternal Mortality Ratio
IUCD	Intrauterine contraceptive device
KZN	KwaZulu-Natal province
LARC	Long acting reversal contraception
LBWR	Low Birth Weight Rate
LP	Limpopo province
M&M	Morbidity and Mortality meetings
M&S	Medical and Surgical conditions
MP	Mpumalanga province
MVA	Manual vacuum aspiration
NaPeMMCo	National Perinatal Morbidity and Mortality Committee
NC	Northern Cape province
NCCEMD	National Committee for Confidential Enquiries into Maternal Deaths
NHC	National central hospital
NPRI	Non-pregnancy related infections
NW	North West province
OH	Obstetric haemorrhage
OMBU	On-site Midwife run Birthing Unit
PHC	Primary health care
PPIP	Perinatal Problem Identification Programme
PMTCT	Prevention of Mother-to-Child Transmission
PNMR	Perinatal Mortality Rate
PPE	Personnel Protective Equipment
PPH	Postpartum haemorrhage
PRS	Pregnancy related sepsis
RH	Regional Hospital
SBR	Stillbirth Rate
TB	Tuberculosis
TH	Tertiary hospital
TOP	Termination of pregnancy
WBOT	Ward based outreach teams
WC	Western Cape province

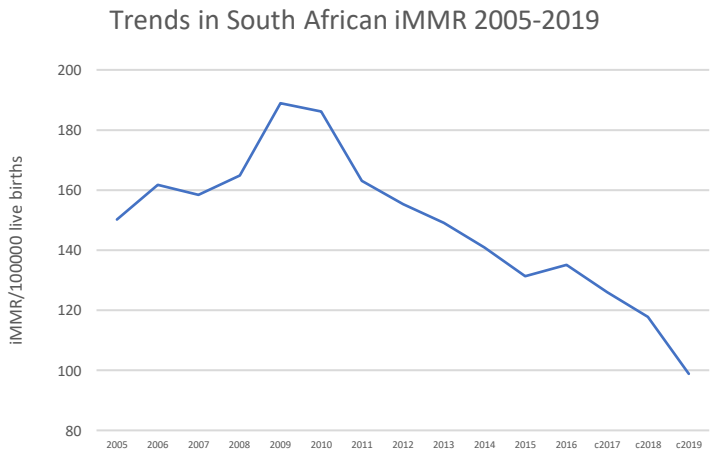
Main Findings NCCEMD

1. There has been a progressive and sustained reduction in maternal mortality
    a. In all provinces,



    b. In all major underlying causes of maternal death except M&S and early pregnancy conditions,
    c. The iMMR was below 100 per 100 000 live births in 2019 for the first time ever recorded by the NCCEMD. The MMR estimated by the DHS in 1998 was 150/100000 live births.
    d. The iMMR for the 2017-2019 triennium was 113.8 per 100 000 live births





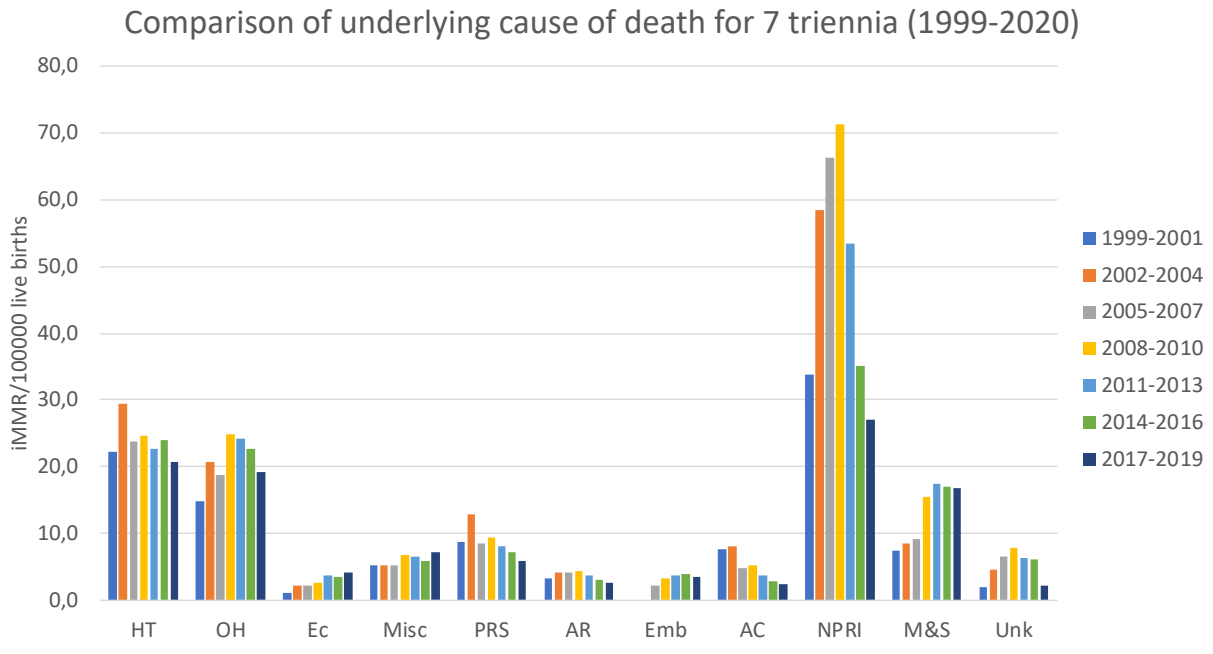
2. The top 4 underlying causes are the top 4 in all provinces, but in varying order. They are NPRI, HPD, OH and M&S. M&S has emerged as a major underlying cause of mortality as the other conditions have decreased in frequency.

Primary obstetric problems	Eastern Cape	Free State	Gauteng (corrected)	KwaZulu-Natal	Limpopo (Corrected)	Mpuma-langa	North West	Northern Cape	Western Cape	South Africa
Medical and surgical disorders	19,02	20,00	17,45	19,78	14,25	13,05	20,07	12,54	11,82	16,91
Non-pregnancy-related infections	29,02	25,00	25,65	27,72	34,52	25,68	33,26	23,52	16,55	27,05
Ectopic pregnancy	1,61	4,29	4,43	3,72	5,94	6,32	6,31	4,70	2,03	4,19
Miscarriage	3,87	15,00	7,80	6,76	6,65	13,05	9,17	7,84	1,01	7,18
Pregnancy-related sepsis	6,45	9,29	6,22	5,24	6,52	4,21	8,03	0,00	5,74	5,99
Obstetric haemorrhage	22,89	31,43	16,28	12,34	28,61	26,95	22,93	26,65	7,09	19,11
Hypertensive disorders of pregnancy	20,96	40,00	22,27	13,35	23,12	23,58	32,68	29,79	8,44	20,73
Anaesthetic complications	2,58	6,43	1,76	3,21	2,88	3,37	1,72	4,70	1,69	2,72
Adverse drug reactions	1,61	0,00	0,85	0,68	1,84	0,00	0,57	0,00	1,01	0,89
Embolism	5,16	2,14	2,04	2,37	5,36	4,21	2,29	9,41	5,40	3,60
Acute collapse - cause unknown	4,51	0,71	3,08	2,37	2,62	1,26	2,87	0,00	1,69	2,53
Miscellaneous	0,64	0,00	0,79	0,17	1,27	0,00	1,15	1,57	1,69	0,74
Unknown - in facility	2,90	2,86	0,91	5,41	0,54	1,26	0,57	1,57	1,01	2,14

Key

	Most common
	2nd most common
	3rd most common
	4th most common

3. There are some problems with the way cause of death were classified with suicide being place under M&S, adverse drug reactions or coincidental. This may have masked the extent of the problem which is perceived as increasing.
4. Early pregnancy deaths (miscarriage and ectopic are together the 5th most common cause but have increased steadily over the triennia, thus are an emerging issue.



5. The provinces that are mainly rural have the highest number of conditions with iMMR 15% above the national average (NW 7/10; FS 6/10; MP 5/10; LP, NC 4/10; EC 3/10; KZ 2/10; GP, WC 1/10).

iMMR of underlying conditions per province and their relationship to South Africa's iMMRs.

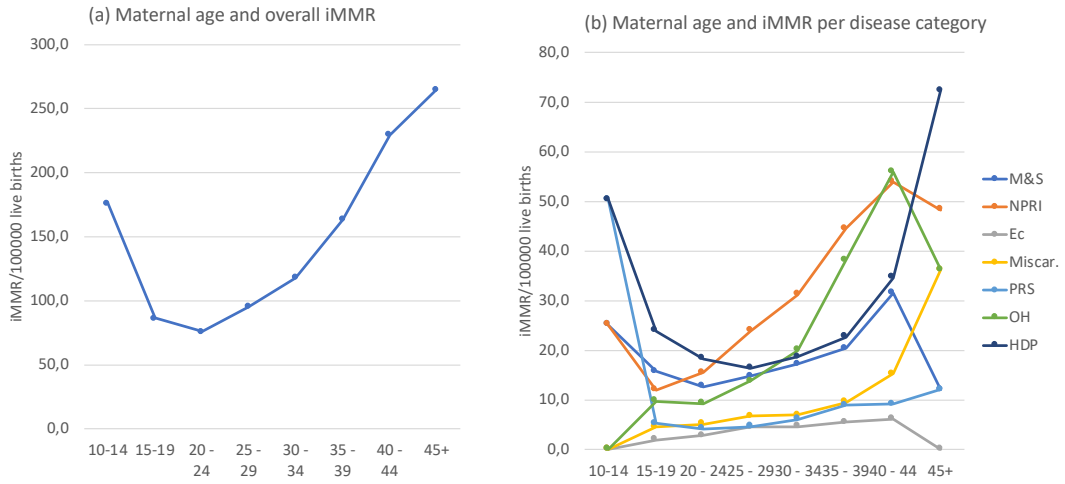
Primary obstetric problems	Eastern Cape	Free State	Gauteng (adjusted)	KwaZulu-Natal	Limpopo (adjusted)	Mpuma-langa	North West	Northern Cape	Western Cape
M&S	19,02	20,00	17,45	19,78	14,25	13,05	20,07	12,54	11,82
NPRI	29,02	25,00	25,65	27,72	34,52	25,68	33,26	23,52	16,55
Ec	1,61	4,29	4,43	3,72	5,94	6,32	6,31	4,70	2,03
Misc	3,87	15,00	7,80	6,76	6,65	13,05	9,17	7,84	1,01
PRS	6,45	9,29	6,22	5,24	6,52	4,21	8,03	0,00	5,74
OH	22,89	31,43	16,28	12,34	28,61	26,95	22,93	26,65	7,09
HDP	20,96	40,00	22,27	13,35	23,12	23,58	32,68	29,79	8,44
AR	2,58	6,43	1,76	3,21	2,88	3,37	1,72	4,70	1,69
Emb	5,16	2,14	2,04	2,37	5,36	4,21	2,29	9,41	5,40
AC	4,51	0,71	3,08	2,37	2,62	1,26	2,87	0,00	1,69

Key

Primary obstetric problems	South Africa	<15% Below SA	>15% Above SA
Medical and surgical disorders (M&S)	16,91	14,4	19,4
Non-pregnancy-related infections (NPRI)	27,05	23,0	31,1
Ectopic pregnancy (Ec)	4,19	3,6	4,8
Miscarriage (Misc.)	7,18	6,1	8,3
Pregnancy-related sepsis (PRS)	5,99	5,1	6,9
Obstetric haemorrhage (OH)	19,11	16,2	22,0
Hypertensive disorders of pregnancy (HDP)	20,73	17,6	23,8
Anaesthetic complications (AR)	2,72	2,3	3,1
Embolism (Emb)	3,60	3,1	4,1
Acute collapse - cause unknown (AC)	2,53	2,2	2,9

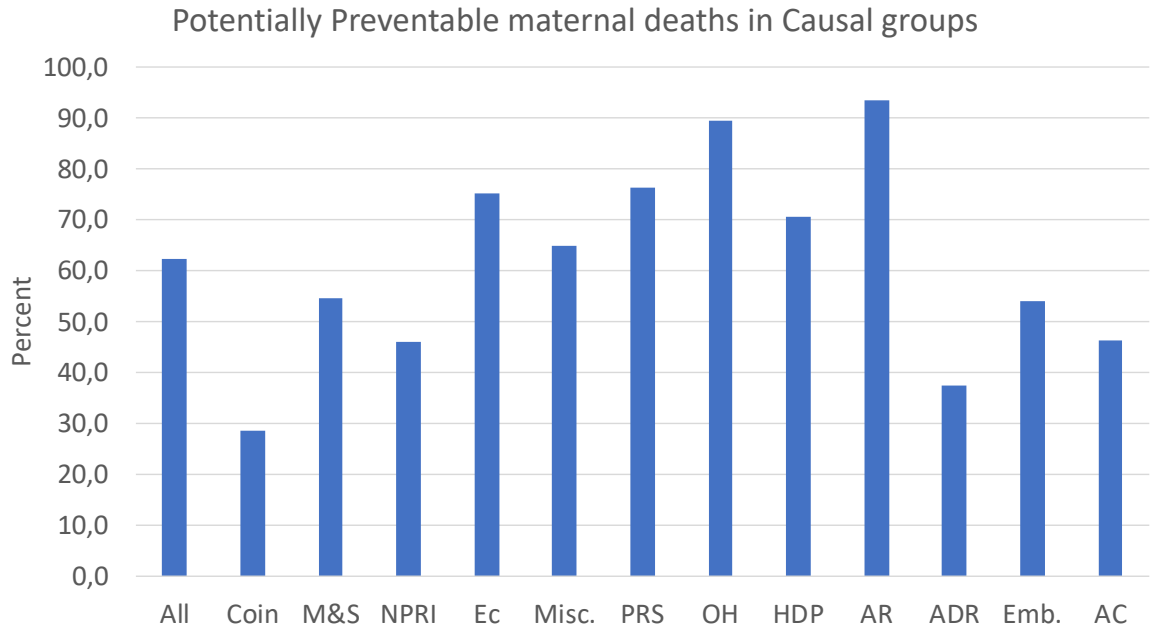
6. The extremes of age have the highest iMMR, especially for HDP.

MATERNAL AGE



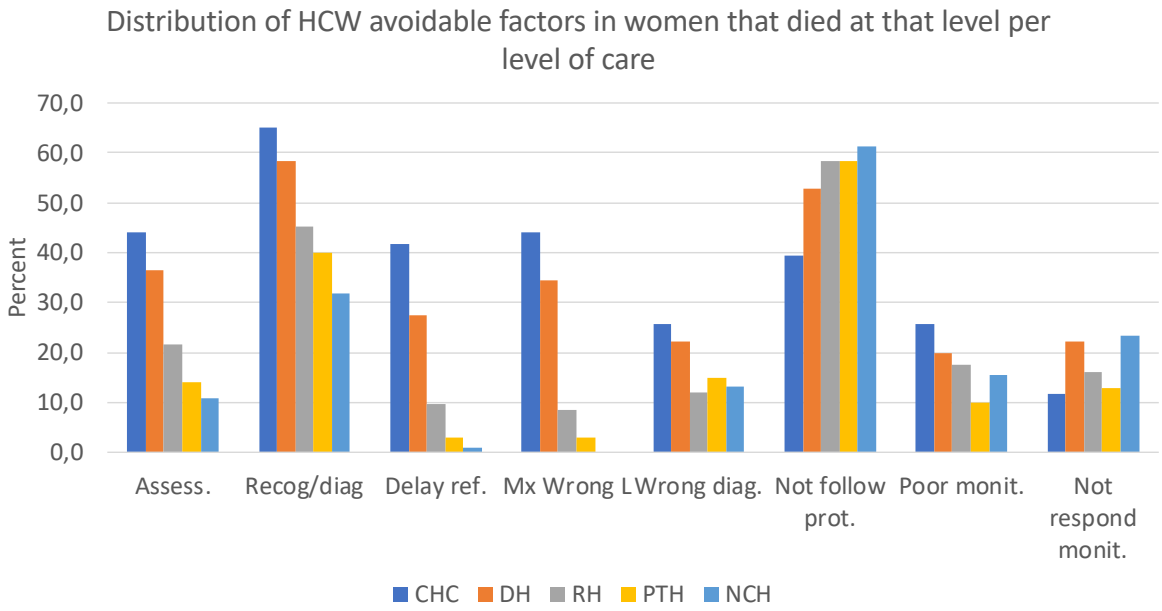
7. The majority of pregnant women who were HIV positive died despite being on ART; 18% of HIV positive deaths were not on treatment and 73.1% were on FDC. We are now moving on from problems of not testing for HIV or not starting ART, to a problem of ART failure, which we need to learn how to manage better.
8. There has been a marked increase of CDs. The CD rate is now 28.1% in the public sector. However, CD Case Fatality rate has declined in all provinces excepting the Free State.
9. CD has a 3 times higher mortality than vaginal delivery.
10. Prolonged labour and induced labour were not important associated factors. Previous CD is a significant associated factor for OH deaths.

11. Anaemia remains a major associated factor especially for NPRI, PRS, OH, and AR deaths.
12. 72.2% of women who died attended antenatal care but only 54% before 20 weeks gestation. The vast majority of women who died due to M&S, HDP and NPRI attended antenatal clinics, indicating that there are quality of care issues during antenatal care.
13. Emergency referral appears not to be a problem from CHCs or district hospitals. 46.8% women who died were managed at some point at CHC with 2. 9% dying there (referral problems 1%); from DH 51.4% managed and 25.3% dying (referral problems 8%); regional hospitals 41.8% managed and 33.6% dying (referral problems 27%); 34.5% managed and died at tertiary level. Referral problems mean problems in women who died at that level either with referring the woman or delay in receiving the woman. However, individual case review of OH cases suggests otherwise; several patients waited a long time for an ambulance and died on the way or shortly after arrival at a RH/TH. This suggests a possible problem in how cases ae assessed.
14. 61% of women who died had an anaesthetic, 0.08% of the total women who had anaesthesia had it at CHCs, 24,9% DH, 35,4% RH, 19,2% PTH, 14,0% at NCH, 6,4% private hospitals.
15. Overall, 62.4% maternal deaths were potentially preventable; the major underlying conditions causing preventable deaths were anaesthetic related 93.3%, OH 89.5%, PRS 76.4%, Ectopic pregnancy 75.2%, HDP 70.6% miscarriage 64,9%. This is unchanged from previous years.



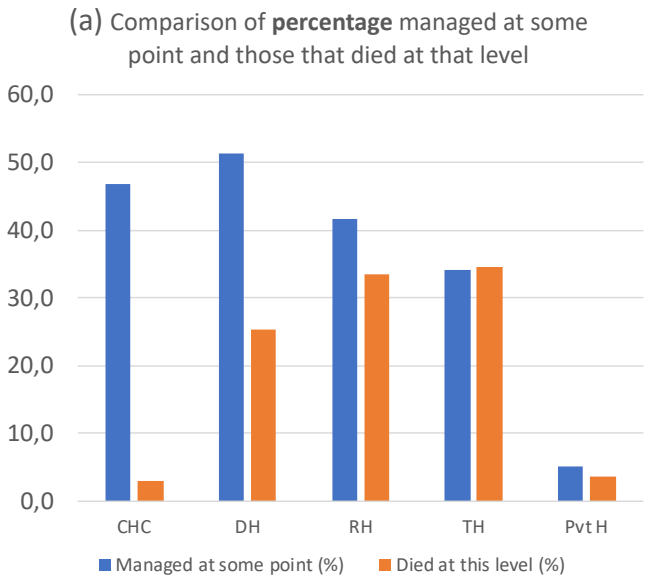
NB: 62.4% deaths in SA were potentially preventable

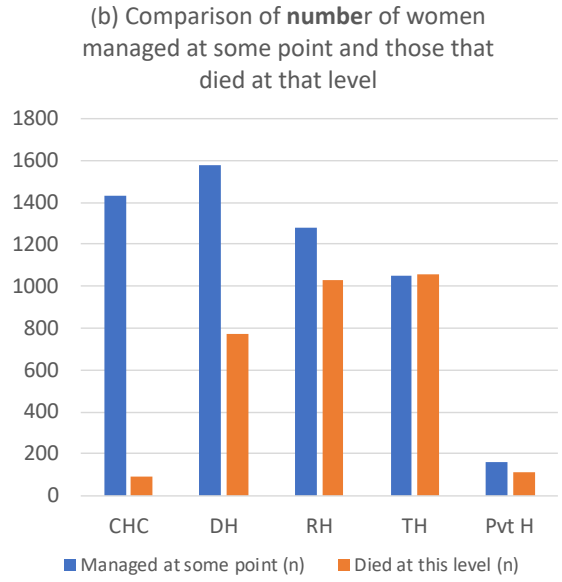
16. The major community orientated avoidable factors were delay seeking help, transport problems from home to health facility, lack of antenatal care, and unsafe abortion for those dying of miscarriage. This is unchanged from previous years.
17. Major administrative factors included lack of appropriately trained staff (skills shortage) doctors (20.5% of deaths), nurses (13.7% of deaths); OH, AR, Ectopic pregnancy and HDP were the conditions most affected.
18. Community avoidable (AF) and Administrative AF were similar across all levels of care; but medical care management at site of death was worst at DH where 80% were managed poorly, then at CHC and RH, where 60% were managed poorly. Treatment prior to referral was poor for 55% from DH, 50% from RH and 40% from CHC.
19. Major problems were assessment and recognition of problems at CHC and DH; and not following standard protocols at DH, RH, and TH.



20. Inadequate assessments: (a) after vaginal delivery meant women transferred out shocked to postnatal ward; (b) after CD discharged from theatre with abnormal vital signs and (c) discharged home from postnatal wards with tachycardia. “Sign-outs” from a),b), and c) often done by junior staff or not done at all.
21. On average
    a. A Clinic/CHC will see a woman who subsequently dies 0,5 times/year i.e. in 2 years the clinic/CHC will see one woman who subsequently dies; the database does not distinguish between a PHC clinic or CHC.
    b. A CHC will see a woman who subsequently dies 2 times/year i.e. in 6 months the CHC will see one woman who subsequently dies; this figure is where on assumes all cases seen at clinics were at CHCs.
    c. A district hospital will see a woman who subsequently dies, 1.7 times/year i.e. in 7 months the DH will see one woman who subsequently dies; this figure is less than CHCs because the DH do far more deliveries than CHCs and also CHCs can refer straight to a RH or TH.
    d. A regional hospital will see a woman who subsequently dies 4 times/year i.e. in 3 months the RH will see one woman who subsequently dies;
    e. A tertiary hospital will see a woman who subsequently dies 15 times/year i.e. in 3 weeks the TH will see one woman who subsequently dies;
    f. This frequency reduces dramatically at all levels, for each condition like HDP, OH, M&S and NPRI.

Level of care





22. Overall the Clinics/CHCs and DH clinicians very rarely see severely sick pregnant women and at the clinics, when they do, the care is poor, this is especially the case where the woman dies at the DH. If the woman is referred, not surprisingly, the problem is detected better than those who die at the DH. At the RH and Tertiary levels, the overwhelming problem is not sticking to standard protocols; this could be due to poor clinical practices and / or overburdened services.
23. Lack of skills are most apparent at DH and CHC. A probable explanation is that the events are so rare and managed in the context of all the other cases seen at the primary level, thus HCWs may not recognise the problem at the CHC or DH, or assess it properly. Thus, we need to stratify the primary level, so that each pregnant woman will be reviewed antenatally by a skilled clinician at least once in the pregnancy at PHC (next level of expertise). This would be best done at the 30 week (28-34 week) visit.
24. 94% of PHC clinics conducting births (all clinics reporting a birth: n=870) do less than 1 delivery a month, 63% of CHC (all CHC: n= 257) do less than 1 delivery per day, 65% of DH do less than 5 deliveries per day (All DH: n=243). Skills cannot be maintained at these levels of delivery, especially at clinics and CHCs.
25. iMMR of preventable and non-preventable deaths have declined in each triennium.

Recommendations NCCEMD

The recommendations assume that **every** site conducts **morbidity and mortality review** meetings, where **minutes** are kept, **actions** assigned to individuals and there is **feedback** at subsequent meetings to hold individuals to **account**.

Summary of crucial recommendations

- Contraception services need to expand to include postpartum IUCD insertion and LARCs; and ensuring contraceptive availability at all facilities caring for women and at high risk medical clinics.
- Set up an expert group to recommend on improving management of early pregnancy and its complications: miscarriage and ectopic management, early pregnancy counselling service and access to safe TOP, earlier initiation of antenatal care after pregnancy diagnosis, screening for mental health issues and identifying women at risk of suicide.

- Antenatal care restructured to ensure every problem case reviewed on-site prior to referral by most experienced midwife and all pregnant women have their pregnancies reviewed by the most experienced and knowledgeable midwife at least once between 28-34 week's gestation.
- Establish On-site Midwife run Birthing Units (OMBUs) at all large district, regional and tertiary hospitals (conducting large numbers of births for women with no risk factors).
- Establish a Safe Labour criteria and evaluation programme like the Safe Caesarean Delivery (surgery and anaesthesia) programme and maintain focus on the Safe CD programme.
- Implement the updated PMTCT protocol for better HIV management and TB detection
- Ensure ESMOE (including anaesthetic ESMOE) training for all new staff and two yearly updates for existing staff. EOST drills/exercises must occur monthly in maternity facilities. This is especially so at primary care and district hospital level as the rarity of conditions makes doing emergency drills essential to maintain skills. Each hospital and CHC should have at least one on-site trainer able to run the relevant ESMOE modules and drills.
- Ensure functional communication channels exist for consultation with and referral to higher levels of care e.g. by using the "Vula App".
- Prior to discharge from a ward and facility, specific criteria must be met and documented.

Conclusions NCCEMD

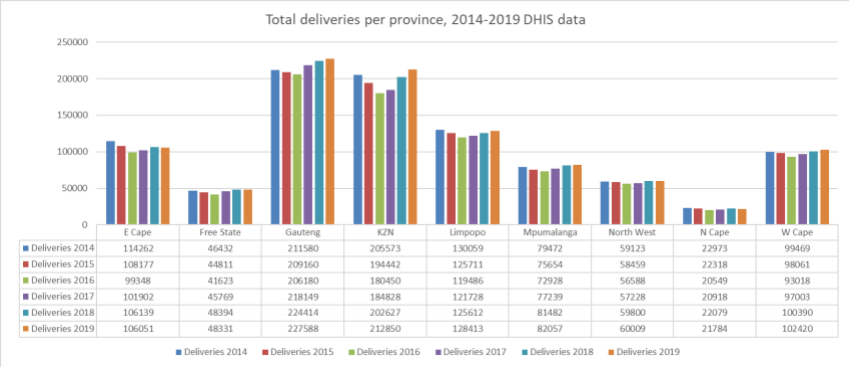
There has been a sustained, continual reduction in mortality, however this is no time for complacency. The clinicians and managers make the same errors as before, only less often. The drop in maternal mortality has exposed medical and surgical conditions now as a major cause of maternal death. This coupled with problems associated with non-pregnancy related infections and hypertensive disorders of pregnancy highlight the necessity of improving antenatal care at the primary care level. As shown above, at primary level there are too few skills to go around necessitating reorganisation of antenatal care at primary level to include a review of all pregnant women once during the third trimester of pregnancy and an in-house referral system for women who develop a risk factor by the most skilled midwife or primary care doctor. Further, there is an epidemic of caesarean deliveries and improving labour management by instituting on-site midwife run birthing units (OMBU), instituting the Safe Caesarean Delivery programme, developing a Safe Labour programme and rationalising birthing sites will control this problem. There has been a continual increase in early pregnancy maternal deaths and an expert group needs to devise methods of improving management early pregnancy:- miscarriage and ectopic diagnosis and management, early pregnancy counselling service and access to safe termination of pregnancy, earlier initiation of antenatal care after pregnancy diagnosis, mental health screening and identifying women at risk of suicide.

Unfortunately, the advent of the Covid-19 pandemic will test the health system enormously and make it difficult to maintain the gains made. We must be on our guard to ensure the key essential services still run efficiently.

		What Focal areas for interventions 5Hs	How Pillars necessary for quality Care 5 Pillars	When & Where Interventions along continuum of care Phase	Interventions at health care facilities
Mortality and morbidity reviews, minutes, actions, accountability and feedback	NCCEMD	1. **HIV** 2. **Obstetric Haemorrhage** 3. **Hypertensive disorders in pregnancy** 4. **Heart and other M&S conditions** 5. **First Half pregnancy**	1. **Appropriately resources and accessible health facilities** Equipment and human resources determined by Safe Labour and CD programmes On site Midwifery Birthing Units (OMBUs) to relieve pressure on Regional and Tertiary hospital labour wards Policy on retention of staff in historically disadvantaged districts 2. **Functional inter-facility consultation and referral system** Ensure proper communication between clinicians at various levels and sites using Vula App. Improve access at Level one to higher level of expertise via Outreach from Regional hospitals or telephonic, or IT/Virtual linkages for advice in antenatal clinics and in emergency situations. Wi-fi in all facilities 3. **Competent (knowledgeable and skilled) health care providers** Ensure ESMOE (including anaesthetic ESMOE) training for all new staff and two-yearly updates for existing staff. EOST drills/exercises must occur monthly in maternity facilities. This is especially so at primary care level as the rarity of conditions makes doing emergency drills essential to maintain skills 4. **Quality Care** Establish minimum standards for safe maternity care/ safe care during labour including minimum staffing norms for safe care in labour. Respectful care at all levels 5. **Community** Use MomConnect to send messages to pregnant women CHWs to integrate maternal health, mental health and contraception into their home visits Increase numbers of social workers available to assess at risk women for social grants, and food parcels. Integration of Home affairs departments in delivery facilities enables immediate issuing of birth certificates and access to grants	1. **Pre-pregnancy** 2. **First Half Pregnancy** 3. **Pregnancy and Childbirth** 4. **Postnatal - Mother** 5. **Postnatal care - neonate**	**Pre-pregnancy** • Contraception services need to expanded to include postpartum IUCD insertion and LARCs; and ensuring contraceptive availability at all facilities caring for women and at high risk medical clinics, adolescent clinics and higher institutions • Pre-pregnancy high risk clinics Pregnancy Early pregnancy focus • Set up expert group to recommend on improving management early pregnancy: miscarriage and ectopic Mx, early pregnancy counselling service and access to safe TOP, earlier initiation ANC after pregnancy diagnosis, screening mental health and identifying women at risk suicide Antenatal care Follow-up antenatal care • Antenatal care restructured to ensure every problem case reviewed on-site prior to referral by most experienced midwife and all pregnant women have their pregnancies reviewed by the most experienced and knowledgeable midwife at least once between 28-34 week's gestation Intrapartum care • Introduce new intrapartum care guidelines (CLEVER) • Training in Safe CD and anaesthesia Postnatal care mother • Following hypertension with severe features, senior advice should be sought before discharge and patients provided with antihypertensive medications. • Before discharge certain criteria must be met. Temperature <37.2, Pulse <100, • Improve postnatal care coverage including use of contraception and detection of mental health problems

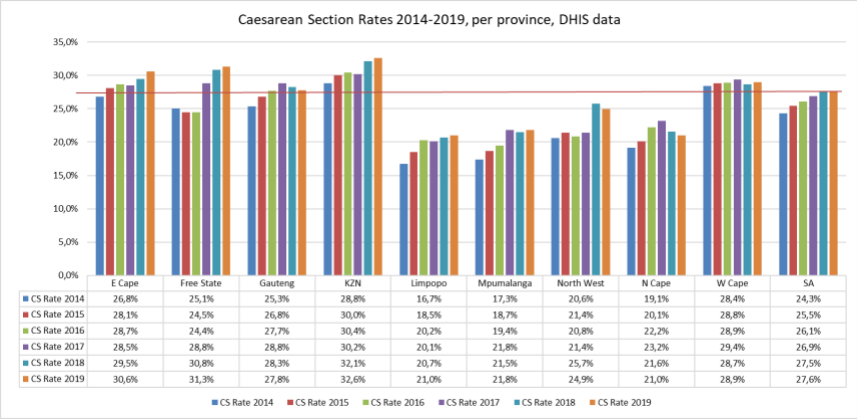
Main findings 2017-2019 NaPeMMCo

1. There was an increase in deliveries in almost every province over the three years, with the sharpest increase in KZN and Gauteng.



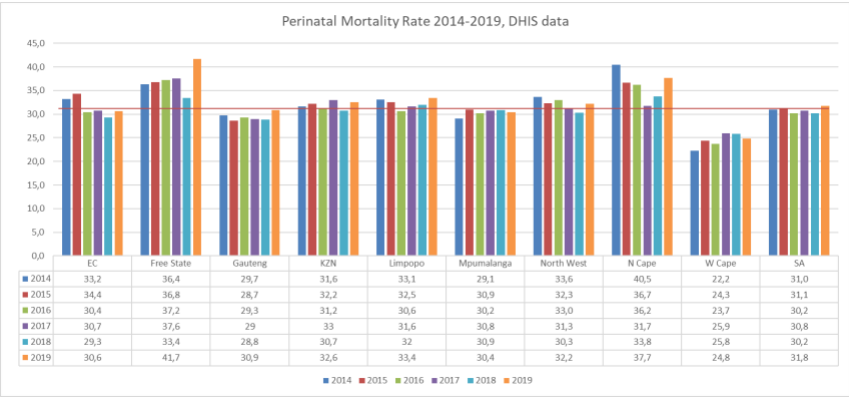
	E Cape	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape
Deliveries 2014	114262	46432	211580	205573	130059	79472	59123	22973	99469
Deliveries 2015	108177	44811	209160	194442	125711	75654	58459	22318	98061
Deliveries 2016	99348	41623	206180	180450	119486	72928	56588	20549	93018
Deliveries 2017	101902	45769	218149	184828	121728	77239	57228	20918	97003
Deliveries 2018	106139	48394	224414	202627	125612	81482	59800	22079	100390
Deliveries 2019	106051	48331	227588	212850	128413	82057	60009	21784	102420

2. The national CD rate was 27.6%. The CD rate increased in every province except Northern Cape, while the Western Cape's CD rate remained virtually unchanged.



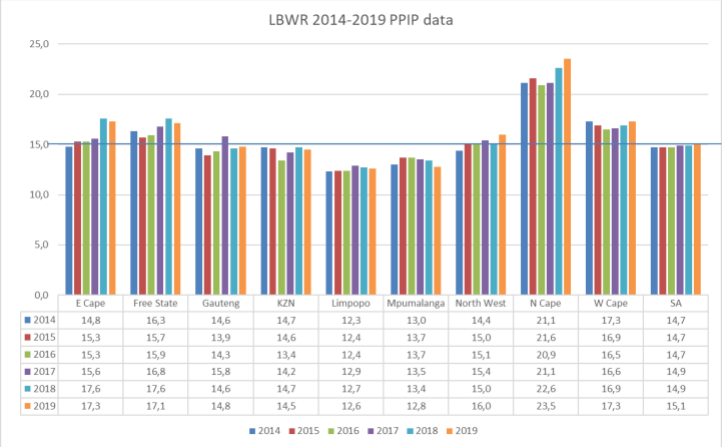
	E Cape	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape	SA
CS Rate 2014	26,8%	25,1%	25,3%	28,8%	16,7%	17,3%	20,6%	19,1%	28,4%	24,3%
CS Rate 2015	28,1%	24,5%	26,8%	30,0%	18,5%	18,7%	21,4%	20,1%	28,8%	25,5%
CS Rate 2016	28,7%	24,4%	27,7%	30,4%	20,2%	19,4%	20,8%	22,2%	28,9%	26,1%
CS Rate 2017	28,5%	28,8%	28,8%	30,2%	20,1%	21,8%	21,4%	23,2%	29,4%	26,9%
CS Rate 2018	29,5%	30,8%	28,3%	32,1%	20,7%	21,5%	25,7%	21,6%	28,7%	27,5%
CS Rate 2019	30,6%	31,3%	27,8%	32,6%	21,0%	21,8%	24,9%	21,0%	28,9%	27,6%

3. The perinatal mortality rate for South Africa, as recorded on the DHIS, was unchanged from the previous triennium at 30.9 per 1000 total deliveries (all weights).



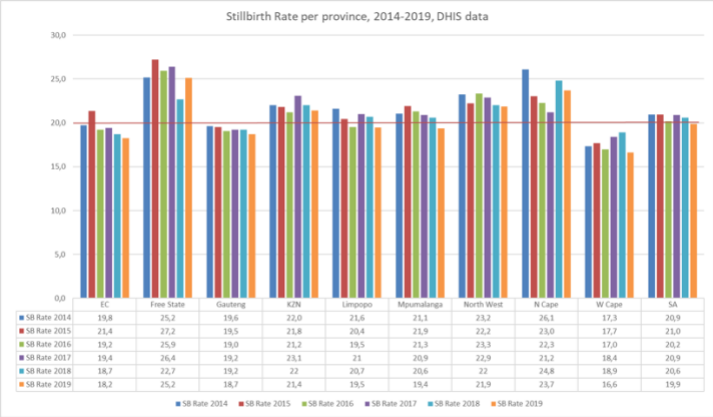
	EC	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape	SA
2014	33,2	36,4	29,7	31,6	33,1	29,1	33,6	40,5	22,2	31,0
2015	34,4	36,8	28,7	32,2	32,5	30,9	32,3	36,7	24,3	31,1
2016	30,4	37,2	29,3	31,2	30,6	30,2	33,0	36,2	23,7	30,2
2017	30,7	37,6	29	33	31,6	30,8	31,3	31,7	25,9	30,8
2018	29,3	33,4	28,8	30,7	32	30,9	30,3	33,8	25,8	30,2
2019	30,6	41,7	30,9	32,6	33,4	30,4	32,2	37,7	24,8	31,8

4. The Northern Cape has the highest percentage of low birth weight babies, with the national LBWR average at 15%.



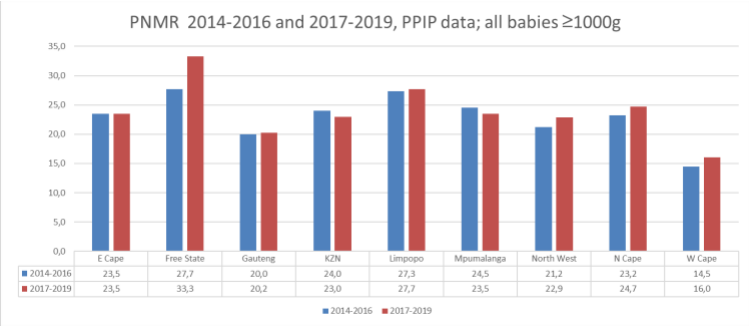
	E Cape	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape	SA
2014	14,8	16,3	14,6	14,7	12,3	13,0	14,4	21,1	17,3	14,7
2015	15,3	15,7	13,9	14,6	12,4	13,7	15,0	21,6	16,9	14,7
2016	15,3	15,9	14,3	13,4	12,4	13,7	15,1	20,9	16,5	14,7
2017	15,6	16,8	15,8	14,2	12,9	13,5	15,4	21,1	16,6	14,9
2018	17,6	17,6	14,6	14,7	12,7	13,4	15,0	22,6	16,9	14,9
2019	17,3	17,1	14,8	14,5	12,6	12,8	16,0	23,5	17,3	15,1

5. The stillbirth rate is very gradually declining for most provinces. The national SBR is 20/1000. The highest SBR is in Free State and Northern Cape.



	EC	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape	SA
SB Rate 2014	19,8	25,2	19,6	22,0	21,6	21,1	23,2	26,1	17,3	20,9
SB Rate 2015	21,4	27,2	19,5	21,8	20,4	21,9	22,2	23,0	17,7	21,0
SB Rate 2016	19,2	25,9	19,0	21,2	19,5	21,3	23,3	22,3	17,0	20,2
SB Rate 2017	19,4	26,4	19,2	23,1	21	20,9	22,9	21,2	18,4	20,9
SB Rate 2018	18,7	22,7	19,2	22	20,7	20,6	22	24,8	18,9	20,6
SB Rate 2019	18,2	25,2	18,7	21,4	19,5	19,4	21,9	23,7	16,6	19,9

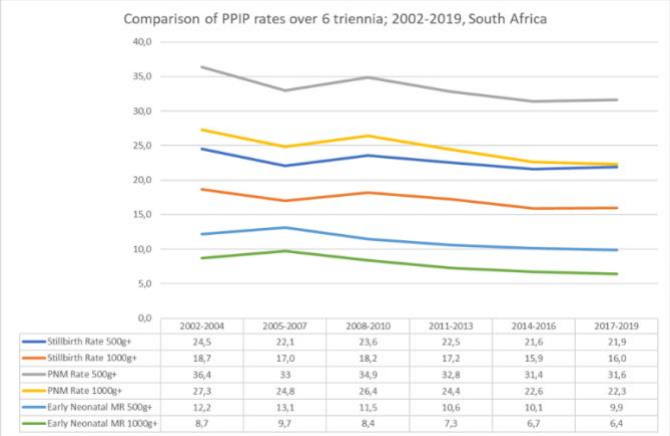
6. The main obstetric cause of death in babies ≥500g was spontaneous preterm labour, and in the ≥1000g category, the main cause of death was unexplained intra-uterine death.
7. In the group ≥1000g, 16.4% of babies died due to intra-partum asphyxia, which is an indicator of poor intra-partum care. When analysing the deaths of term babies (≥2500g) only, hypoxia remains the leading cause of neonatal deaths (60.9%).
8. The PNMR stayed mostly constant from the 2014-2016 triennium in all provinces except Free State, where there was a striking increase.



	E Cape	Free State	Gauteng	KZN	Limpopo	Mpumalanga	North West	N Cape	W Cape
2014-2016	23,5	27,7	20,0	24,0	27,3	24,5	21,2	23,2	14,5
2017-2019	23,5	33,3	20,2	23,0	27,7	23,5	22,9	24,7	16,0

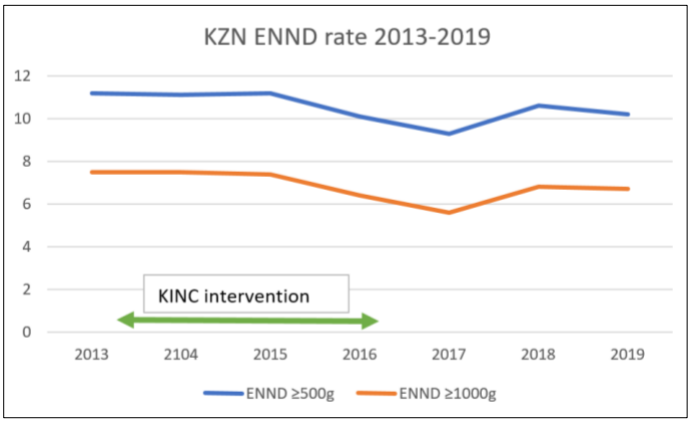
9. There is a continued gradual decline in PNMR at every level of care over the last 5 triennia except National Central hospitals, where there was an increase in deaths.

10. The early neonatal mortality rate has dropped below 10/1000 for the first time in the 2017-2019 triennium.



	2002-2004	2005-2007	2008-2010	2011-2013	2014-2016	2017-2019
Stillbirth Rate 500g+	24,5	22,1	23,6	22,5	21,6	21,9
Stillbirth Rate 1000g+	18,7	17,0	18,2	17,2	15,9	16,0
PNM Rate 500g+	36,4	33	34,9	32,8	31,4	31,6
PNM Rate 1000g+	27,3	24,8	26,4	24,4	22,6	22,3
Early Neonatal MR 500g+	12,2	13,1	11,5	10,6	10,1	9,9
Early Neonatal MR 1000g+	8,7	9,7	8,4	7,3	6,7	6,4

11. The decrease in the perinatal mortality rate is mostly due to a decrease in the number of reported stillbirths.
12. The biggest gaps between PPIP and DHIS data remain in Gauteng (42%) and KZN (35%). This implies that more than one third of deaths in these provinces are not discussed at M&M meetings.
13. The ENNDR in KZN declined after the KINC intervention (data from PPIP):



14. The PNMR for babies ≥1000g is 22.8/1000 and the Neonatal Death Rate (≥1000g for first 28 days of life) is 8.8/1000.
15. The SBR for ≥1000g is 16.2. This is unchanged from the previous triennium.

TARGETS

All provinces should aim for a Stillbirth Rate (≥1000g) of <15/1000 by 2030.
All provinces should aim for a Neonatal Death Rate (≥1000g) of <8/1000 by 2030
All provinces should have regular Morbidity and Mortality meetings that are entered in to the PPIP database so that at least 90% of deaths are discussed and entered.

Current status (red- below target, green above target, orange on track for 2030):

Province	Current status SBR ≥1000g	Current status NND ≥1000g	Current status PPIP (percentage of deaths entered)
Eastern Cape	16.7	10	82.7%
Free State	23.7	12.8	70.6%
Gauteng	14.6	7.2	57.6%
KZN	16.7	8.2	78.9%
Limpopo	17.6	13.8	74.7%
Mpumalanga	15.8	8.8	98.8%
North West	17.6	9.7	88.2%
Northern Cape	19	6.6	64.4%
Western cape	12.4	4.2	97.4%

NaPeMMCo Recommendations from the data

1. The KZN Initiative for Newborn Care model of funding has shown clear improvement in quality of care in new-borns and is recommended as a way to provide scale-up across the country.
2. Reduction of asphyxia deaths: continue with roll-out of HBB training. Add neonatal resuscitation drill (EOST) to ESMOE training.
3. Continue with HHAPI-NeSS strategy to address Asphyxia, Prematurity and Infection
4. Ensure functioning PPIP software at all delivery units with structures in place for M&M meetings and entering of data.
5. Implement Umbiflow™ as a means to decrease late stillbirths.
6. Focus on intrapartum care training to reduce birth asphyxia.
7. Investigate the high LBWR in N Cape and W Cape.
8. Free State appears to be the province with the biggest need for intervention e.g. KINC model.
9. The sudden increase in deaths at Central Hospitals needs to be interrogated to see if it is clinically significant and important. It could reflect appropriate referral of vulnerable babies to more specialised levels of care.
10. The annual increase in deliveries will place additional burden on birthing facilities; this must be taken in consideration for planning purposes.

Summary of findings of Rapid Report on effect of Covid-19 on use of maternal services and on maternal and perinatal mortality

Data was collected from DHIS and the NCCEMD for January to June 2019 and 2020. A comparison was made between data on service utilisation and outcomes for 2020 and 2019 to determine trends for 2020, particularly from April. National, provincial and district data are presented.

Antenatal visits

- There was a marked reduction in antenatal first visits in South Africa for April 2020 compared to 2019. This corresponded to the introduction of stage 5 lockdown restrictions. However, this was a temporary effect with return to similar numbers by June 2020.
- All province showed this pattern, except for the E Cape which persisted with reduced antenatal first visits in June 2020.
- All districts had a reduction in April which are particularly marked for some of the large metros; Johannesburg, eThekwini and Cape Town. The majority of districts show 'recovery' in May and June 2020 but this did not occur in OR Tambo, Mangaung, and Frances Baard; and to a lesser extent in Cape Town and Johannesburg.

Contraception visits

- Nationally, visits by women for contraception were less in April and May 2020 compared to April and May 2019 but similar in June 2020.
- In all provinces, except Northern Cape, there was a notable reduction in visits for contraception in April 2020, followed by a slight recovery in May and similar numbers for June 2020, compared to 2019 levels. Mpumalanga has had a marked reduction in contraception visits for January to May 2020, but this improved markedly in June.
- Considering Depo-Provera visits as a proxy for contraception visits, most districts followed the provincial trends, with lesser visits in April and May 2020 compared to 2019, but becoming similar in June 2020; this was particularly marked for Cape Town. However, the following districts remained with lesser numbers of visits in June: OR Tambo and Nelson Mandela bay in E Cape and eThekwini in KwaZulu-Natal.

Termination of Pregnancy Services

- Nationally there has been a significant drop in numbers of TOPs performed when lockdown level 5 started in April 2020, which remained reduced in May and June 2020, when compared with June 2019
- There was provincial variation with Free State, Gauteng, Limpopo, North West and N. Cape 'recovering' to 2019 levels in June 2020, whereas for E. Cape, KwaZulu-Natal, Mpumulanga and W. Cape number of TOPs remained reduced in June 2020 compared to 2019.
- The districts where the numbers of TOPs declined most and remained lower in June 2020 compared to 2019 were: Nelson Mandela Bay (EC), Lejweleputswa (FS), eThekwini (KZN), Vhembe (LIM), Gert Sibande (MPU) and Cape town (WC).

Facility Births

- There was an increase in facility live births in 2020 for each month from January to June 2020 compared to 2019, with the smallest increase in April 2020.
- Comparing provinces, there has been a marked reduction in births in KwaZulu-Natal from March to June 2020, and Eastern Cape in June 2020; otherwise the number of births in facilities has remained fairly constant. Limpopo and Mpumalanga has had consistently more births per month in 2020 compared to 2019.
- In most districts, live births have not fluctuated much between years. However, compared to 2019, there was an increase in facility live births in all districts in Limpopo and Ehlanzeni in Mpumulanga for Jan to June 2020; Oliver Tambo in May; and Fezile Daba and Johannesburg in June. Decreases were noted in Nelson Mandela Bay, K.Kaunda and Tshwane in May and June; and from March to June

in eThekwini. W. Cape showed a marked decrease in April but returned to similar numbers in June 2020 compared to 2019

Maternal mortality

- At a national level, there has been a marked increase in numbers of maternal deaths in June 2020 compared to 2019, minimal change in April and a slight reduction in May 2020.
- The national iMMR increased slightly in the second quarter of 2020 (April to June) compared to 2019. This was most marked for W Cape, Limpopo, Gauteng and Eastern Cape, where it also increased compared to the first quarter (Jan to March) 2020. Mpumulanga and North West showed a rise in the second quarter 2020 compared to first quarter 2020; but not when compared to 2019.

Perinatal Mortality.

- The stillbirth rate has been fairly constant across the two years nationally and for most provinces. The only exceptions are Gauteng where it increased in May and June; and Mpumulanga which has shown a decline for April to June but this could be a reporting problem
- Nationally, the ENND rate has remained similar to the same period in 2019 Comparing ENND rates for provinces, Mpumulanga has shown an increase in April to June 2020, Free State showed a steep rise in April and reduction in May; and Northern Cape had a reduction in April and steep rise in May but both remaining lower in June 2020. Whether this reflects population movements between neighbouring provinces is uncertain.
- Nationally, there has been little change in numbers of perinatal deaths and perinatal mortality rate (PMNR) between 2019 and 2020
- Comparing provinces, the perinatal mortality rate was reduced in Mpumalanga and N. Cape in April 2020 compared to 2019 but nationally and for other provinces, there were no obvious trends in differences in perinatal mortality rates during 2020 compared to 2019.

Discussion and Conclusion.

There has been a major negative effect on women using antenatal care clinics and reproductive health (contraception and TOP) services since April 2020 when lockdown started. The pandemic and associated lockdown has caused an increase in maternal mortality rates in Western Cape, E Cape, Gauteng and Limpopo in the second quarter of 2020. The first three provinces have highest numbers of Covid 19 cases. However, it is unclear why there has been an increase in mortality in Limpopo, perhaps women have moved from Gauteng to Limpopo during lockdown. There is evidence of increase usage of clinics and services in Limpopo compared with 2019.

As yet there has been minimal impact on perinatal mortality. If home births and deaths were to be included and when data is available for July, when the pandemic was more advanced, additional effects are likely to be seen.

This rapid appraisal has identified some important trends and should be continued on a monthly basis through the duration of the Covid 19 pandemic

Recommendations

1. Health promotion messages must include and stress the importance of continued attendance at antenatal clinics and clinics for preventative services such as contraception and immunisation. MomConnect should also send out messages encouraging pregnant women to attend antenatal care.
2. Primary Health Care Clinics and Community Health Centres must continue to offer antenatal care, contraceptive, TOP, immunisation services and other primary care services.

3. Maternity units need to remain open despite Covid 19 infections. Thus, maternity units need adequate access to PPE and training of the staff on how to protect themselves. This must include behaviour at staff tea and lunches. Programmes to provide emotional support for staff in the maternity units should be introduced.
4. Clinicians must continue to keep updated with new developments in managing pregnant women and their babies with Covid-19. Protocols for managing pregnant women and their babies are regularly updated and available from the SAMRC/UP Maternal and Infant Health Care Strategies unit (matinfru@up.ac.za).
5. The rapid Covid-19 survey of pregnant women and their babies should be produced monthly to help with detecting new problems arising and improve planning.

Integrated recommendations for Saving Mothers and Babies (Five 5s)

		What	How	When & Where	
	Committee	Focal areas for interventions	Pillars necessary for quality Care	Interventions along continuum of care	
				Phase	Interventions
Mortality and morbidity reviews, minutes, actions, accountability and feedback	NCCEMD	1. **H**IV 2. Obstetric Haemorrhage, 3. Hypertensive disorders in pregnancy, 4. Heart and other M&S conditions, 5. First Half pregnancy	1. Competent (knowledgeable and skilled) health care providers Ensure ESMOE (including anaesthetic ESMOE) training for all new staff and two-yearly updates for existing staff. EOST drills/exercises must occur monthly in maternity facilities. This is especially so at primary care level as the rarity of conditions makes doing emergency drills essential to maintain skills 2. Functional inter-facility referral system and communication Ensure proper communication between clinicians at various levels and sites using Vula App. Improve access at Level one to higher level of expertise via Outreach from Regional hospitals or telephonic, or IT/Virtual linkages for advice in antenatal clinics and in emergency situations. Wi-fi in all facilities 3. Appropriately resourced and accessible health facilities Equipment and human resources determined by Safe Labour and CD programmes On site Midwifery Birthing Units (OMBUs) to relieve pressure on Regional and Tertiary hospital labour wards Policy on retention of staff in historically disadvantaged districts 4. Community involvement Use MomConnect to send messages to pregnant women CHWs to integrate maternal health, mental health and contraception into their home visits Increase numbers of social workers available to assess at risk women for social grants, and food parcels. Integration of Home affairs departments in delivery facilities enables immediate issuing of birth certificates and access to grants 5. Quality care for all Establish minimum standards for safe maternity care/ safe care during labour including minimum staffing norms for safe care in labour. Adhere to criteria for safe discharge Respectful care at all levels	1. Pre-pregnancy 2. Pregnancy 3. Childbirth 4. Postnatal - mother 5. Postnatal - neonate	1. Contraception Pre-pregnancy evaluation 2. Antenatal care (early comprehensive First visit, TOP Review at 28-34 weeks; next level of expertise) 3. Effective intrapartum care, (OMBU Safe labour, CD and discharge) 4. Breastfeeding Comprehensive integrated 6 week visit 5. Integrated Neonatal care programme
	NaPeMMCo	1. Asphyxia, 2. prematurity, 3. Infection 4. Fetal growth restriction 5. Congenital infections			

Integrated recommendations for Saving Mothers and Babies during the life course (pre-pregnancy to postpartum)

Life course	Specific recommended interventions from NCCEMD/NaPeMMCo reports	Focus areas for implementation or improvement in quality of care, to reduce avoidable morbidity and mortality
Pre-pregnancy: • Preventing unplanned or unwanted pregnancies • Optimising HIV management	Access to adolescent and woman-friendly contraceptive services HIV- reduction of viral load before conception	Accessible contraception for high school students and tertiary education students Pre-conception counselling for previous serious pregnancy complications
Safe conception	Optimising chronic medical conditions, including minimising HIV viral load for the woman and her partner, controlling epilepsy with appropriate choice of drugs for pregnancy Folic acid supplementation to reduce risk of neural tube defects	Access to High Risk clinics for pre-conception counselling for women with medical or genetic conditions. Integration of family planning /contraception services into chronic medical follow-up clinics including HIV/ART clinics, cardiac clinics, diabetic clinics Folic acid supplementation as soon as contraception is stopped or a pregnancy is planned.
Early pregnancy (first half of pregnancy)	Pregnancy tests must be available at every clinic Access to ultrasound for early pregnancy bleeding MTOP available at every clinic Surgical and 2nd trimester TOP services available in every district	Early detection of pregnancy Access to free and safe TOP Skilled and prompt management of early pregnancy complications in casualty and gynae departments Early ANC booking with use of the new national DOH maternity case record, includes Mental health screening Appropriate identification and referral of high risk pregnancies Calcium, iron and folate supplementation for all pregnant women
First Booking visit	Promote early booking (community campaigns) BANC+ guidelines for effective antenatal care and appropriate referral Correct use of point-of-care testing (syphilis, HIV, Rh)	Booking before 20 weeks Prevention of anaemia (iron and folate supplementation) Calcium supplementation for all Vaccination (tettox, H1N1) Appropriate identification and referral for high risk pregnancies Mental health screen Ensure point of care rapid tests available to screen for syphilis in pregnancy, and that treatment with long-acting penicillin is given when screen positive

Antenatal care	Updated Maternity Care Guideline for effective antenatal care Establish next level of expertise referral system within PHC/MOU/CHC clinics Identification of women that may benefit from cerclage or progesterone to prevent premature labour Access to High Risk clinics at every level of care Create system where every pregnant woman is reviewed between 28-34 weeks by the most experienced staff member at the clinic.	Create system of first level referral for all PHC clinics and MOUs/CHC at those clinics Identify women at risk for preterm labour and supplement with progesterone where appropriate Manage medical conditions at specialist level Early identification of hypertensive disease. Discuss management of all pre-eclamptics with a specialist with appropriate referral Review of all pregnant women with most experienced staff member between 28-34 week's gestation
Labour and delivery	Correct use of partogram Implementation of IntraPartum Care Guideline Teaching on PPH (monograph) Access to aseptic techniques (handwashing, adequate supply of PPE etc) to do safe deliveries and reduce risk of nosocomial sepsis. Implementation of BMZ protocol (steroids)	Respectful care in labour: promote companionship in all labour wards. Correct use of intra-partum care guidelines to minimise unnecessary CD and birth asphyxia Safe CD Prevention of PPH Correct identification and management of PPH Infection prevention control measures in place to reduce maternal and new-born infection Steroids and referral for women at risk of imminent pre-term delivery
Immediate postpartum care	Use of the shock Index to recognise early bleeding Use of Early Warning Charts and special area for observation directly post delivery Training in HBB package Availability of LARCS at all delivery sites	Initiate breastfeeding Prevention of PPH Correct identification and management of PPH Management of the new born Care for the Small and Sick neonate Effective post-partum contraception Establish discharge checklist to be completed before discharge from labour ward and hospital
First weeks post delivery	Implement Essential postnatal care package at all clinics Introduce Integrated Neonatal Care training package	6 days and 6 weeks post-delivery check-up for mother and baby Maintain breastfeeding

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