

The WHO Application of ICD-10 to Perinatal Deaths: ICD-Perinatal Mortality (ICD-PM)

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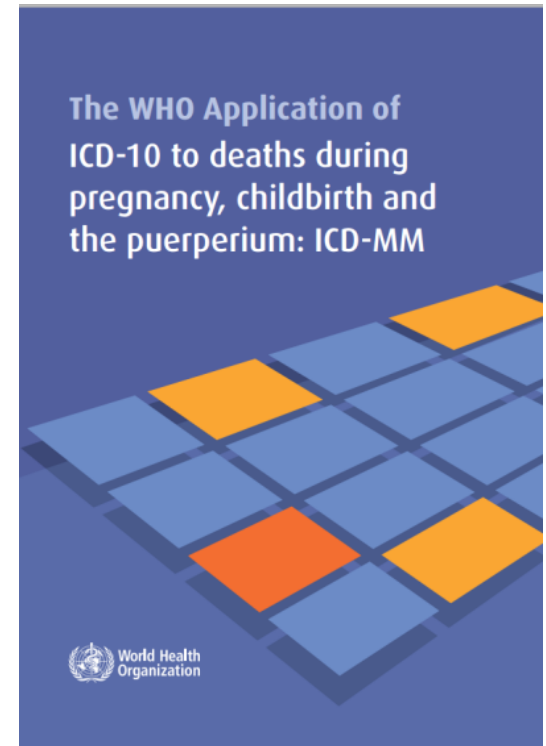
Background – 1

- ❑ Accurate capture and classification of perinatal deaths is critical
- ❑ Since 2009 - 81 different systems used globally for classifying perinatal death^{1,2}
- ❑ 2014 Delphi survey³ – characteristics of a global system
- ❑ Ideal to have a unifying and globally applicable system

1. Hopkins Leisher S, Teoh Z, Reinebrant H, *et al.* Seeking order amidst chaos: A systematic review of classification systems for causes of stillbirth and neonatal death, 2009-2014. BMC Pregnancy and Childbirth 2015 (*Under review*)
2. Hopkins Leisher S, Teoh Z, Reinebrant H, *et al.* Classification systems for causes of stillbirth and neonatal death, 2009-2014: An assessment of alignment 2 with characteristics for an effective global system BMC Pregnancy and Childbirth 2015 (*Under review*)
3. Wojcieszek AM, Reinebrant H, Hopkins Leisher S, *et al.* Characteristics of a global classification system for perinatal deaths: A Delphi consensus study. BMC Pregnancy and Childbirth 2015 (*Under review*)

Background – 2

- ❑ The WHO Application of ICD-10 maternal deaths: ICD-Maternal Mortality (ICD-MM) released in 2012



- ❑ A sister document for perinatal mortality has long been envisaged
- ❑ WHO convened a meeting of experts in July 2014 to inform the structure of a new perinatal death classification system

ICD-PM

- ❑ The WHO Application of ICD-10 to Perinatal Deaths: ICD-Perinatal Mortality (ICD-PM)
- ❑ Aims to facilitate the consistent collection, analysis and interpretation of information on perinatal deaths
- ❑ Need to emphasize the mother-baby dyad
- ❑ Actionable information for programming

Features

- ❑ Separates perinatal deaths by timing of death
 - Antenatal, intrapartum, neonatal
- ❑ Applies cause of death using logically grouped ICD-10 codes
 - Re-organized, user-friendly, relevant across settings
- ❑ Ensures the maternal condition is always captured
 - Related to the perinatal death causal pathway

ICD-PM groups

Antenatal deaths

	ANTENATAL DEATH	ICD-10 codes
A1	Congenital malformations, deformations and chromosomal abnormalities	Q00-Q99
A2	Infection	P35, P37, P39
A3	Acute antepartum event	P20
A4	Other specified antepartum disorder (Including codes specific to the antenatal period from haemorrhagic and haematological disorders of fetus and newborn)	P50, P52, P55, P56, P60, P61
A5	Disorders related to length of gestation and fetal growth	P05, P08
A6	Miscellaneous* <i>(Including codes specific to the antenatal period from transitory endocrine and metabolic disorders specific to fetus and newborn, digestive system disorders of fetus and newborn, conditions involving the integument and temperature regulation of fetus and newborn, and other disorders originating in the perinatal period)</i>	P70, P75, P77, P83, P96
A7	Antenatal death of unspecified cause	P95

ICD-PM groups

Intrapartum deaths

	INTRAPARTUM DEATH	ICD-10 codes
I1	Congenital malformations, deformations and chromosomal abnormalities	Q00-Q99
I2	Birth trauma	P10-P15
I3	Acute intrapartum event	P20
I4	Infection	P35, P37, P39
I5	Other specified intrapartum disorder <i>(Including codes specific to the intrapartum period from haemorrhagic and haematological disorders of fetus and newborn)</i>	P50, P52, P55, P56, P60, P61
I6	Disorders related to length of gestation and fetal growth	P05, P08, P07
I7	Miscellaneous* <i>(Including codes specific to the intrapartum period from transitory endocrine and metabolic disorders specific to fetus and newborn, and other disorders originating in the perinatal period)</i>	P70, P96
I8	Intrapartum death of unspecified cause	P95

ICD-PM groups

Neonatal deaths

	NEONATAL DEATH	ICD-10 codes
N1	Congenital malformations, deformations and chromosomal abnormalities	Q00-Q99
N2	Birth trauma	P10-P15
N3	Low birth weight and prematurity	P07
N4	Complications of intrapartum events	P20, P21,
N5	Convulsions and disorders of cerebral status	P90, P91
N6	Infection	P35-P39
N7	Respiratory and cardiovascular disorders	P22-P29
N8	Other neonatal conditions <i>(Including codes specific to the neonatal period from haemorrhagic and haematological disorders of fetus and newborn, transitory endocrine and metabolic disorders specific to fetus and newborn, digestive system disorders of fetus and newborn, conditions involving the integument and temperature regulation of fetus and newborn, other disorders originating in the perinatal period)</i>	P50-P61, P70-P78, P80-P83, P92-P94
N9	Disorders related to length of gestation and fetal growth	P05, P08
N10	Miscellaneous	*
N11	Neonatal death of unspecified cause	P96

ICD-PM groups

Maternal condition

	MATERNAL CONDITION	ICD-10 codes
M1	Maternal complications of pregnancy	P01
M2	Complications of placenta, cord and membranes	P02
M3	Other complications of labour and delivery	P03
M4	Maternal medical and surgical conditions	P00
M5	Noxious influences transmitted via placenta or breast milk	P04
M6	No maternal condition identified	

Pilot testing

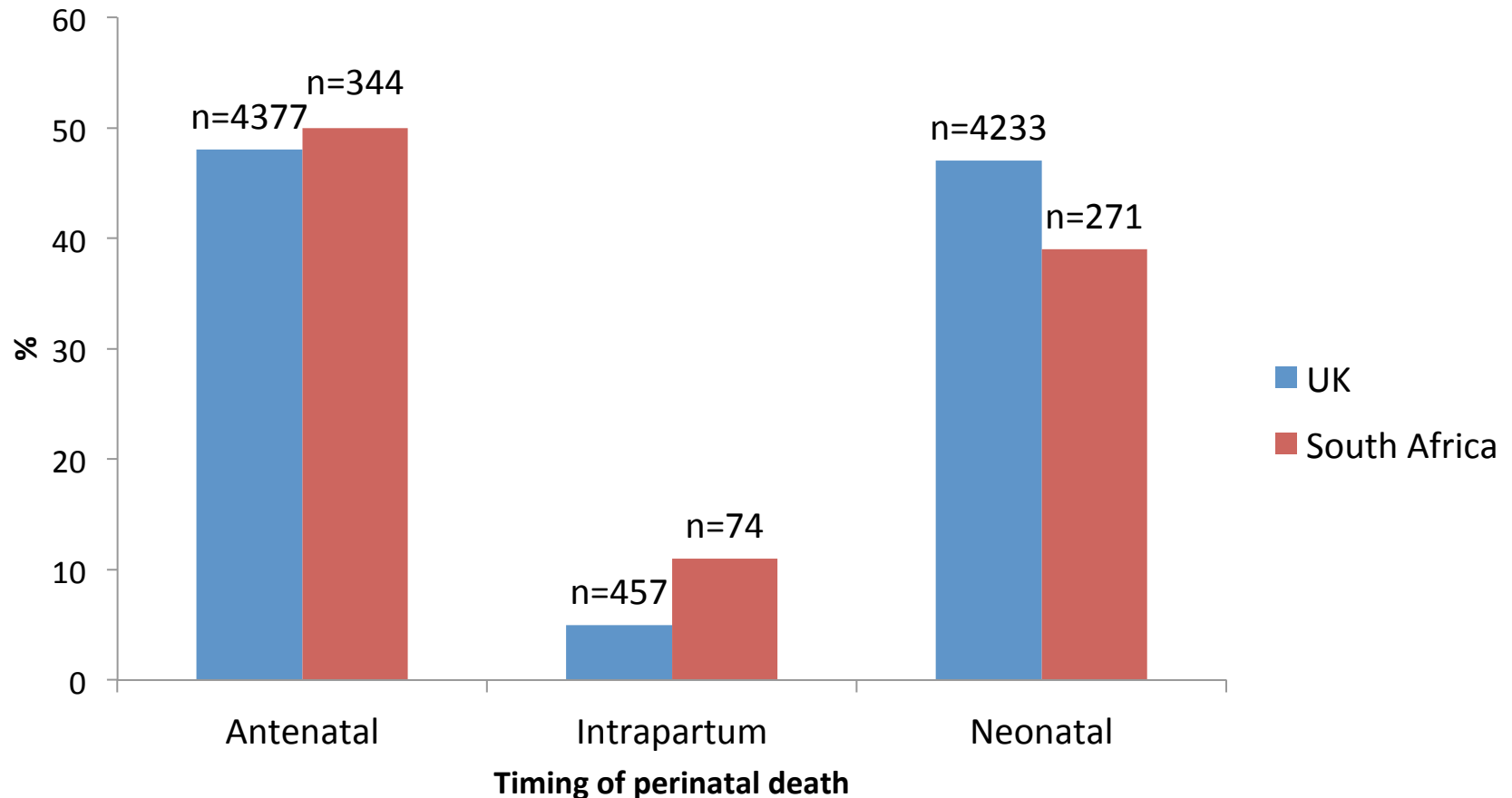
- ❑ *Analysis 1:* Demonstrate the application of ICD-PM
 - Highlights common causes of perinatal death, and shows areas where intervention would benefit mother and baby
- ❑ *Analysis 2:* Optimising ICD to identify the maternal condition
 - Explores the benefits of changes to the ICD coding rules in the upcoming ICD-11, such that ICD-PM and ICD-MM would utilise the same maternal codes
- ❑ *Analysis 3:* Specific application
 - Preterm perinatal deaths as an informative case study, comparing results between the ICD-PM, and the ICD-PM using the ICD-MM maternal codes.

Pilot testing – Application of ICD-PM

- ❑ ICD-PM was applied to deaths from two databases (South Africa and the UK)
- ❑ Deaths grouped according to timing of death
- ❑ Cause of death grouped according to the ICD-PM groupings of ICD-10 codes
- ❑ Main maternal condition at the time of perinatal death assigned to each case

Pilot testing – results

Timing of death



Pilot testing – Intrapartum deaths

MATERNAL CONDITION	M1: Maternal complications of pregnancy	M2: Complications of placenta, cord and membranes	M3: Other complications of labour and delivery	M4 Maternal medical and surgical conditions	M5: Noxious influences transmitted via placenta or breast milk	M6: No maternal condition identified	Other	TOTAL (%)
PERINATAL CAUSE OF DEATH								
I1: Congenital malformations, deformations and chromosomal abnormalities	1	5	2	1		6		15 (2.8)
I2: Birth trauma		2				3		5 (0.9)
I3: Acute intrapartum event	26	148	19	20	2	149	1	365 (68.7)
I4: Infection				1	1			2 (0.4)
I5: Other specified intrapartum disorder								
I6: Disorders related to length of gestation and fetal growth	1	12		6		5		24 (4.5)
I7: Miscellaneous		1						1 (0.2)
I8: Intrapartum death of unspecified cause	8	56	1	15	1	38		119 (22.4)
TOTAL (%)	36 (6.8)	224 (42.2)	22 (4.1)	43 (8.1)	4 (0.7)	201 (37.9)	1 (0.2)	531

Next steps

- ❑ ICD-PM pilot testing – publication and dissemination
- ❑ Technical consultation including regional representation
- ❑ Alignment with perinatal death audit guidance
- ❑ WHO ICD-PM guidance document
- ❑ Ongoing uptake and implementation in countries
 - Bangladesh, Uganda

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ADDITIONAL SLIDES

Pilot testing – results

Perinatal cause of death

- ❑ Antenatal deaths
 - Fetal deaths of unspecified causes (59%)
 - Deformations and chromosomal abnormalities (21%)
 - Consequence of problems related to length of gestation and fetal growth (14%)
- ❑ Intrapartum deaths
 - Acute intrapartum event (69%)
- ❑ Neonatal deaths
 - Consequences of low birth weight and prematurity (31%)
 - Deformations and chromosomal abnormalities (26%)
 - Deaths of unspecified causes in healthy mothers (25%)

Pilot testing – results

Maternal condition

- ❑ Mothers were often healthy across all three time periods
 - 53%, 38%, and 45% in the antenatal, intrapartum, and neonatal deaths, respectively
- ❑ Where there was a maternal condition associated with perinatal death, it was most often maternal conditions that may be unrelated to the present pregnancy and complications of placenta, cord and membranes