

Seoul, Republic of  
Korea  
10 - 16 October 2009

**Representation of Prematurity in  
Mortality Statistics**  
**A suggestion to change Volume two**

WHO-FIC 2009/D031

Dr. med. Horst Buxmann, Johann Wolfgang Goethe Universität ,  
Frankfurt am Main, Germany  
Dr. Christina Poethko-Müller, MSc., Robert Koch Institute,  
Berlin, Germany  
Dr. Stefanie Weber, DIMDI, Cologne, Germany

Abstract

Volume two of the ICD-10 specifies the use of the ICD-10 for Mortality. In Section 4.1.11. of Volume two it is specified how to use the codes P07 and P08. These Codes should not be used for underlying cause coding “if any other cause of perinatal mortality is reported”. If the source data permits an evaluation of gestational age and birth weight from other data on the death certificate, an additional analysis of this important information can be performed.

For those certificates, where this additional information cannot be collected, coding according to Volume two often ends with another code from chapter 16 and the information on gestational age and birth weight is lost.

This paper is proposing to revisit the rule in Volume 2 and to constrain the recoding to only those cases where the cause of death is not a consequence of P07 and P08.

Additionally it should be recommended to collect gestational age and birth weight consistently all over the world and therefore make it part of the template for the death certificate as given in Volume 2.

As this topic is quite complex and might have a great statistical impact on these cases of great interest for public health, it might be discussed in order to change this rule and the coding of prematurity itself for ICD-11 rather than for ICD-10.

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means - electronic, mechanical or other - without the prior written permission of WHO.

The views expressed in documents by named authors are solely the responsibility of those authors.

The Codeblock “Disorders related to length of gestation and fetal growth” describes a number of conditions that might lead to death. The conditions are not explaining why they appeared and for the correct diagnosis it is necessary to specify the reason why e.g. the prematurity (P07) appeared. From the statistics on the causes of death in Germany (see table 1) you can see, that the number of death coded to the P chapter does not pose a significant percentage of the causes of death in total in Germany (only about 0.2 % of all death are due to “Certain conditions originating in the perinatal period”)

Kodeblock	1998	1999	2000	2005	2006	2007
A00-T98	852.382	846.330	838.797	830.227	821.627	827.155
P00-P96	1.600	1.625	1.474	1.341	1.390	1.464
- P00-P04	130	171	165	149	180	183
- P05-P08	895	907	770	696	687	775
- P10-P15	21	12	6	3	4	4
- P20-P29	328	271	303	238	260	246
- P35-P39	79	106	72	68	66	77
- P50-P61	71	67	82	59	70	48
- P70-P74	11	10	3	4	7	1
- P75-P78	32	36	32	32	41	37
- P80-P83	14	15	18	12	15	14
- P90-P96	19	30	23	80	60	79
Q00-Q99	1.822	1.610	1.643	1.528	1.473	1.451
- Q00-Q07	189	172	158	124	152	126
- Q10-Q18	1	-	2	-	-	1
- Q20-Q28	726	633	673	506	489	448
- Q30-Q34	125	90	107	75	48	62
- Q35-Q37	1	-	1	1	-	-
- Q38-Q45	60	50	39	51	46	38
- Q50-Q56	-	3	-	-	-	-
- Q60-Q64	97	91	73	62	63	74
- Q65-Q79	89	85	86	86	90	85
- Q80-Q89	161	171	191	173	192	199
- Q90-Q99	373	315	313	450	393	418

Table 1: Numbers of death in Germany, grouped by code blocks, all ages and all genders. [www.gbe-](http://www.gbe-)

[bund.de](http://bund.de)

But if you look at the number of deaths in the age group of under one year olds, the picture, as you would expect, changes:

Kodeblock	1998	1999	2000	2005	2006	2007
A00-T98	3.668	3.496	3.362	2.696	2.579	2.656
P00-P96	1.568	1.605	1.455	1.264	1.333	1.387
- P00-P04	130	171	164	149	180	182
- P05-P08	894	905	769	696	687	775
- P10-P15	15	11	5	3	4	3
- P20-P29	316	264	296	227	246	227
- P35-P39	72	97	70	65	63	73
- P50-P61	71	67	81	59	70	48
- P70-P74	10	9	3	4	7	1
- P75-P78	31	36	32	32	41	37
- P80-P83	14	15	18	12	15	14
- P90-P96	15	30	17	17	20	27
Q00-Q99	1.051	951	934	700	637	686
- Q00-Q07	87	75	85	50	54	45
- Q10-Q18	-	-	1	-	-	-
- Q20-Q28	457	405	394	248	240	220
- Q30-Q34	108	76	96	68	43	58
- Q35-Q37	1	-	1	-	-	-
- Q38-Q45	36	28	22	20	16	16
- Q50-Q56	-	1	-	-	-	-
- Q60-Q64	64	56	46	37	35	48
- Q65-Q79	58	68	60	56	60	67
- Q80-Q89	84	96	94	80	73	90
- Q90-Q99	156	146	135	141	116	142
R00-R99	689	574	599	414	319	304
- R95-R99	684	568	593	405	315	303
- R96-R99	82	61	111	107	56	75
S00-T98	100	81	86	71	78	63

Table 2: Numbers of death in Germany, grouped by code blocks, age < 1 year and all genders.

[www.gbe-bund.de](http://www.gbe-bund.de)

According to the rules in Volume two the certificate can only be coded to P07 and P08 if no other diagnosis can be found on the certificate. In Section 4.1.11. of Volume two is specified how to use the codes P07 and P08. These Codes should not be used for underlying cause coding “if any other cause of perinatal mortality is reported”.

So the number of deaths in the blue line is deaths where the certifier only noted “Prematurity” on the certificate (or where the coder did not follow the rules correctly).

But there are a couple of code blocks with diagnosis that might have led to prematurity, e.g. “Congenital malformations of the digestive system” or “Chromosomal abnormalities, not elsewhere classified”.

But from the monocausal statistics of only the underlying cause of death this information is lost. If a country is able to collect the completed weeks of gestation and the birth weight consistently, one could add this information to the statistics and be more precise.

In many countries this information is not collected or, like in Germany, due to data protection law, is not evaluated.

In these countries the cases of great interest to the public health system could not be separated and the statistics can only be an estimate of the exact numbers of deaths caused by prematurity. Results of studies show that even in countries using automated coding software and therefore reduce the problem of miscoding, the underlying cause of death statistics does not show the true numbers of death due to prematurity. The reason for that is mostly caused by the rule in 4.1.11. [1]

So in order to change this situation of imprecise information from the underlying cause of death on prematurity two changes are recommended by the authors:

We suggest to change the coding rule on P07 and allow the selection of P07, even if other diagnosis are present on the certificate, especially in that cases, where prematurity is the underlying reason for the diagnosis which caused the death. This would apply to the following codes, all being typical complications of P07

- |  |
|--|
| P22.0 Respiratory distress syndrome of newborn                                     |
| P27.1 Bronchopulmonary dysplasia originating in the perinatal period               |
| P28.0 Primary atelectasis of newborn   |
| P52.0 Intraventricular (nontraumatic) haemorrhage, grade 1, of fetus and newborn   |
| P52.1 Intraventricular (nontraumatic) haemorrhage, grade 2, of fetus and newborn   |
| P52.2 Intraventricular (nontraumatic) haemorrhage, grade 3, of fetus and newborn   |
| P52.3 Unspecified intraventricular (nontraumatic) haemorrhage of fetus and newborn |
| P59.0 Neonatal jaundice associated with preterm delivery                           |
| P77 Necrotizing enterocolitis of fetus and newborn                                 |
| P91.1 Acquired periventricular cysts of newborn                                    |
| P91.2 Neonatal cerebral leukomalacia   |

Additionally we encourage stronger recommendations on multiple cause of death analysis in Volume 2 and maybe even a guideline for sample multiple cause analysis on topics of great public health interest. Such guidelines could be developed by the MRG and then be recommended to WHO mortality data collection in order to enhance and standardise data analysis worldwide.

References:

[1] The Contribution of Preterm Birth to Infant Mortality Rates in the United States, William M. Callaghan, Marian F. MacDorman, Sonja A. Rasmussen, Cheng Qin and Eve M. Lackritz, *Pediatrics* 2006;118;1566-1573