

# Intrapartum death rates in hospitals

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## Introduction

THE INTRAPARTUM MORTALITY RATE, which includes both the stillbirth rate and the neonatal death rate, is accepted as an indicator of the efficiency of maternity services (Lancet, 1967). We have analysed the results of the year 1967 for the Maternity Unit, General Hospital, Kuala Lumpur, and have compared them with the results of the Obstetric Unit, University Hospital, for the years 1968, 1969 and 1970.

## Material and Methods

With the permission of Dato (Dr.) Ariffin bin Ngah Marzuki, data were obtained from the case records of the Maternity Unit. The data used were:—

1. The ethnic group of the mother.
2. The social class of the mother:— where the husband's reported occupation was professional, business or tradesman, the mother was considered as "upper class", all others were "lower class".
3. The parity of the mother:— they were divided into para 0, para 1–3, para 4–6, and para 6.
4. The sex of the infant.
5. Whether the infant was stillborn, died in the neonatal period, or was discharged alive.
6. The birth weight of the infant. Multiple births were excluded.

## Results

There were 11,721 deliveries at the Maternity Unit during 1967. The ethnic group and parities of the mothers are shown in Table 1.

Some of the case records were incomplete. The present study includes 10,175 deliveries, including 427 stillbirths.

## Factors affecting death rates

By using a form of multifactorial analysis, it was possible to separate out the effects on the stillbirth and neonatal death rates of the ethnic group, social class and parity of the mother and the sex and birth weight of the infant.

Minor differences in stillbirth and neonatal death rates were associated with the ethnic group, social class and parity of the mother and with the sex of the infant; but none of these reached statistical significance. Only for the birth weight of the infant were there significant changes in the stillbirth and neonatal death rates. It appears that an infant's chances of being stillborn or of dying neonatally at the Maternity Unit, General Hospital, depend only on the birth weight of the infant.

The intrapartum death rates for infants at the General Hospital and the University Hospital are shown in Fig. 1

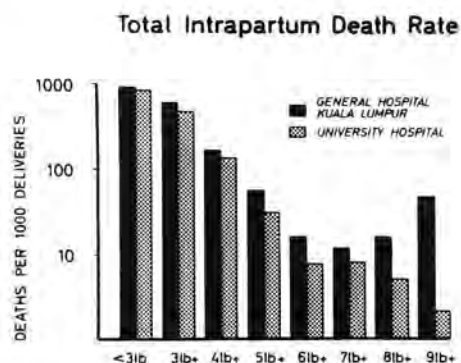
The death rate falls with increasing birth weight to the 7 lb class, but, after that, the death rate begins to rise again. The death rates have been separated into

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**Table 1: Total Number of Mothers Admitted (by race and parity of mother)**

Parity	0	1	2	3	4	5	6	7	8
Race									
Malay	727	357	259	184	187	176	183	138	84
Chinese	2375	713	462	375	305	388	363	283	177
Indian	669	429	337	247	227	204	203	145	121
Other races	51	24	18	16	12	9	7	4	2
<b>TOTAL</b>	<b>3822</b>	<b>1523</b>	<b>2076</b>	<b>822</b>	<b>731</b>	<b>777</b>	<b>756</b>	<b>570</b>	<b>384</b>

Race	9	10	11	12	13	14	Over 14	Unknown	Total
Malay	64	32	28	24	6	4	4	149	2606
Chinese	140	103	50	35	20	5	7	249	6050
Indian	82	39	21	12	5	3	3	165	2912
Other races	1	3	0	0	0	0	1	5	153
<b>TOTAL</b>	<b>287</b>	<b>177</b>	<b>99</b>	<b>71</b>	<b>31</b>	<b>12</b>	<b>15</b>	<b>568</b>	<b>11721</b>



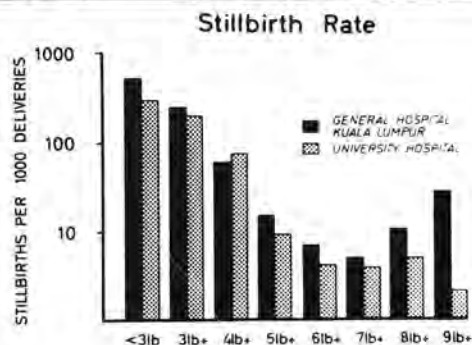
**Fig. 1**

The intrapartum death rates for infants born at the Maternity Unit, General Hospital, Kuala Lumpur, and at the University Hospital, Petaling Jaya.

stillbirths and neonatal deaths in Fig. 2 and Fig. 3.

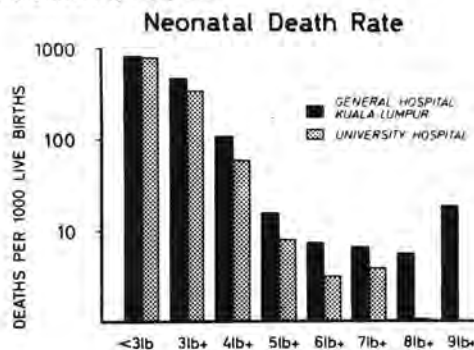
For infants under 3 lb birth weight, the death rates are similar for the two hospitals, but for larger infants the death rate is lower in the University Hospital.

If the standards of care of the University Hospital had applied to the Maternity Unit, General Hospital, there would have been fewer intrapartum deaths. The actual reduction in deaths is shown in Table 2.



**Fig. 2**

The stillbirth rates at the General Hospital, Kuala Lumpur, and the University Hospital.



**Fig. 3**

The neonatal death rates at the General Hospital, Kuala Lumpur, and the University Hospital.

Table 2: The expected reduction in the number of infant deaths at GH achieved by changing the intrapartum death rates.

Birth weight lbs	Total No. of deliveries	Intrapartum deaths	Reduction in number of deaths at GH if		
			UH stillbirth rate	UH neonatal death rate	UH stillbirth & neonatal death rate
3	117	107	5	1	7
3+	149	91	4	16	21
4+	418	68	-6	20	14
5+	1,689	52	10	12	23
6+	3,835	55	10	15	26
7+	2,993	35	3	8	11
8+	867	14	4	5	9
9+	107	5	1	2	3
Totals	10,175	427	31	79	114
Reduction in death rate			7%	19%	27%

It can be seen that improvements in the stillbirth rate would reduce the number of deaths by 31, or 7.3%, improvements in the neonatal death rate would have resulted in 79 fewer deaths or 18.5% less, while improvement in both stillbirth and neonatal death rates would give 114 fewer deaths, or a reduction of 26%. The reduction of numbers of each improvement separately does not necessarily add to the total reduction when both are improved simultaneously, because improved neonatal care can be given only to liveborn infants.

**Discussion**

It is difficult to compare intrapartum death rates between developing and Western countries. In many developing countries, the only reliable data on intrapartum deaths is from hospitals. These data are biased, as many women come to a hospital for delivery only if there is a complication of pregnancy or labour (Thomson, Chun & Baird, 1963). However, comparisons between the General Hospital, Kuala Lumpur, and the University Hospital are justified as both serve similar communities and we have shown that differences in ethnic group, social class and parity of the mother do not significantly affect the death rates. With the single exception of infants between 4 lb and 5 lb, the stillbirth and neonatal death rates are lower in the University Hospital.

Because of its special role in undergraduate and post-graduate teaching and in research, the University Hospital is more heavily staffed and better equipped

than most of the Ministry hospitals, and these facts probably account for the differences in the death rates. Undoubtedly, the Ministry hospitals will be staffed and equipped at the same standards as the University Hospital in due course, and their standards of care will rise to the same level. However, improvements cost money, which is never plentiful, and it is important that the priority for improvements be arranged so that the maximum benefit is obtained as quickly as possible. From this study, it is possible to make some suggestions for the order of priorities.

1. The special care of small premature infants is expensive in staff and equipment. It seems that the number of lives saved by these special facilities will be small. Although one or two Special Care Nurseries should be available for experimental and educational purposes, the widespread provision of these facilities should be low in the list of priorities.
2. From the data presented in this paper, it appears that improvement in the neonatal death rate would be more effective than lowering the stillbirth rate. But many neonatal deaths occur in infants who have suffered birth injury, and occur in the first few hours of life (Dugdale 1967). Improvement in the care of mother during labour and of the infant in the immediate postnatal period would probably be the most effective way of reducing both the stillbirth and the neonatal death rates. This would involve co-operation of the

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obstetrician and the paediatrician in the delivery room. In difficult deliveries, both the mother and infant need special care. The obstetrician is often fully occupied with the care of the mother; the paediatrician should be present to look after the infant. Both obstetric and paediatric trainees should be experienced in the care of neonates, and the care of mother and child should be a joint responsibility. This type of care would do more to reduce death and disability among neonates than the most elaborate of special care nurseries, and at a fraction of the cost.

3. It has been shown that the most important single factor in the survival of neonates is the birth weight. Average birth weights are lower here than in Western countries, and this probably reflects poor maternal nutrition (Richard & Lowe 1966). Our long-term aim should, therefore, be to improve maternal nutrition so that heavier infants with a greater chance of survival are born.

### Acknowledgements

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### References

- Dugdale, A.E. (1968) *Med. J. Aust.*, 2: 1092.  
Leading article, *Lancet*. (1967) i: 1367.  
Richard, I.D.G. & Lowe, C.R. (1966) *Lancet*, i: 1170.  
Thomson, A.M., Chun, D. & Baird, D. (1963) *J. Obs. Gynaec. Brit. Comm.*, 70: 871.