

# Medical History . . .

## Obstetric care, social class, and maternal mortality

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Common sense would suggest that maternal mortality in Britain must have fallen fairly steadily over the past 150 years. Common sense would also suggest that the effects of poverty would have led to a higher maternal mortality in the lower social classes, the difference being greater in the nineteenth century than the twentieth century. On both counts common sense would lead us astray. In fact, from the earliest comprehensive reports on deaths in childbirth in 1841 (fifth annual report of the registrar general) until the mid-1930s there was no substantial or sustained fall in maternal mortality, in spite of the introduction of anaesthetics (1847), antisepsis (1880s), and caesarean section for obstructed labour (1890-1900) (table I and figure).

One's instinctive reaction is to question the validity of statistics that indicate that the risk of dying in pregnancy and childbirth was as high in the 1930s as it was in the middle of the nineteenth century. This finding, however, cannot be dismissed as a statistical artefact. Potential sources of statistical distortion, such as changes in the accuracy of death registration, in the classification of diseases, or in the proportion of primiparous births, played at most a minor part in shaping the graph of maternal mortality.<sup>1</sup> Moreover, those concerned with obstetric care between 1870 and the 1930s were only too aware that the undiminished maternal mortality was both a reality and a scandal.<sup>2</sup> Indeed, in Scotland maternal mortality rose steadily from 1900 to 1935.<sup>3</sup> Between 1930 and 1933, for example, over 10 000 maternal deaths occurred in England and Wales. Today for the same number of births the expected number of deaths would be less than 250. The dramatic fall in maternal mortality from the late 1930s to the present day seems to have been initiated by the introduction of the sulphonamides and sustained by blood transfusion, penicillin, and a rising standard of obstetric education and obstetric care; but this period (from 1935 to the present) lies outside the scope of this paper.

### Maternal mortality and social class

The second unexpected feature of maternal mortality may be described as the "reversed social class relationship" for the following reason. From the mid-nineteenth century to the 1930s mortality for most of the common causes of death not only declined steadily but was also strongly associated with social class, being highest, predictably, in the working classes and lowest in the middle and upper classes. When there was no effective medical treatment for virtually all of the common fatal diseases social and economic deprivation per se, not lack of medical care, was the direct cause of the higher death rate among the poor. This did not apply, however, to maternal mortality, which seems to have been related to social class in the opposite direction. In other words maternal mortality was often higher in the middle and upper classes than in the working class. What is the evidence for this curious anomaly, and what are the implications?

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TABLE I—Maternal mortality 1847-1980 (deaths/1000 births) in England and Wales

Five year period	Annual mortality averages		
	Puerperal sepsis	Accidents of childbirth*	Total
(1847-50)	1.9	3.9	5.8
1851-55	1.5	3.4	4.9
1856-60	1.5	3.0	4.5
1861-65	1.6	3.2	4.8
1866-70	1.5	3.1	4.6
1871-75	2.4	3.0	5.4
1876-80	1.7	2.2	3.9
1881-85	2.8	2.1	4.9
1886-90	2.4	2.1	4.5
1891-95	2.5	2.9	5.4
1896-00	2.0	2.6	4.6
1901-05	1.9	2.3	4.2
1906-10	1.6	2.2	3.8
1911-15	1.5	2.3	3.8
1916-20	1.6	2.3	3.9
1921-25	1.5	2.2	3.7
1926-30	1.8	2.2	4.0
1931-35	1.6	2.7	4.3
1936-40	0.77	2.47	3.24
1941-45	0.36	1.90	2.26
1946-50	0.14	0.95	1.09
1951-55	0.098	0.60	0.70
1956-60	0.06	0.37	0.43
1961-65	0.04	0.28	0.32
1966-70			0.27
1971-75			0.13
1976-80			0.12

\*The term "accidents of childbirth" was used to cover all causes of maternal mortality apart from puerperal sepsis.

Sources: *Reports of the Registrar General and On the state of the public health*; reports of the Chief Medical Officer of the Ministry of Health and Department of Health.

In 1781 Robert Bland, physician-accoucheur to the Westminster General Dispensary, published the first statistical account of deliveries among the urban poor; he was surprised to notice that his private patients were more liable to die from childbed fever than the poor who lived in the worst of the London slums.<sup>4</sup>

In 1851 John Robertson of Manchester compared the maternal mortality in "the township of Hulme, representing a great labouring community" with that in "Moss-side, Broughton, Cheetham and Crumpsall . . . which may stand for a community composed, as largely as any that could be found, of the middle and affluent classes," and he found to his great surprise that "for every death in childbed in Hulme, more than double the number dies in the four townships."<sup>5</sup>

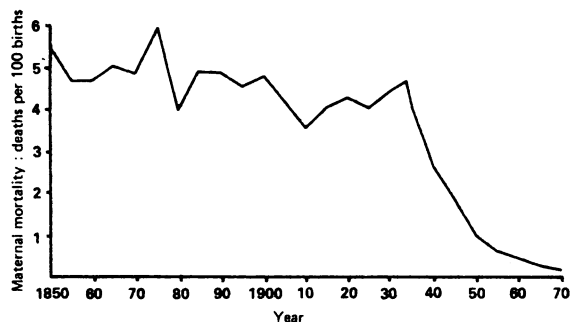
### WHO DELIVERS BABIES?

In 1898 C J Cullingworth discovered that in London the districts with the highest maternal death rates were the middle class ones while those with the lowest were working class. "It will be observed," he wrote, "that Westminster, Lambeth, Whitechapel, St George's-in-the-East, and Shoreditch, which might have been expected to appear high on the list, show a much smaller proportion of cases [of puerperal fever] than Hampstead and Islington, and even St James, Kensington, and Chelsea."<sup>6</sup> The probable explanation, that a high maternal mortality was associated with doctors' deliveries and a low rate was found where midwives' deliveries were the rule, was not pursued by Cullingworth. In 1934 Dudfield stumbled on the same finding. The maternal mortality was higher in the "healthy districts" of the west end of London than in districts such as Bethnal Green and Poplar. He

offered no explanation but concluded that "there is evidently scope for an intensive inquiry to elucidate these differences."<sup>7</sup> But London and Manchester were not the only places where this anomaly was found. Fairbairn reported that in Leeds in 1920-9, when the maternal death rate for the city as a whole was 4.49/1000 deliveries, the rate was 5.93 in the middle class areas and 3.01 in the working class areas. The explanation for this anomaly, he wrote, was simple:

The midwife employing class expect to deliver themselves, and that medical aid will only be required for unexpected and unlikely happenings. The woman who engages a doctor is an entirely different proposition, as she often does so in the expectation that if things do not move quickly the artificial aid that is at hand will be immediately available.<sup>8</sup>

Munro Kerr showed a similar but less pronounced difference in maternal mortality between the residential wards and the working class industrial wards in Glasgow over the same period.<sup>9</sup> The same finding emerged from a detailed and thoughtful report published by the Scottish Board of Health in 1928. In Aberdeen it was shown that there was no association between high maternal mortality and inadequate housing, overcrowding, or living in poor and congested areas. More importantly, it was found that maternal mortality for home deliveries in the practice of doctors was 6.9 compared with 2.8 for home deliveries in the practices of midwives.<sup>10</sup> This reversed social class relationship was also shown by the national statistics, especially for deaths from puerperal sepsis (table II).



Maternal mortality in England and Wales (deaths per 1000 births) 1850-1970.

TABLE II—Maternal mortality of married women according to social class of husband in England and Wales 1930-2<sup>11</sup>

Social class	Puerperal sepsis	Puerperal haemorrhage	Toxaemia	Total
I and II (professional and managerial)	1.45	0.50	0.81	4.44
III (skilled)	1.33	0.44	0.81	4.11
IV (semiskilled)	1.21	0.48	0.60	4.16
V (unskilled)	1.16	0.60	0.68	3.89

#### THE ROCHDALE EXPERIMENT

The reaction to each of these findings was usually surprise bordering on disbelief. Yet they might have been predicted from the records of the "lying in" charities. At these, dating from the mid-eighteenth century, the poor of the great cities were delivered in their own homes by midwives trained by the charity, and the results were often extremely good. By the mid-nineteenth century, when the national maternal mortality was in the region of five per 1000 deliveries, and the mortality for lying in hospitals was horrendous, these outpatient charities were consistently recording death rates of three or less (records of the Royal Maternity Charity, library of Royal College of Obstetricians and Gynaecologists).<sup>12-15</sup> Indeed, the Liverpool Ladies Charity achieved a maternal death rate of 1.3/1000 in over 6000 deliveries undertaken in the poorest homes in the city.<sup>16</sup> Such good results could not have been obtained if socioeconomic deprivation was a major cause of high maternal mortality.

The conclusive evidence, however, comes from the famous Rochdale experiment in the early 1930s. When Andrew Topping was appointed medical officer of health to Rochdale in 1930 it had "the very unenviable distinction" of the highest maternal mortality in the country; it was "a fraction less than 9." By a vigorous reformation of maternity services, but with no alteration to the diet or living conditions of the poor, Topping reduced the rate to 1.75 by 1935, showing that the standard of obstetric care was the decisive factor.<sup>17 18</sup> In a review of this experiment in 1935, Oxley and his colleagues concluded that the high maternal mortality in Rochdale:

Could not be attributed to economic disabilities from which, as a highly industrialised community this borough in common with its neighbours was naturally suffering during the years of the investigation . . . [but to] the existence of obstetrical factors which, in many instances, were capable, with considerable justification, of being regarded as preventable.<sup>19</sup>

#### Standards of obstetric care

Until the late 1930s puerperal fever, haemorrhage (antenatal and postnatal), and toxæmia accounted for about three quarters of maternal deaths, and puerperal fever was usually the largest component (tables I and II). Deaths from abortion rose during the first three decades of this century but never became a major cause of maternal mortality in Britain as they seem to have done in the cities of Sweden and Germany.<sup>20 21</sup> From the 1880s, when antisepsis and asepsis were introduced into the practice of obstetrics, it was emphasised repeatedly that a large proportion (variously estimated as 40-60%) of maternal deaths were preventable. It must be remembered, moreover, that until the second world war most deliveries took place at home under the care of midwives or general practitioners. Births in hospitals and nursing homes formed only 15% of all live births in England and Wales in 1927, 24% in 1933, and 35% in 1937. Moreover, the National Birthday Trust Fund Survey of 1946 showed a strong association between social class and home confinements attended by doctors. For first pregnancies 82% of the wives of professional and salaried workers were delivered by doctors compared with 35% for manual workers.<sup>22</sup> This difference was probably even greater in the 1920s and 1930s. Because of the far greater number of home deliveries their outcome was largely responsible for determining the national level of maternal mortality.

#### INTERVENTIONIST OBSTETRICS

A most important finding, therefore, is that the second half of the nineteenth century saw a profound change in obstetric practice. For the preceding 80 or 90 years, obstetric practice had been extremely conservative. From the 1870s, however, practitioners of obstetrics, and especially general practitioners, began to intervene in normal labours to an astonishing extent. They took their lead from obstetricians, who, influenced by the growth of gynaecological surgery, advocated an active approach to obstetrics and emphasised that "the absurd dread of possessing powerful instruments has long been the bugbear of English midwifery."<sup>23</sup> From the end of the nineteenth century the use of chloroform and forceps in ordinary domiciliary deliveries was often as high as 50% or even 70%.<sup>24 25</sup> This was justified on the grounds of "civilisation, injudicious breeding and modes of dress and occupation" so that modern women could not, and should not, be expected to bear the pains of a normal labour. "I use chloroform and the forceps in every possible case, and have done so for many years," wrote a general practitioner from North Shields in 1906, "The whole proceeding lasts from 15 to 40 minutes according to the difficulty of the case." And the same author believed that "antiseptics are worse than useless."<sup>26</sup> There is abundant evidence that this was common practice. A rate of using forceps of 50-75% in ordinary cases booked by general practitioners was, for example, reported in 1899 in Glasgow.<sup>27</sup> The corresponding figure for the general practitioners of Carmarthenshire in 1930 was 55.8%.<sup>28</sup> In Aberdeen it was suggested that the high mortality in obstetrics in general practice was due not so much to poor practice as to the occupational hazard of a high carrier rate of haemolytic streptococci, but they never tested this testable hypothesis.<sup>29</sup> Topping, however, stated bluntly that the conduct of some general practitioners in midwifery cases which he discovered when he arrived in Rochdale was "little short of murder."<sup>30</sup>

#### OBSTETRIC EDUCATION

The poor standard of obstetric practice, the refusal of many general practitioners and midwives to recognise the proved benefits of elementary aseptic precautions, and the absence of antenatal care are well attested.<sup>31-33</sup> In the end the blame lies fairly and squarely on the teaching hospitals. From the 1830s the teachers of obstetrics battled endlessly, and for the most part unsuccessfully, for proper curriculum time and a proper regard for their subject.<sup>34</sup> In 1898 Elizabeth Garrett Anderson wrote angrily that the examiners, above all, were to blame:

When they recognise that a sound and extensive knowledge of practical midwifery is infinitely more important to a practitioner than a minute acquaintance with organic chemistry and the refinements of physiology, there will be a chance of improvement but not till then. . . . If every student was compelled to spend six months in acquiring skill in midwifery the puerperal mortality all over the country would probably soon approach that which I think it is at the present moment in the London maternity charities, namely, about 1 in 500.<sup>35</sup>

The same sentiments were expressed all over again in the Medical Research Council's *Report on Maternal Mortality* in 1932, which estimated that over half the deaths in childbirth were preventable. Little had changed in the previous 30 years, and the standard of obstetric education was often appallingly low.<sup>36</sup> It is difficult to believe that the high maternal mortality and the reversed social class relationship was not, at least mainly, a result of poor obstetric education leading to poor obstetric care. What was the influence of these findings on policies concerning the place of confinement?

#### HOME OR HOSPITAL?

During the twentieth century the move from domiciliary to hospital confinements has taken place at different rates and for different reasons in different countries. In the United States of America the introduction of twilight sleep in 1914 seems to have been an important turning point.<sup>37</sup> Shorter believes, however, that poor obstetrics in general practice was a decisive factor both in Britain and the United States of America.<sup>38</sup> Certainly a minority of British obstetricians in the 1920s believed that 100% hospital care was the ideal, even if it would take a long time to achieve it. Childbirth was treated as a surgical procedure and the puerperium likened to the healing of a surgical wound.<sup>39</sup> Deliveries, it was argued, should therefore take place in hospital, and home confinements (like kitchen table surgery) should be relegated to the past.

Such attitudes were reinforced by the pervasive belief, mentioned above, that childbirth was no longer a physiological process. "Modern civilisation has so changed the average woman of today that parturition is no longer the easy process it was reputed to be in less civilised times."<sup>40</sup> It was an attitude which justified both the move from home to hospital and, in the meantime, the habit of large scale intervention in routine domiciliary obstetrics. It may explain why general practitioners in the interwar period were often criticised for poor antiseptic practice, or for lack of interest and experience in obstetrics, but only rarely for the excessive use of the forceps.<sup>41</sup>

During the first half of this century, while the United States of America moved rapidly towards total hospital deliveries, Britain moved much more cautiously in the same direction. In both countries maternal mortality remained high until the mid-1930s, but Holland, firmly wedded to home deliveries, achieved a much lower maternal mortality. This was referred to often as evidence that home confinements were safer, as if the place of delivery was the major factor which determined maternal mortality. International comparisons of maternal mortality can, indeed, be valuable, but only if they include a consideration of the differences in obstetric training and the availability of obstetric care, differences in the way statistics are collected, and the social and economic differences between the countries compared.

#### Obstetrics today

In Britain today not only is maternal mortality reduced to a very low level, but the pattern of causes of mortality and the relation to social class has altered. One lesson from the first third of this century is that attitudes instilled by teaching institutions, including attitudes of scorn or indifference to a part of the curriculum, have a profound effect on the practice of doctors throughout their lifetime.

But the main conclusion may be of more than historical interest. There are parts of the world today where maternal mortality and the components of that mortality closely resemble those in Britain before the 1930s. Local or international agencies tackling such problems may argue over the relative importance of medical care and environmental aid. There are, of course, dangers in comparing past problems in British medical care with present problems in other countries. It seems, however, that maternal mortality (but not neonatal or infant mortality, which behave quite differently) is remarkably sensitive to standards of obstetric care but remarkably resistant to the levels of socioeconomic deprivation seen in Britain over the last 150 years. In obstetrics the difference between a careful doctor (or midwife) and a careless one can be very large indeed. The introduction, therefore, of an ordinary standard of good obstetric practice, not necessarily at the level of the hospital specialist, can be expected to have a profoundly beneficial effect in societies that still suffer high maternal mortality.

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