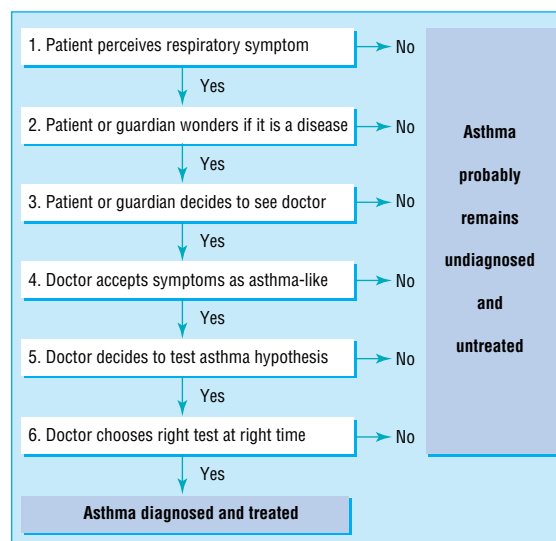


## Commentary: Improving the diagnostic rate in asthma: a community issue

Hans C Siersted

Our definition of asthma—the coexistence of asthma-like symptoms and obstructive airway abnormality—is widely accepted. The test battery and the diagnostic algorithm are routinely used in specialist clinics, and similar principles are applied by general practitioners. Thus we believe that asthma diagnosed in our community based study would also be diagnosed as such if the children visited an observant general practitioner. Our study shows, however, that in many patients asthma is not properly diagnosed.

Most importantly, most of these patients with undiagnosed asthma did not even report their symptoms to a doctor. Therefore we asked ourselves the question: can characteristics of these children with undiagnosed asthma be identified to help to increase awareness about the possibility of asthma in children with respiratory symptoms that are not obviously abnormal to parents, guardians, and school teachers? We believe that knowledge of the risk factors identified for not having asthma diagnosed could certainly promote the diagnostic decision process, especially at the community level (figure), leading new candidates for asthma evaluation to the doctor's waiting room. If then the doctor, considering also risk factors for underdiagnosis, agrees that a patient's symptoms could possibly be asthma, it is not the right time to wonder if more risk factors could help differentiate between asthma and "symptoms only." Instead, it is the time for tests such as peak flow monitoring



Stepwise path for diagnosing asthma in patients with respiratory symptoms

and (if these are negative) challenge with methacholine or exercise.

Thus, knowledge of pitfalls (risk factors for underdiagnosis)—for example, explaining cough alone as a natural response to passive smoking and exercise dyspnoea as simply the result of obesity—may be helpful at all stages of the diagnostic path towards the right answer to the asthma question.

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## Numbers of deaths related to intrapartum asphyxia and timing of birth in all Wales perinatal survey, 1993-5

Jane H Stewart, Joan Andrews, Patrick H T Cartlidge

### Abstract

**Objectives:** To investigate the relation between the timing of birth and the occurrence of death related to an intrapartum event.

**Design:** Analysis of 107 206 births to Welsh residents in 1993-5, including 608 cases of stillbirth and 407 of neonatal death identified in the all Wales perinatal survey, the cause of death classified with the clinicopathological system.

**Subjects:** 79 normally formed babies stillborn or who died in the neonatal period, birth weight > 1499 g, for whom cause of death was related to an intrapartum event.

**Main outcome measures:** Relative risk of death due to an intrapartum event according to the hour, day, and month of birth.

**Results:** Mortality was higher in babies born between 9 00 pm and 8 59 am than in those born between 9 00 am and 8 59 pm; relative risk (95% confidence interval) 2.18 (1.37 to 3.47). July and August births also had a higher death rate than births in other months; relative risk 1.99 (1.23 to 3.23). Weekend births had a higher death rate but it was not significant.

**Conclusions:** The excess of deaths at night and during months when annual leave is popular may indicate an overreliance on inexperienced staff at these times. Errors of judgment may also be related to physical and mental fatigue, demanding a more disciplined systematic approach at night. Mistakes may be ameliorated by increasing shiftwork, but shifts should be carefully designed to avoid undue disruption of circadian rhythms. In addition, greater supervision by senior staff may be required at night and during summer months.

Editorial by Spencer

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## Introduction

The sharp fall in perinatal mortality in the United Kingdom in recent decades has been ascribed both to an improvement in general health and to specific advances in perinatal care.<sup>1</sup> Death due to intrapartum asphyxia of a mature and normally formed baby is now uncommon, but because labour is a time of maximum clinical supervision these deaths are widely considered to be the most preventable component of perinatal mortality.<sup>2</sup> Indeed, in a low risk pregnancy the incidence of stillbirths or neonatal deaths due to intrapartum asphyxia is regarded as a sensitive measure of the quality of care around the time of labour and delivery.<sup>3-5</sup>

In 1992 the confidential inquiry into stillbirths and deaths in infancy was established in England, Wales, and Northern Ireland.<sup>6</sup> This inquiry initially focused on deaths related to intrapartum events to delineate the components of perinatal care most frequently associated with a poor outcome. The fourth annual report of the inquiry concentrated on the results of 873 "intrapartum related deaths" that took place in 1994 and 1995 and showed that more than half the cases were linked to suboptimal care; the most common deficiencies were related to clinical management, with staff failing to recognise problems or failing to act appropriately once a problem was identified.<sup>7</sup> These issues were linked with deficiencies in training and a lack of senior supervision around the time of delivery.

Maintaining a consistent level of readily available and experienced staff for the management of labour is sometimes difficult because the occurrence of a perinatal emergency is largely unpredictable. Problems may occur when training grade staff begin working in a specialty in which initially they have little experience. Also, staffing levels may fluctuate during holiday periods, when annual leave is most popular, and during unsociable hours (nights and weekends).<sup>8</sup> In this study we investigated the relation between the hour, day, and month of delivery and the incidence of deaths related to an intrapartum event.

## Subjects and methods

We identified 608 stillbirths and 407 neonatal deaths in 1993-5, using the all Wales perinatal survey, a population based surveillance of mortality between 20 completed weeks of gestation and 1 year of age.<sup>9</sup> The births were to women usually resident in Wales, irrespective of the place of delivery. Information about each death was collected on the survey questionnaire that was normally completed by the team in whose unit the baby died.<sup>9</sup> This included details about the mother (medical and obstetric history, current pregnancy, labour, and delivery) and baby (sex, birth weight, gestation, clinical management, and postmortem findings). This information was used by local staff to classify the cause of death by using the clinicopathological system<sup>10 11</sup> and verified for accuracy by the regional coordinating team. Completeness of ascertainment of stillbirths and neonatal deaths was validated by cross checking with data from the Office for National Statistics and the Child Health System Database.<sup>12</sup>

Data on surviving infants were obtained from the Child Health System Database, which collects infor-

mation on Welsh residents from the birth notification record.<sup>12</sup> There were 107 206 registrable births during the period of investigation, maternity care being delivered in 16 consultant obstetric units and 11 general practitioner units within Wales and several hospitals in neighbouring English health authorities; home deliveries accounted for 1.8% of all births. The rate of caesarean section in Welsh maternity units in 1993-5 was 16.8%, and the elective caesarean section rate was 6.7%.<sup>9</sup>

The study relates to deaths in 1993-5 classified as being due to an intrapartum related event<sup>9 11</sup> for babies with a birth weight >1499 g who died during labour or within 28 completed days of life. The hour, day, and month of birth of these infants was compared with that of surviving infants. The effect of being born at night was analysed by comparing the death rate for births between 9 00 am and 8 59 pm (day) with that between 9 00 pm and 8 59 am (night). July and August were considered the peak months of annual leave so the death rate for births in these months was compared with that for the rest of the year. Senior house officers in Wales rotate to new posts in February and August; the effect of this was assessed by comparing the death rate for births in these months with that during the rest of the year.

Relative risks and 95% confidence intervals were calculated to assess the effect of each factor on death rates. Multiple logistic regression was used to determine whether the different factors contributed independently to the rate of death.

## Results

A total of 79 deaths (0.74/1000 total births) related to an intrapartum event were identified. Birth weight ranged between 1500 g and 4805 g (median 3050 g) and gestational age between 29 and 43 weeks (median 39 weeks). Seventy cases were from singleton pregnancies and nine from twin pregnancies; in one set of twins both fetuses were stillborn. Twelve deaths (eight at night) were after an induction of labour, 38 (25 at night) at emergency caesarean section, and none at elective caesarean section. There were 33 deaths during labour, 42 early neonatal deaths, and four late neonatal deaths.

The intrapartum related death rate was higher in babies born at night. There were 27 deaths from 56 892 births between 9 00 am and 8 59 pm (0.47/1000) compared with 52 deaths from 50 314 births between 9 00 pm and 8 59 am (1.04/1000), a relative risk of death of 2.18 (95% confidence interval 1.37 to 3.47). If babies born during the daytime by elective caesarean section (rate 6.7%) and therefore not exposed to labour are excluded from the analysis, the difference remains significant with a relative risk of death of 1.95 (1.22 to 3.10).

Births in July and August (annual leave effect) had a significantly higher rate of intrapartum related death (1.25/1000 births) compared with births in other months (0.63/1000/births), with a relative risk of death of 1.99 (1.23 to 3.23) (table). The death rate for births in February and August (rotation effect) was also significantly higher (1.25/1000 births), with a relative risk of death of 1.97 (1.21 to 3.22). As August births feature in both the annual leave and rotation months, further analysis with multiple logistic regression was performed to establish whether the two effects were independent. When these factors were analysed

Numbers of intrapartum related deaths and month of birth in all Wales perinatal survey, 1993-5

Month of birth	No of deaths	No of births
January	4	8 858
February	10	8 305
March	4	9 139
April	5	8 894
May	6	9 398
June	6	9 118
July	11	9 092
August	12	9 237
September	2	9 200
October	5	8 788
November	5	8 484
December	9	8 693
Total	79	107 206

together the rotation effect was no longer significant ( $P=0.1088$ ).

Using the same methodology we tested whether night, annual leave, and rotation effects all influenced the death rate when analysed together. We found that the annual leave and night effects were significant ( $P=0.0056$  and  $P=0.0011$ , respectively) but that the rotation effect was not ( $P=0.1082$ ).

There was a tendency for babies born towards the end of the week to have a higher rate of intrapartum related deaths. Monday and Tuesday births had the lowest relative risk of death of 0.78 (0.39 to 1.57) and 0.71 (0.36 to 1.43), respectively, in contrast with 1.20 (0.68 to 2.21) and 1.48 (0.82 to 2.68) on Saturday and Sunday. These differences, however, were not significant.

## Discussion

This population based study has highlighted a variation in the risk of death due to an intrapartum event according to the time of birth, with the most striking feature being the higher risk of death for babies born at night. In view of the recognised association of care around the time of delivery with outcome, this must raise concerns about variability in the quality of perinatal care.

The increased risk of being born at night could be explained if induced labours, which have a higher risk of intrapartum complications, are selectively more likely to result in a delivery at night. These data were not available for all births, but in one health district with 15% of deliveries and comparable induction rates, night time birth was less common after an induction of labour (48%) than after a spontaneous labour (52%) (J Bethel, personal communication). Induction of labour is therefore unlikely to be the explanation.

Specific information on staffing levels and the availability of experienced staff at the moment of birth was not available. Nevertheless, one of the more plausible explanations for intrapartum related deaths being associated with birth during the night is a reduced availability of skilled and experienced staff at this time. This view is supported by an audit by Meer et al, who reported that in the West Midlands most suboptimal obstetric practice occurs out of office hours.<sup>13</sup> It is also consistent with a finding of the confidential inquiry into perioperative deaths that the risk of surgery conducted out of hours is higher because it tends to be performed by junior surgeons without supervision.<sup>14</sup>

## Hours of work

Errors of judgment are more likely if staff are physically and mentally tired.<sup>15</sup> Obstetrics differs from other medical specialties in the excess night time hours (9 pm to 9 am) worked by junior medical staff compared with staff in other disciplines.<sup>8</sup> Night time tiredness should have been lessened by the recent widespread introduction of shiftwork among junior medical staff, but this pattern of work is unpopular,<sup>16</sup> and continuity of patient care may be affected. Shiftwork can also be profoundly affected by circadian rhythms, resulting in fatigue during the last few hours of the night, especially if the person is on a new night shift.<sup>17</sup> In comparison to staff who work only nights, those who rotate shifts report twice as many errors related to tiredness.<sup>17</sup> The adverse effects of shifts on health and performance are most pronounced when rotations last fewer than 3 weeks, and circadian rhythms are further disrupted if the shift rotation is counterclockwise.<sup>15</sup>

## Effect of month of birth

We have also found an increased risk of an intrapartum related death among babies born in July and August, when annual leave is popular. At these times junior medical staff may be less well supervised and perinatal services may rely more heavily on locum staff employed to cover annual leave. This effect is exacerbated if the staffing establishment has no built in allowances to cover staff absence. Indeed, research commissioned by the Department of Health into patterns of staffing in obstetrics found that during holiday periods one of the units surveyed was on occasion nearly crippled by staff shortages.<sup>8</sup> Babies born in February and August, when senior house officers rotate to new posts, were not at a significantly increased risk. This may indicate that critical decisions are usually made by other members of staff, but nevertheless it is unfortunate that inexperienced medical staff rotate to new posts in August, when senior staff may be on annual leave.

## Conclusion

Deaths related to an intrapartum event are more common among babies born at night and during months when annual leave is popular. Errors of judgment are probably related to mental fatigue, and staff need to be aware how their performance may vary at different times, demanding a more disciplined systematic approach at night. Mistakes may also be ameliorated by

## Key messages

- In low risk pregnancies the incidence of death due to intrapartum asphyxia is regarded as a sensitive measure of the quality of perinatal care
- Babies born at night and during summer months are at increased risk of death due to intrapartum asphyxia, raising concerns about variability in care around the time of delivery
- Errors of judgment may be related to mental fatigue. Staff need to be aware of how their performance may vary, and a more disciplined systematic approach at night may be needed
- Greater supervision by senior staff may be required at night and during summer months



the increased use of shiftwork, but shifts need to be carefully designed to avoid an excessive disruption of circadian rhythms and consequent fatigue. In addition, greater supervision by senior staff may be required at night and during summer months.

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## Effectiveness of screening older people for impaired vision in community setting: systematic review of evidence from randomised controlled trials

Liam Smeeth, Steve Iliffe

### Abstract

**Objective:** To assess whether population screening for impaired vision among older people in the community leads to improvements in vision.

**Design:** Systematic review of randomised controlled trials of population screening in the community that included any assessment of vision or visual function with at least 6 months' follow up.

**Subjects:** Adults aged 65 or over.

**Main outcome measure:** Proportions with visual impairment in intervention and control groups with any method of assessing visual impairment.

**Results:** There were no trials that primarily assessed visual screening. Outcome data on vision were available for 3494 people in five trials of multiphasic assessment. All the trials used self reported measures for vision impairment, both as screening tools and as outcome measures. The inclusion of a visual screening component in the assessments did not result in improvements in self reported visual problems (pooled odds ratio 1.04; 95% confidence interval 0.89 to 1.22). A small reduction (11%) in the number of older people with self reported visual problems cannot be excluded. **Conclusions:** Screening of asymptomatic older people in the community is not justified on present evidence. Visual impairment in this age group can usually be reduced with treatment. It is unclear why no benefit was seen. Further work is needed to clarify what interventions are appropriate for older people with unreported impairment of vision.

### Introduction

The introduction of the sight test fee in 1990 increased concern about undetected visual problems in older people,<sup>1</sup> and visual screening for older people in general practice was advocated.<sup>2</sup> Renewed concern has been expressed recently by the Royal National Institute for the Blind<sup>3</sup> and the Department of Health.<sup>4</sup>

Since 1990 general practitioners have been required to offer an annual screening assessment to all patients aged 75 and over,<sup>5</sup> specifically including an assessment of vision. While multiphasic screening of older people has been shown to be beneficial overall,<sup>6</sup> exactly which procedures are effective is uncertain. The 75 and over programme is currently under review.<sup>7</sup>

### Rationale for screening older people for visual problems

Visual impairment is common among older people. In community based surveys of unselected older people undertaken in the United Kingdom, visual acuity of less than 6/12 has been found in around 2% of those aged 65 to 74 and around 20% of those aged 75 and over.<sup>8,9</sup> This level of visual acuity is below the requirements for driving in the United Kingdom.<sup>10</sup> Larger surveys have been performed in the United States,<sup>11-13</sup> and, though the prevalence of reduced visual acuity is lower in one of these,<sup>11</sup> similar overall trends are seen. Various adverse factors have been reported in association with visual impairment. These include reduced functional status and quality of life,<sup>14-16</sup> depression,<sup>16-18</sup> and falls.<sup>19-21</sup>

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