

Cornwall and Isles of Scilly Primary Care Trust

Infant Mortality Health Equity Audit

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Introduction

Over the last 20 years the life expectancy of people living in Cornwall and Isles of Scilly (CIOS) has continued to increase as death rates have fallen. However, despite significant improvements inequalities still exist both within CIOS, and between CIOS and other areas. In 2003 the Government published '*Tackling Health Inequalities – A Programme for Action*'. This focuses on action to achieve two national health inequalities targets by 2010. These 'headline targets' are based on reducing inequalities in infant mortality and life expectancy. The infant mortality target was introduced because there is a significant variation in infant deaths between manual and professional groups and between different areas. The target focuses on reducing this gap. However nationally a number of interventions have been demonstrated to have an impact on the infant mortality for which some data is available. Many infant deaths occur within the first month of life and many of those within the first 7 days from birth. The main causes of death in these very young children are prematurity and congenital abnormalities and there is a relationship with smoking in pregnancy, poor nutrition and antenatal care. The infant mortality target aims to address infant mortality through tackling some of these causes, as well as improving the health of older babies.

What is a Health Equity Audit?

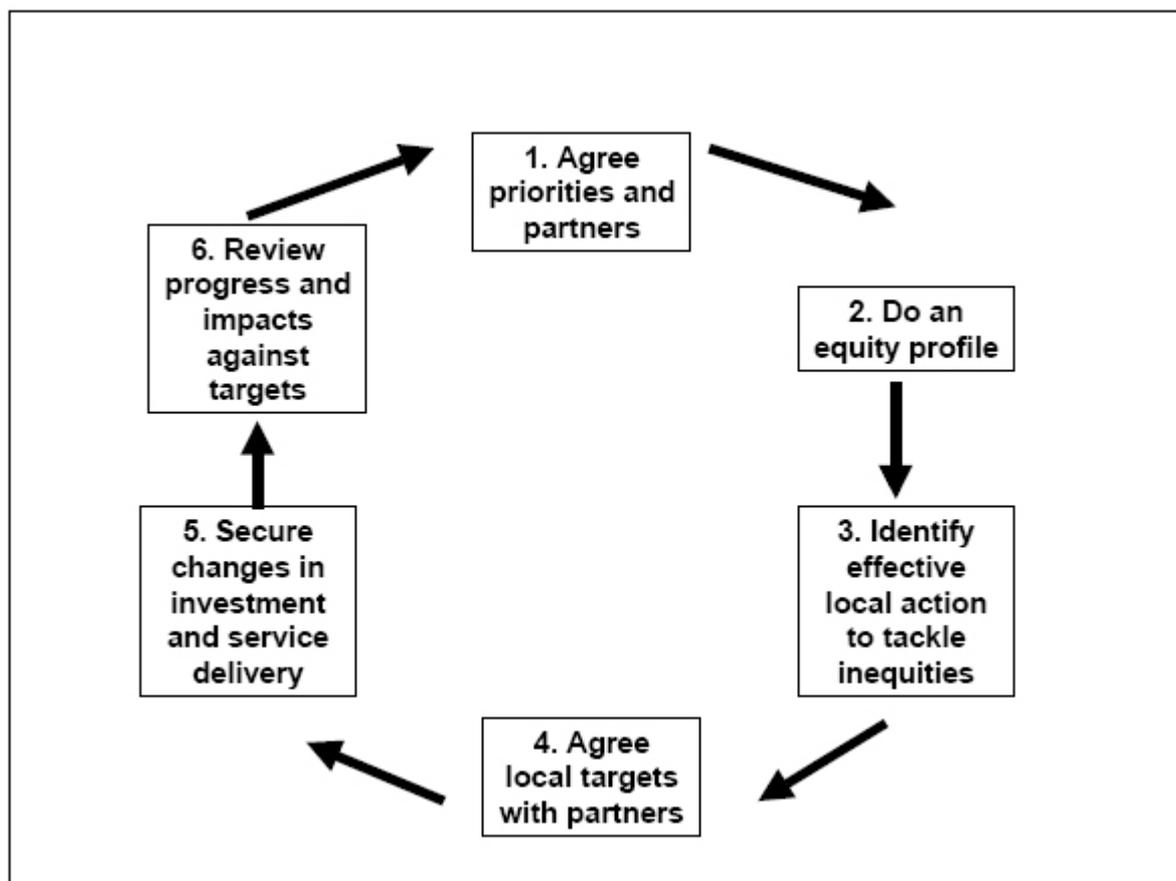
A definition of Health Equity Audit (HEA) is the process by which local partners:

- Systematically review inequities in the causes of ill health and in access to effective services and their outcomes for a defined population.
- Ensure that action required is agreed and incorporated into local plans, services and practice.
- Evaluate the impact of the actions on reducing inequity

It provides an opportunity for statutory agencies and LSPs to develop common understandings of their local health inequalities and to ensure that resources are allocated to tackle them.

Health inequality describes differences in health experience and health outcomes between different population groups. In contrast, Health Equity Audits (HEA) focus on how fairly resources are distributed in relation to the health needs of different groups. The key stages of a HEA are outlined in Figure 1.

Figure 1. Key stages in a health equity audit



Infant mortality

Infant mortality is defined as deaths under one year of age, excluding stillbirths. Infant mortality is a sensitive measure of the overall health of a population. It reflects the apparent association between the causes of infant mortality and other factors that are likely to influence the health status of whole populations, such as their economic development, general living conditions, social well being, rates of illness, and the quality of the environment. In the 2006 the infant mortality rate (IMR) in the UK was 5.08. This is significantly higher than the IMR for the same year in other developed European countries such as France (4.21), Germany (4.12) and Norway (3.67).¹

The infant mortality rate includes all deaths in the first year of life. Still births are not included in the infant mortality rate but do form a large proportion of the deaths included in the perinatal rate (see definitions below). The exact cause of about 70% of all stillbirths remains uncertain. Where causes are known they include congenital malformation (thought to be the cause of death for over 15% of stillbirths), ante-partum haemorrhage, prematurity, pre-eclampsia, rhesus incompatibility, obstetric cholestasis, pre-existing maternal

medical conditions such as diabetes, birth trauma, infections and immunological disorders.²

It is useful to distinguish between deaths that occur around the time of birth and those that occur later in the first year. Mortality in the early stages of infancy is especially sensitive to the quality of care given to the mother and baby.³ The predominant causes of death in the neonatal period are conditions related to immaturity, congenital anomalies, and asphyxia, anoxia, or trauma.⁴ The confidential inquiry into stillbirths and deaths in infancy (CESDI) found that the main contribution to the overall decline in neonatal mortality over the past 10 years has been a 50% reduction in deaths from congenital malformation. The inquiry concluded that this was probably related to improved prenatal diagnosis with a combination of pre-registration abortion and improved survival after treatment.⁵ The CEMACH found that a high proportion of still births and neonatal deaths were born to women living in socially deprived areas and in women from Black or minority ethnic groups. Postneonatal mortality is thought to be influenced to a much greater extent by parents' socioeconomic circumstances, reflected in the causes of death.^{6 7} The main causes of death in this period are the sudden infant death syndrome, congenital anomalies, infections, and injury and poisoning.⁴

The following definitions are used:

$$\text{Still birth rate} = \frac{\text{stillbirths} \times 1,000}{\text{live births} + \text{stillbirths}}$$

$$\text{Perinatal mortality rate} = \frac{(\text{stillbirths} + \text{deaths within the first 7 days of life}) \times 1,000}{\text{live births} + \text{stillbirths}}$$

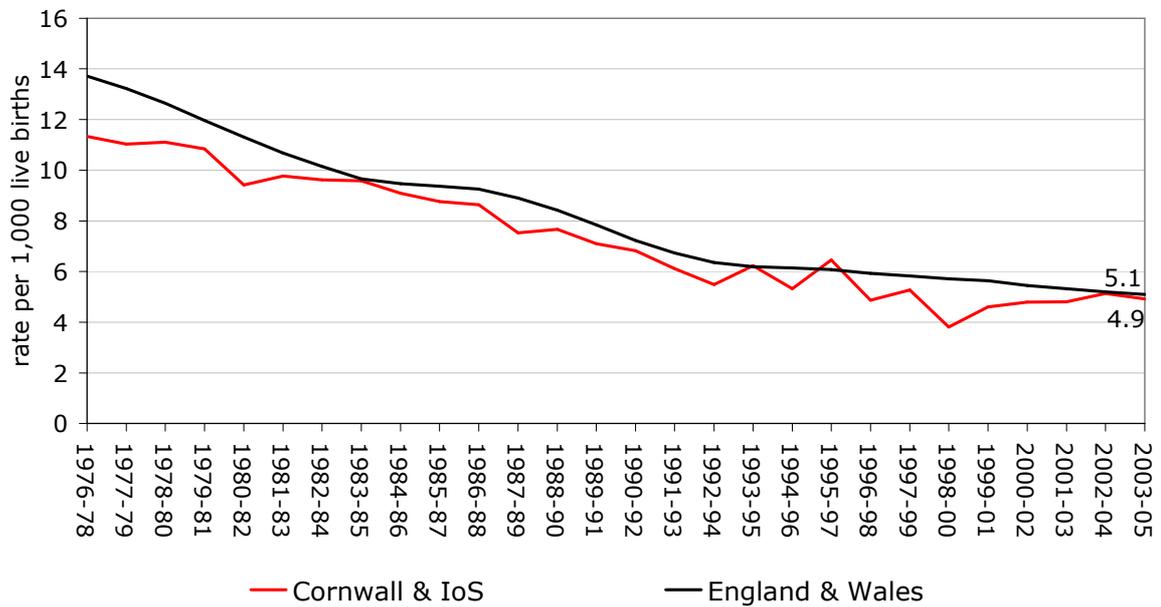
$$\text{Neonatal mortality rate} = \frac{\text{deaths within the first 28 days of life} \times 1,000}{\text{live births}}$$

$$\text{Postneonatal mortality rate} = \frac{\text{deaths at ages 28 days \& over but under 1 year of life} \times 1,000}{\text{live births}}$$

$$\text{Infant mortality rate} = \frac{\text{deaths within the first year of life} \times 1,000}{\text{live births}}$$

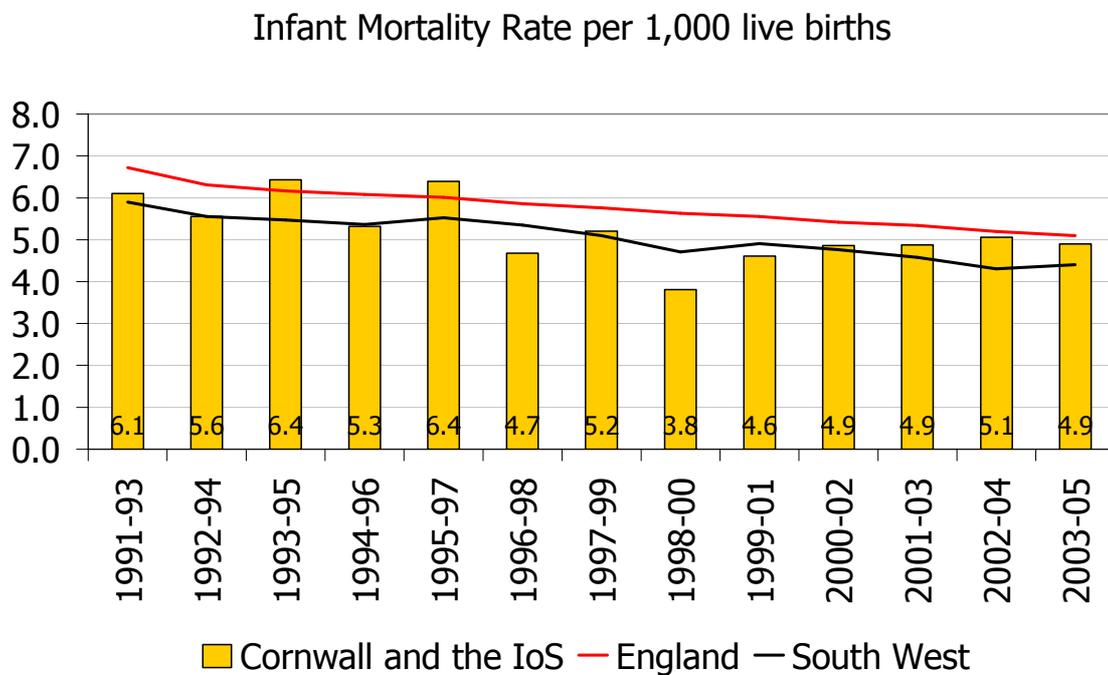
In CIOS the number of deaths in infants under one year has decreased from 64 deaths in 1976 to 22 in 2005. Infant mortality rates are decreasing in Cornwall and Isles of Scilly (CIOS) and have halved since 1976. The rates are similar and usually below the rates in England and Wales, but over the last five years this decrease has stalled (Figure 2, Figure 3).

Figure 2. Three year moving average for infant mortality for CIOS & E&W



Source: Annual Extracts of Births and Deaths ONS

Figure 3. Infant mortality rates per 1000 live births



Source: Annual Extracts of Births and Deaths ONS

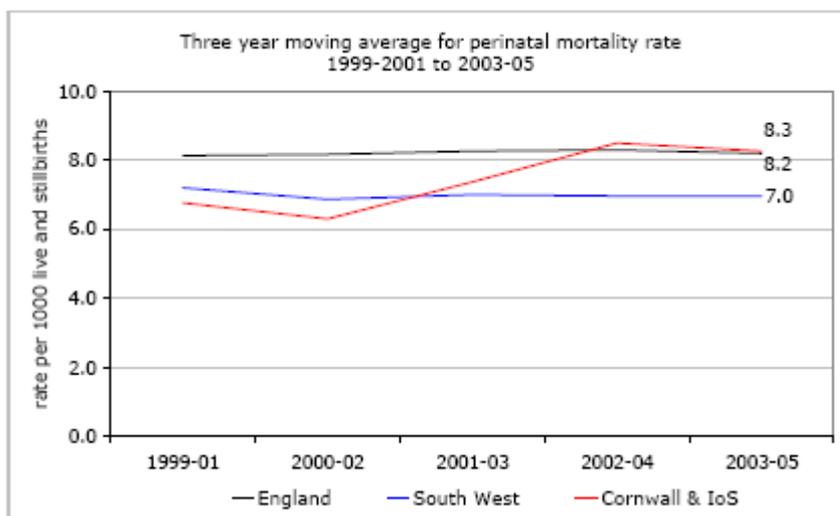
The IMR for 2001-3 was 4.8, for 2004-6 it was 4.9. The annual IMR for the period were:

2006 4.25
 2005 4.59
 2004 6.07
 2003 4.06
 2002 5.24
 2001 5.13

As can be seen whilst the overall trend is downwards the rate was particularly high in 2004. The 3 year rate will need to be monitored annually to ensure that the downwards trend continues.

The perinatal mortality rates are currently higher for Cornwall and Isles of Scilly than England (see Figure 4) although at a local level the data can be subject to large fluctuations due to small numbers. The stillbirth rate for the period 2003-2005 was 4.9 per 1,000 live births, the rate for England in 2006 was 5.34 per 1,000 live births and for the Southwest 4.53.²

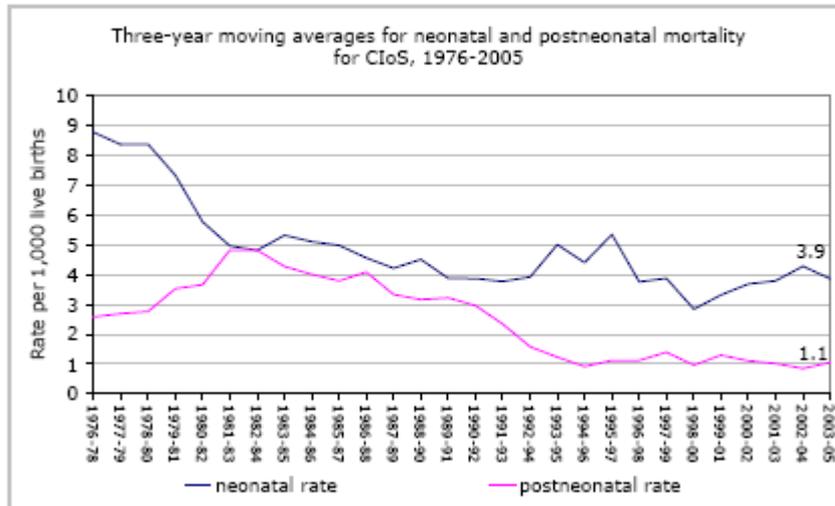
Figure 4. Three year moving average for the perinatal mortality rate



Source: Cornwall Children and Young People's Plan Needs Assessment 2007

The postneonatal mortality rate has shown a greater reduction than the neonatal rate (Figure 5).

Figure 5. Three year moving average for the postneonatal mortality rate and the neonatal mortality rate



Source: Cornwall Children and Young People’s Plan Needs Assessment 2007

Causes of death

Routinely used statistics on infant mortality are derived from the Office for National Statistics (ONS) who in turn collate information from birth and death registers. When a death occurs, the attending physician usually completes a death certificate. A death certificate may be completed before a post-mortem examination is carried out, or when full investigations as to cause of death are complete. Some deaths are referred to the coroner who ultimately completes the death certificate. The cause of death recorded on the death certificate is coded and causes of deaths are usually considered in groups (such as “infections” and “congenital anomalies”).

Table 1 shows the numbers of infant deaths for the period 2001 to 2005, the numbers of those deaths that occurred in the first week of life and those that occurred in the first month. Please note that these figures refer to deaths that were registered rather than those that occurred each year, Registration of a death may be in the calendar year following its occurrence should an investigation be required into the cause of death. In each year over half of infant deaths occurred in the first week of life.

Table 1. Number of infant deaths

Year	Deaths in the first week	Deaths in the first month	Total infant deaths
2001	12	15	23
2002	16	20	24
2003	15	17	19
2004	19	23	29
2005	14	15	22

Source: Annual Extracts of Deaths ONS

Three quarters of all neonatal deaths in England are due to immaturity related conditions and congenital abnormalities. Over two fifths of all post-neonatal deaths (44%) are due to ‘signs, symptoms and ill defined conditions’

(predominantly Sudden Unexplained Death in Infancy) and congenital abnormalities.

Looking at the cause of death in Cornwall, the single most common cause of death was extreme immaturity, or other types of immaturity. This is shown in Table 2.

Table 2. Number of deaths in the first week of life that are due to immaturity 2001-5

Year	Cause of death – ‘extreme immaturity and other preterm infants’
2001	8
2002	13
2003	11
2004	13
2005	8

Note: the above figures include first and other causes of death.
Source: Annual Extracts of Deaths ONS

Immaturity related conditions make up over half of all deaths in the first week of life for each of the years. Other causes of death included: birth asphyxia, respiratory distress, infections, congenital malformations, anencephaly, sudden infant death, low birth weight/ slow foetal growth, haemorrhage, and pre-eclampsia. Approximately 10% of infant deaths are multiple births.

When considering infant mortality, it is important to take into consideration the fact that in any one year, the numbers are extremely small, and large variations can occur year-on-year. However, what is clear from the above figures is that the majority of infant deaths occur in the first week of life, and that the majority of these are caused by immaturity.

Inequalities in infant mortality

Whilst IMR in England has been declining steadily over the past three decades there remain significant inequalities in infant mortality rates. Since the baseline period of 1997-99 the gap between the infant mortality rate in the routine and manual group (R&M) and the total population has increased although it is now showing a downward trend. At baseline the IMR in England and Wales was 13% higher in the RM group compared to the total population. By 2003-4 this gap had increased to 18%. In the period 2004-6 the gap had fallen slightly to 17%; the IMR in England and Wales (for all babies with father’s occupation stated) was 4.8 deaths per 1.000 live births compared to a rate of 5.6 in the routine and manual group. 8% of live births in England and Wales were born preterm (less than 37 weeks gestation), the percentage of preterm births was highest among babies with fathers in the R&M group. Infant mortality was higher in the R&M groups at all gestational ages.^{8,9}

The Government has set targets to reduce inequalities by increasing life expectancy in the most disadvantaged populations. Part of this target is to reduce infant mortality as follows:

..... to reduce by at least 10% the gap in mortality between the routine and manual group and the population as a whole.

The infant mortality target compares the IMR in R&M group, as derived from the father's occupation recorded on the data certificate, with that of the population as a whole. The population as a whole refers to all births inside and outside marriage jointly registered by both parents.

The difficulty of the above target is that some particularly disadvantaged groups are excluded from it. These include births registered by the mother alone. Socioeconomic classification is based on the father's occupation, so registrations by the mother alone cannot be classified. Those occupations classified as 'other' also cannot be classified. This 'other' group is diverse, and includes the long-term unemployed, those who have never worked, and students. It is particularly important that these groups are not forgotten when considering how infant mortality might be reduced.

As the numbers of infant deaths in Cornwall and Isles of Scilly are low, local data is difficult to use effectively as variation, even using the method of smoothing three years, is too great. In addition local data systems do not link the occupation of the father to the infant's death. Therefore, it is very difficult to monitor progress locally towards achieving the target.

As this data is not routinely available local data from ONS was requested. Table 3 shows the IMR for routine and manual occupations and all occupations in CIOS and England for the years 2002-2005. The Infant Mortality Rate in CIOS for the three year period 2003-2005 was 5.12 for routine and manual occupations and 4.77 for all occupations again it must be remembered that this is based on small numbers

Table 3. Infant mortality: All, routine and manual occupations 2002-2005

CIOS	Routine & manual	All occupations	England	Routine & manual	All occupations
2002	4.7	4.8	2002	5.9	5.2
2003	4.6	3.9	2003	6.3	5.3
2004	7.1	5.9	2004	5.7	4.9
2005	3.6	4.6	2005	5.5	5.0

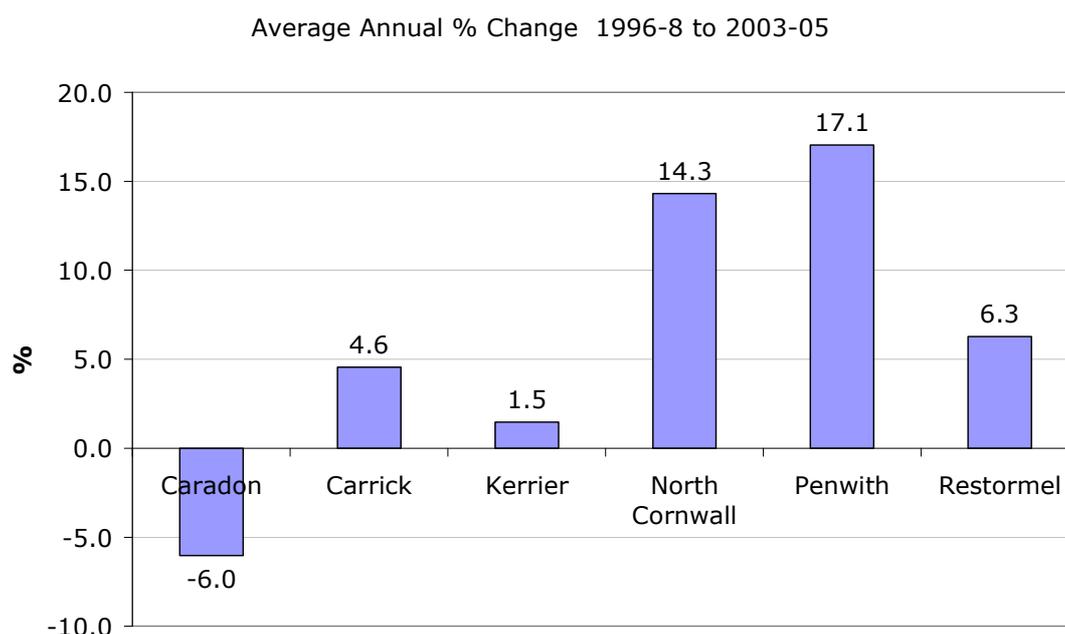
Source: ONS

Table 4 shows the 5 year average IMR for the local authority areas in CIOS. There do appear to be marked differences in rates however it is important to remember that the number of deaths is very small and can be subject to large fluctuations (see Figure 6).

Table 4. Infant mortality rate by local authority 2001-2005

Local Authority	IMR 2001-5
Caradon	3.1
Carrick	7.2
Kerrier	5.6
North Cornwall	5.9
Penwith	5.2
Restormel	3.9
Isles of Scilly	0

Figure 6. Average annual percent change in IMR by local authority 1996-1998 and 2003-2005



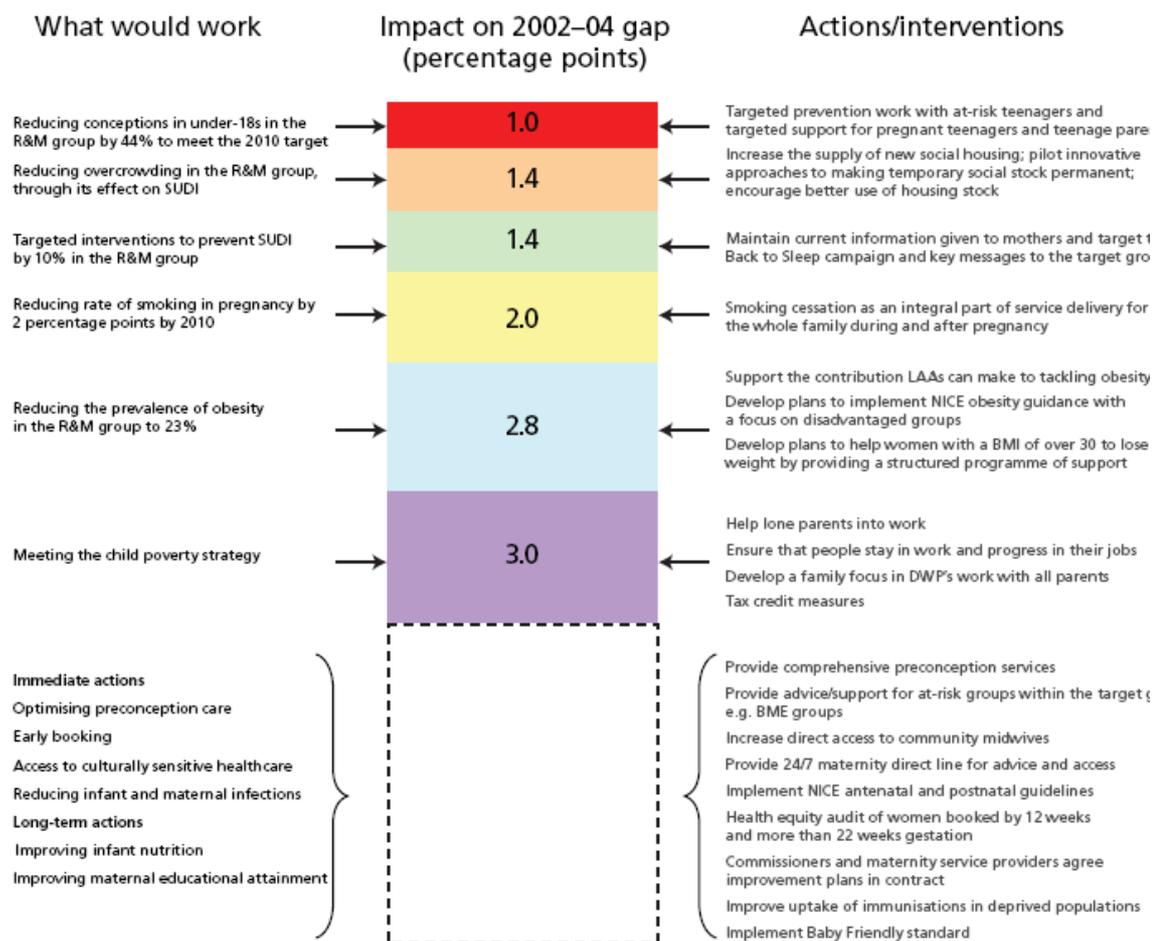
At national level there is evidence, using mothers' country of origin as a proxy of infant ethnicity, of variation in infant death rates by ethnicity. Estimated maternal ethnic-specific mortality rates in 2004 show significantly higher stillbirth rates and neonatal mortality rates for women of Black ethnicity (2.8 and 2.7 times higher, respectively), Asian ethnicity (2.0 and 1.6 times higher, respectively) and Chinese and other ethnicity (1.9 times higher in both cases) when compared with rates for women of White ethnicity. At the local level, numbers are too small to enable meaningful analysis by ethnicity. We have taken action to ensure that ethnicity is taken into account when monitoring infant mortality. The Child Deaths review process, the procedures for which

are set out in 'Working Together to Safeguard Children', will become mandatory in April 2008. Working Together (paragraph 7.7),¹⁰ sets out that LSCBs should use a national minimum dataset for collecting information about child deaths. This dataset will include ethnicity in CIOs. This process involves Child Death Overview Panels being responsible for reviewing information on all child deaths, and meeting regularly to evaluate the routinely collected data specified in the dataset so that any trends or patterns at a local level can be identified.

Factors that impact on Infant Mortality

Given that the number of infant deaths in Cornwall is low, in order to obtain an indication of progression toward the infant mortality target it is important to look at the IMR in the context of other initiatives which may impact on infant morbidity and mortality. There are a number of interventions to reduce inequalities in infant mortality that have been examined nationally. A useful diagram (Figure 7) illustrates the contribution that may be made by different factors.⁸

Figure 7



Measuring inequalities in Cornwall

The Index of Multiple Deprivation (IMD) combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each small area in England.¹¹ This allows each area to be ranked relative to one another according to their level of deprivation. There are six district summary scores for each of the 354 Local Authority (LA) districts in England. A relative ranking of areas, according to their level of deprivation is then provided. The IMD 2007 have recently been released. In this report we use the IMD 2007 as an indicator of deprivation at the Local Authority level however it is important to be aware there may be a considerable range in the levels of deprivation at the Ward and Local Lower Super Output within the LA. For example both Restormel and Kerrier are in the top 30% most deprived LAs in England but they have pockets of severe deprivation which are in the top 10% of deprived areas in the country. The higher the IMD score the more deprived the area is. In the context of the present report it is useful to look at the Income Deprivation Affecting Children Index (IDACI). The table below lists the percentage of the population between the ages of 0-16 that are living in the 20% most income deprived Super Output Areas in England.

Table 5. IMD score and rank and IDACI by local authority

Local Authority	IMD average score	IMD rank	IDACI (%)
Penwith	31.61	36	25
Kerrier	25.05	86	19
Restormel	24.51	89	11
NCDC	24.07	96	5
Carrick	21.61	120	9
Caradon	18.76	156	20

In the tables which follow the data presented will be in order of highest to lowest IMD score.

Information and data sources

The information and data presented below come from government, Department of Health, local government, acute trust and PCT statistics. It is also based on discussions with a number of professionals in this field including midwives, health visitors, the breastfeeding co-ordinator and those working in the PCT's Health Promotion service.

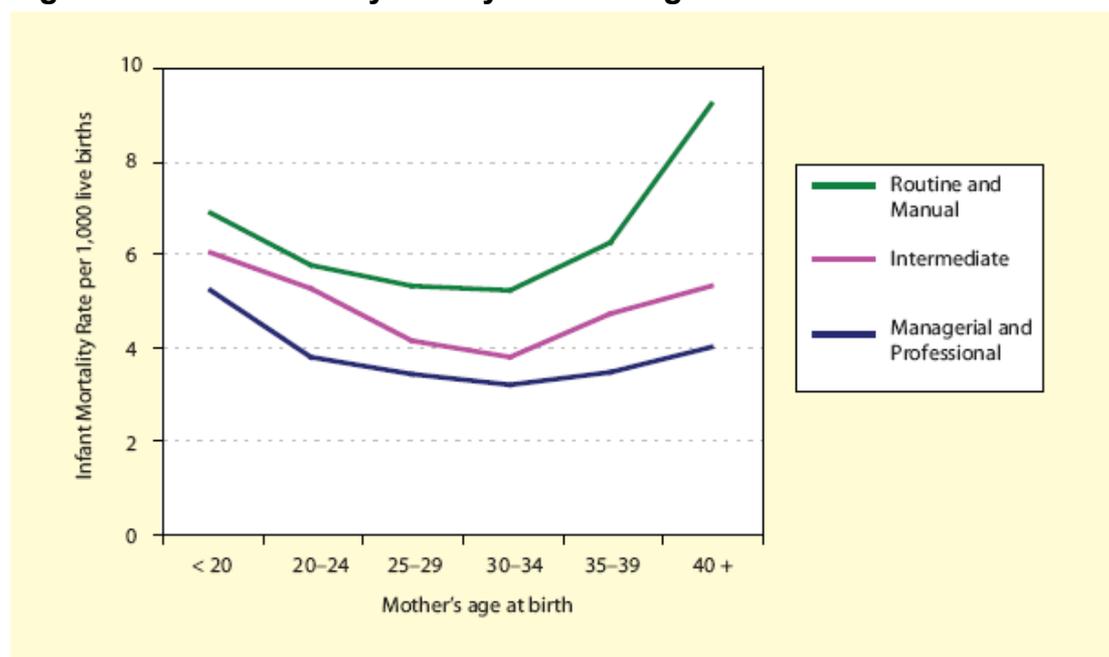
INTERVENTIONS THAT HAVE A DEMONSTRABLE IMPACT ON THE INFANT MORTALITY GAP

At a national level a number of interventions have been demonstrated to have an impact on the infant mortality gap. In the following section the interventions highlighted in the recent guidance from the DoH⁸ will be examined in the context of Cornwall and the Isles of Scilly.

Reduce teenage pregnancies

Tackling teenage pregnancy is central to the PCTs work to prevent health inequalities, child poverty and social exclusion. Nationally young women from the poorest backgrounds are 10 times more likely to become teenage mothers than those from professional backgrounds. IMRs for babies born to mothers under the age of 20 are approximately 60% higher than for babies born to mothers aged 20-39 (7.6 per 1,000 live births compared to 4.7 per 1,000 live births for 2002-4). As shown in Figure 8, higher infant mortality rates are seen across different socio-economic groups, indicating that the mother's age, in itself, influences mortality rates.

Figure 8. Infant mortality rate by mothers age at birth 2006



Source: National Statistics, 2006

Children born to teenage mothers are more likely to be born pre-term, with a 25% higher risk of low birth weight. The lifestyles and behaviour of teenage mothers influences these outcomes, and include:

- Later booking for ante-natal care (on average at 16 weeks gestation);
- Higher rates of smoking throughout pregnancy, compared to older mothers, including older mothers from lower socio-economic groups;

- Lower rates of breastfeeding, which are around a third lower than the average for all mothers;
- Poor maternal nutrition during pregnancy.

Smoking during pregnancy is estimated to contribute to 40% of all infant deaths. Teenage mothers are more likely than older mothers to have been smoking before they became pregnant and are less likely to stop smoking during their pregnancy. Research also identifies poorer health and social outcomes for children born to teenage mothers, beyond those evident at the time of birth. For example, they have higher rates of accidents, such as falls and swallowing dangerous substances, and are more likely to experience behavioural problems, such as conduct, emotional and hyperactivity problems. The higher incidences of these problems are, at least in part, due to higher levels of poor emotional health among teenage mothers. There are particular risks to the babies of lone teenage mothers in poor living conditions, such as poor quality bed and breakfast or temporary accommodation where the baby may be sleeping in the same bed or sofa which increase the risk of sudden infant deaths.^{8,12}

In 2006 the under 18 teenage conception rate for CIOS per 1,000 girls aged 15-17 was 32.5, a fall from a rate of 36.6 in 2005. This is in line with a decline in England and Wales from 41.4 in 2005 to 40.7 in 2006. However, the rate varies markedly across the CIOS. In the period 2002-2004 11 out of 120 wards had rates in excess of 60 per 1000 and 3 in excess of 70 per 1000. Bodmin St Marys had the highest rate with 88.4 per 1000 which is in the top 10% in England (see Table 6). Seven of the eleven wards with a higher under 18 conception rate also have a high deprivation score. The under 16 conception rate for 2002-4 was 6.9 for CIOS compared to 7.8 for England. For under 18 conceptions the 2003-5 maternity rate was 18.1. There was a reduction in the maternity rate of 19.7% compared with the period 1997-9.

Table 6. Cornwall and Isles of Scilly Wards with Teenage Conception rates in excess of 60 per 1,000

WARD NAME	No. of u18 conceptions 2002-04	Under 18 conception rate 2002-04	Estimated deprivation score 2004	Deprivation quintile (5=most deprived)
Bodmin St Mary's	35	88.4	29.20	5
Gover	18	73.2	28.31	5
Redruth North	30	70.4	37.20	5
Mount Charles	22	68.5	27.66	5
Illogan South	30	66.7	30.88	5
Camborne North	21	66.0	33.36	5

Edgumbe North	16	65.0	23.72	4
Helston South	16	64.3	23.27	4
Boscawen	20	63.5	18.05	4
Rock	24	62.0	25.55	4
Penwerris	18	61.2	31.23	5

Table 7 shows the 2005 under 18 teenage conception figures, the percentage change in conception rate between 1998 and 2005 and the percent of births to women aged less than 20 by local authority.

Table 7. CIOS teenage conception rates 2005, change in conception rate and % births to women aged less than 20 by local authority

Local authority	Under 18 conception rate 2005	% change 1998-2005	Percent of births to women aged <20 2003-5
Penwith & IoS	38.0	-20.3	8.00
Kerrier	43.1	-1.7	8.07
Restormel	42.3	0.4	8.06
N Cornwall	31.1	-28.6	6.62
Carrick	28.6	-9.2	6.54
Caradon	24.9	-27.9	6.08

The under 18 conception rate and the percent of births to women aged less than 20 is clearly higher in those local authorities with the highest deprivation score.

Nationally it has been shown that teenage pregnancy is strongly related to deprivation and inequalities. Teenage mothers experience poor housing, mental health problems and domestic violence. Data from STORK indicates that in 2005 and 2007 one quarter of mothers under 18 said that they were experiencing housing problems (this is a low estimate due to the nature of the data collection, see below). As of September 2007 in Restormel Borough Council 11% of households in temporary accommodation (which the borough had a statutory duty to accommodate) were teenage mothers or teenage expectant mothers.

The Reducing Teenage Pregnancy Strategy in CIOS is aiming for a more holistic approach to teenage pregnancy and is working with Cornwall's

Integrated Youth Support Services (IYSS) to address the wider needs of teenage parents. The IYSS offer community based support to young people, including teenage parents, through one stop shops, Connexions centres and outreach services.

A referral pathway initially developed between midwives and Connexions and now part of IYSS delivery helps to ensure that teenage parents are offered appropriate support in providing direct help and coordinating other services to meet their needs.

The referral pathway between midwives and Connexions has been in place for just over a year and is working well in most areas but there are some inconsistencies across CIOS with not all teenage parents being referred. This is now being addressed with support from the Director of Midwifery and the Integrated Midwifery Teams. There have also been some issues with follow ups from Connexions to the young women referred to them, which is also now being addressed. There is a recognition that young mothers need to receive practical and emotional support on a range of issues, so that they can be in a position where they can adopt more healthy behaviours, such as stopping smoking and eating sensibly and receive ongoing support relating to work based / benefit / housing issues.

The midwife teams in CIOS are being encouraged to nominate a Teenage Pregnancy Champion for each team. Midwives working with teenage mothers are being provided with extra training in order to provide young mothers with assistance in the following areas:

- Stopping smoking
- Breast feeding support
- Postnatal depression
- Sexual health

In discussions with health visitors, midwives and other stakeholders it was suggested that there should be a link through and with Healthy Schools in order to address teenage pregnancy and preconception care. The Healthy Schools Co-ordinator is fully supportive of this move and links have been made with other interested parties.

Reducing sudden unexpected death in infancy

Cot death is a term commonly used to describe a sudden and unexpected infant death that is initially unexplained. The equivalent medical term is 'sudden unexpected death in infancy' (SUDI). Some sudden and unexpected infant deaths can be explained by a thorough post-mortem examination and other investigations. Cot deaths that remain unexplained after a thorough examination are usually registered as sudden infant death syndrome (SIDS). Sometimes other terms like sudden infant death, sudden unexpected death in infancy (SUDI) or unascertained may be used. A post mortem examination will reveal a specific cause of death in less than half of all cot deaths. Causes may include accidents, infection, congenital abnormality or

metabolic disorder. For the cases that remain unexplained (SIDS), researchers think there are likely to be undiscovered causes. For many it is likely that a combination of factors affect a baby at a vulnerable stage of development.

SIDS is defined as the sudden unexpected death of an infant (aged younger than 1 year), for which a post-mortem examination to an agreed protocol, and a review of the clinical history and circumstances of death failed to offer a sufficient explanation. Most SIDS deaths happen within the first 8 months of life, with most around 3–4 months and fewest in the first month. The risk is higher for males, pre-term and low birth weight infants, and those sleeping in non-supine positions.

The syndrome is seen in all social groups but is more prevalent in the socioeconomically deprived. Factors that are associated with increased risk include age of mother, size of family sleeping position of the baby, bed sharing, smoking, overheating, bedding / mattresses, breastfeeding, dummies and illness. A recent meta-analysis showed that immunisation was associated with a significantly lower risk of SIDS. However the mechanism is unclear.¹⁵ Since the UK's "Back to Sleep" campaign in 1991, which encouraged parents to place their infant to sleep supine, the number of deaths from SIDS has fallen by 75% in England and Wales. Since this time the epidemiological profile of SIDS has changed. This was highlighted by the Avon research group, led by Professor Peter Fleming, who found that over the last 20 years, the proportion of SIDS deaths occurring in socio economically deprived families has risen from 47% to 74% and the proportion affecting prematurely born infants has risen from 12% to 34%.¹³ The rate of SIDS for England and Wales in 2006 was 0.2 per 1,000 live and still births.

The total number of sudden unexpected deaths in infancy (0-2 years) recorded in Cornwall from 2000 to 2007, was 35 with an average of just over 4 deaths per year. The yearly figures for SUDI between 0-1 years were:

2000 - 2
2001 - 3
2002 - 1
2003 - 3
2004 - 9
2005 - 5
2006 - 4
2007 - 6

New parents receive a copy of the "Reduce the Risk", a leaflet produced by the DoH and the Foundation for Sudden Infant Deaths (FSID), which gives details of the risks of SIDS. The local FSID representatives works with professionals (health visitors, midwives, A & E departments, police, coroners officers, children's centres etc.) who deal with infant care, and when an infant dies, to update them on the latest information to reduce risks. The CONI (Care Of the Next Infant) project supports parents with specialist advice and

information when they have a subsequent baby. There is a local CONI paediatrician and a health visitor acts as the local CONI Co-ordinator.

Midwives and health visitors are all aware of and share these messages with antenatal and new mothers. An increased focus by all health professionals on these messages are important in preventing SIDS in all social groups and in particular disadvantaged groups where the occurrence is higher.

There is currently no epidemiological data available on SIDS in Cornwall. A national data collection system on child deaths commenced April 2008. This will enable us to look in more detail at where deaths occur and their causes.

Reducing maternal smoking

Women who smoke increase their risk of miscarriage and are more likely to have low birth weight babies, premature babies and to experience stillbirth or death of their baby within the first month of life. In England in 2005 32% of mothers reported smoking in the 12 months before or during pregnancy. Seventeen percent of mothers continued to smoke throughout pregnancy, whilst 49% of smoking mothers gave up before or during pregnancy.¹⁴

In CIOS in 2005-2006 19.86% of mothers were known to have been smokers at the time of delivery. In 2006-2007 the figure was 20.15%. One of the Cornwall LAA stretch targets is to reduce the number of women smokers who go back to smoking after the birth of their baby from 90% to 70%. There is not yet any data available on the progress towards this target.

The Stop Smoking Service midwife is part of the effort to achieve this target. She takes referrals from midwives and GPs and visits mothers in their home to discuss smoking cessation and give them advice.

The midwife described some of the challenges associated with the role. The smoking cessation programme for pregnant women has been running for seven years. However, the number of referrals to the service remains relatively low and she estimates is less than 50% of potential referrals. In 2007 303 pregnant women were referred to the Stop Smoking Service. This is down on the previous year but may in part be a temporary effect of the re-organisation of the midwifery service in CIOS. Providing the service is time consuming. The visits involve talking not only to the pregnant mother about her smoking but also involve discussion of the smoking habits of other family members, triggers and stress relief. Therefore a visit can last from one to two hours. Despite the NICE guidelines 2002 recommending endorsing the use of 16 hour nicotine replacement patches in pregnant women there is still reluctance among some GPs to prescribe this to their pregnant patients. Anecdotally many women use the nicotine replacement patches only as a backup and perhaps as many as 50% do not use their prescription.

Data from the Royal Cornwall Hospitals Trust shows that in the year 2006-2007:

41% of deliveries under 53 weeks were to smokers
 43% of stillbirths/late miscarriages were to smokers
 48% of deliveries under 3000g were to smokers.

The Stop Smoking midwife felt that the situation could be improved if as a matter of routine all mothers who were currently smoking or had given up in the past 12 months were routinely referred to the smoking cessation service for help and advice when booking in for their pregnancy.

The proportion of teenage mothers (under 18 conceptions) who are smoking at booking is very high (see table 8).

Table 8. Percentage of teenage mothers smoking at booking 2005-7

Teenage mothers (under 18 conceptions) smoking at booking*			
	2005	2006	2007 (first ¾)
Number	145	242	101
% of all teenage mothers	44	50	45

Source: STORK data

The Stop Smoking Service monitors the ethnicity of all its users and has leaflets available in many languages and access to the interpreting service. The service will also be advertised in the new version of the migrant workers pack due out later in 2008.

Over the period 2005 to 2008 the percentage of women resident in CIOS delivering at Derriford Hospital who were known to have been smokers at the time of delivery fell from 18.5% to 17.6%.

Optimising maternal and infant nutrition

Maternal nutrition and obesity

Neonatal deaths are more common in women who are underweight, overweight or obese before they conceive. Obesity during pregnancy is a risk factor for adverse pregnancy outcomes. In the UK population, 33% of women are currently overweight (BMI>25) and 23% are obese (BMI>30). The complications of obesity during pregnancy include: increased risk of miscarriage, increased need for caesarean sections and greater risk during procedure, increased risk of pre-eclampsia and thromboembolism. According to Confidential Enquiries into Maternal and Child Health (CEMACH), obesity is a feature of 35% of maternal deaths.¹⁶ Risks to the developing foetus include increased risk of congenital anomalies, macrosomia (large size at birth), stillbirth and perinatal mortality. Potentially there are also long-term obesity problems for the child.

Obesity is linked to social class and is more common in routine and manual workers than in the managerial and professional groups. This link is stronger in women. The Health Survey for England 2004 indicated that 33% of women

in routine and semi-routine occupations were classified as obese compared with 21% in higher managerial and professional occupations.¹⁷ As household income declines the proportion of women who are obese increases. In 2003 women in the most deprived IMD quintile had the highest prevalence of overweight including obesity.²⁰

There is very little data available in CIOS on obesity in adults. Recent QMAS data shows that obesity prevalence is 8.5% of the GP-registered population in CIOS compared with an average prevalence in England of 7.4%. Of the CIOS commissioning localities obesity is highest in the East Cornwall and the West Cornwall locality groups. The CIOS Obesity Strategy identifies the main issues, including the nature and impact of the obesity epidemic and in terms of delivery takes a life course approach to prevention and treatment.

There are a number of initiatives in CIOS to encourage healthy eating and to tackle adult obesity such as the Eatsome project. Why Weight? is a project targeted on most disadvantaged super output areas offering early intervention to help combat childhood obesity. From April 2007 to January 2008 45 families were engaged with this programme.

Healthy Start, which was first piloted in Devon and Cornwall in 2005, offers vouchers to exchange for milk, fresh fruit and vegetables, and infant formula to pregnant women and children under the age of four in low income families. The vouchers can be used in a wide range of participating shops and pharmacies. Breastfeeding and non breastfeeding mothers will benefit equally from the scheme. As of 2006 over 9,000 women and children in Devon and CIOS were receiving Healthy Start vouchers.

Increase breastfeeding

Breastfeeding has long been recognised as beneficial to both the mother and her baby. Nutritionally, it provides everything for the first six months of a baby's life. Breastfeeding also reduces the risk of a baby being admitted to hospital for gastro- intestinal or respiratory infections. It promotes bonding between the mother and her baby and there is also some evidence that it reduces the likelihood of the baby becoming obese in later life.

The 2005 Infant Feeding Survey estimated that in England and Wales 77% of babies were breastfed initially.¹⁸ Figures from England and Wales for 2000 show that 12% of mothers had stopped breastfeeding by the time they left hospital. Mothers of first babies were more likely to have stopped breastfeeding by the time they left hospital than mothers of second or later babies. In CIOS in 2005/06 68% of mothers were known to have initiated breastfeeding. In 2006/07 this figure had increased slightly to 71.2%.

For women from CIOS who gave birth at the Royal Devon and Exeter Hospital in the period 2006-2007 80% were breastfeeding on discharge. At Derriford Hospital the percentage of mothers from CIOS who are known to have initiated breastfeeding has increased from 60.35% in 2005-6 to 71.2% in 2007-8.

Figures from the Royal Cornwall Hospitals Trust (Table 9) indicate that whilst the breastfeeding at birth figures are steadily increasing, breastfeeding on discharge figures are lower.

Table 9. Percentage of women breastfeeding at birth and percentage of women breastfeeding at discharge for Royal Cornwall Hospitals Trust

	2001	2002	2003	2004	2005	2006
Breastfeeding at birth %	73	72	75	73	76	76
Breastfeeding on discharge %	64	64	67	66	70	70

Source: STORK data RCHT

This would suggest that more needs to be done to support those who choose to breastfeed while they are in hospital. Reliable statistics on breastfeeding rates at handover from midwifery to health visitor care, and at later points e.g. at immunisations and at 6 months, are not currently available. This is in part because data collected by the health visitor teams are based on mothers recall over the previous 6 months and in part as a result of the poor return of forms held in the children's red books. There is a paucity of data on breastfeeding rates and deprivation. The new national Vital Sign Tier 2 'the percentage of infants breastfed at 6-8 weeks' will ensure we better monitor this target and promote good practice. There is no data currently available in CIOS on breastfeeding rates and socio-economic group or deprivation.

Table 10. RCHT feeding intentions at booking by place of delivery 2007

Feeding Intentions at Booking for 2007 by Place of Delivery							
Feeding Intent At Booking	Helston Hosp.	Home	Other	RCH Treliske	St Austell Community Hosp.	St Mary's Hosp.	Grand Total
Artificial	4	31	2	378	13		428
Breast	58	280	14	2123	197	5	2677
Not Known	3	11	4	325	29		372
Undecided	5	34		501	54		594
(blank)	1	32	5	89	29		156
Total	71	388	25	3416	322	5	4227

Source: STORK data RCHT

Table 11. RCHT breastfeeding on discharge by place of delivery 2007

Breastfeeding on Discharge in 2007 by Place of Delivery				
Place of delivery	No	Not known	Yes	Total
Helston Community Hospital	4	48	19	71
Home	5	368	15	388

Other	3	19	3	25
RCH Treliske	958	48	2410	3416
St Austell Community Hospital	46	8	268	322
St Mary's IOS Hospital			5	5

Source: STORK data RCHT

It is evident from tables 10 and 11 above that whilst data collection at RCHT and St Austell is good for breastfeeding at discharge it is less so for breastfeeding intentions with over 9% of 'unknowns'. This may reflect the inappropriate use of the "not known" rather than the "undecided" code. The data from Helston and for home births is poor.

The proportion of teenage mothers (conceptions under 18) who were recorded as intending to breastfeed was low but the proportion who breastfed at discharge was only slightly below that of all women (see Table 12). This would suggest that good work is being done to encourage young mothers to breastfeed.

Table 12. Teenage mothers breastfeeding at booking and at discharge 2005-7.

Breastfeeding by teenage mothers (under 18 conceptions)			
%	2005	2006	2007 (First ¾)
Intention to breastfeed at booking	39	46	28
Breastfeeding at discharge	41	50	46

Source: STORK data RCHT

CIOS has a strategic plan to increase local rates of breastfeeding. The Cornwall Local Area Agreement aims to achieve a 10% increase in breastfeeding initiation rates over the three years from 2006. An infant feeding co-ordinator has been employed to facilitate this. CIOS has applied to UNICEF for Baby Friendly status and is the first area in the country to have received a certificate of commitment from UNICEF for this scheme across all NHS sectors. Under this midwives, health visitors and nursery nurses have mandatory training in providing advice on infant feeding. The training programme is currently being rolled out.

Also introduced into the red book is an antenatal and postnatal checklist about infant feeding with a prompt to health workers as to what should have been discussed with the mother. Discussions are currently taking place to decide whether the two growth charts in the red book (one for breastfed babies and one for bottle fed babies) should be replaced by a new WHO recommended growth chart which may help to reduce confusion and help in the identification of obese babies.

Throughout CIOS efforts are being made to encourage breastfeeding. Children centres in Cornwall host breastfeeding support groups with peer

support and advice from health professionals. North Cornwall Council recently adopted a breastfeeding friendly policy which aims to reduce the barriers to and stigma towards breastfeeding outside the home that often makes mothers anxious about feeding their babies in public.

Improving access to maternity care

Knowledge of foetal and infant development highlights the importance of offering early intervention and prevention in pregnancy. It has also been shown that maternal deaths are higher in women who do not receive early antenatal care. Nationally around 16% of all pregnant women, including many of those under 18 years of age delay seeking maternity care until they are five or more months pregnant.

Maternity Matters¹⁹ and the PSA maternity indicator highlight the importance of early booking. The indicator is set at a full health and social care assessment of needs, risks and choices by 12 completed weeks of pregnancy.

Early booking

Data from Royal Cornwall Hospital indicates that in 2007 87.7% of women were booked into antenatal care by 12 weeks. Table 13 shows the numbers of mothers who delivered in 2007 who booked antenatal care at over 12 weeks of gestation by the place of delivery.

Table 13. Mothers who delivered in 2007 who booked antenatal care at over 12 weeks of gestation by the place of delivery

Place of delivery	Over 12 weeks gestation	
	Number	Percent of births at place of delivery
Helston Community Hospital	11	15.4
Home	63	16.2
Other	10	40.0
RCH Treリスケ	356	10.4
St Austell Community Hospital	35	10.9
St Mary's IOS Hospital	1	20.0

Source: STORK data RCHT

This table indicates that with the exception of the 'Other' category and for the Isles of Scilly where numbers are very small, over 80 percent of women have booked antenatal care by 12 weeks gestation. The percent of women who are booked for antenatal care within 12 weeks varies by age of mother, the lowest percentage, 67%, is in women under 18 and the highest, 85.9%, is in women aged 25-34 years of age.

At antenatal booking women are given information on Healthy Start, dietary advice and infant feeding. They are also referred to the smoking cessation services who call the women to discuss cessation.

Preconception advice plays an important part in the health of mother and baby. Discussions with midwives and health visitors have led to suggestions that supermarkets and pharmacists could be used as information outlets, together with schools, universities and colleges. Reaching young women who do not attend higher or further education can be problematic; however opportunities to reach them can be achieved through the Integrated Youth Support Service, via one stop shops, Connexions centres, mobile / outreach provision, community and voluntary organisations and youth clubs.

Currently the maternity data collection system, STORK, records the ethnicity of less than one third of women booking for antenatal care. The data system has recently been changed to improve the recording of ethnicity.

Alcohol/drugs

This section is based on discussions with the drug and alcohol community midwife at the Royal Cornwall Hospital. There has been a drug and alcohol specialty midwife at the Royal Cornwall Hospital since 1994. In 1994 there were 32 referrals for amphetamines, heroin, methadone and polydrug use, by 2006 the number of referrals had risen to over 145. Referrals come through a variety of routes: informal referrals from fellow drug users plus 'formal' referrals from CDAT, shared care, consultants, community midwives. There are also self-referrals. In the year 2006/7 there were 127 ongoing case and 94 referrals, of these 24 related to alcohol and 27 to heroin. Since 1994 there has been one infant death (a stillbirth) in women registered with the drug and alcohol community midwife.

The majority of women using the service are in their late teens to early 20s. When the service first started the majority of clients were using amphetamines; now heroin is the most common drug of use. Many of the women have a history of physical or sexual abuse and may have mental health issues before and after the birth. The drug team has counsellors and psychotherapists that can help but there are waiting lists for these services. A number of women are users of both drugs and alcohol. They receive help from CADA which provides support, counselling and reduction programmes.

Not all women in need are being reached. Anecdotally those women that are not reaching the service are those that are homeless, travellers and those with mental health problems and learning disabilities. The current midwife covers CIOS so a large proportion of her time is spent in travelling to clients. One model of effective working which the alcohol and drugs community midwife highlighted is used in Bristol. Here there is a team with a community psychiatric nurse, midwife, drug/alcohol workers, and senior registrar obstetrician which works together in a co-ordinated way and which has

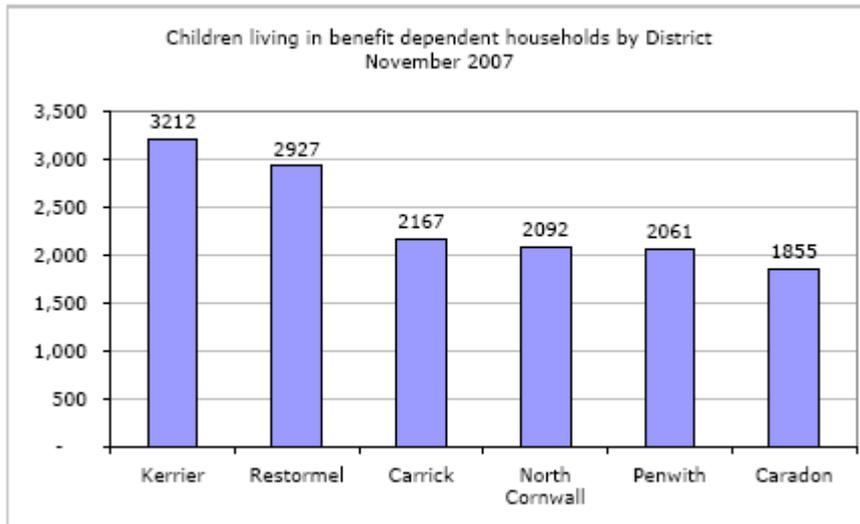
organised guidelines throughout pregnancy and after care for women with alcohol and drug issues.

At present there is little data available on whether there are social or ethnic inequalities in access to early antenatal booking in Cornwall. Nationally it has been shown that reducing the percentage of women who access maternity services late through targeted outreach work for vulnerable and socially excluded groups provides a focus on reducing the health inequalities these groups face and supports them in making well-informed decisions about their care throughout pregnancy, birth and postnatally. Understanding why women do not seek early care can inform the provision of more flexible services at times and places that meet the needs of these women and reduce barriers to access. An investigation needs to be carried out to investigate any social or ethnic inequalities in access to antenatal services and to identify appropriate ways of reducing barriers to access.

Reducing child poverty

Nationally there has been a reduction in the number of children in relative poverty over the last decade. The official measure of child poverty (households below 60% median income) is collected nationally and is currently not available below regional level. In the draft National Indicator Set (NIS), due for implementation from 1st April 2008, an interim measure has been defined as “the proportion of children who live in households where out of work benefits are received.” The following figures do not follow the definition as specified in the draft NIS guidelines as they exclude pension credit and include severe disablement allowance. The figures are however judged to be an appropriate proxy measure until data collection methods are in place to collect child poverty data to the NIS definition. Data sourced through the Real Choices - Tackling Child Poverty in Cornwall Project in November 2007 identified that there were 14,314 children aged 0-15 living in households where the family were in receipt of Incapacity Benefit, Income Support, Job Seekers Allowance or Severe Disablement Allowance. Based on 2006 population estimates from the Office for National Statistics this equates to 15.7% of the population aged 0-15 living in benefit dependent households (see Figures 9 and 10).

Figure 9. Number of children living in benefit dependent households by District 2007



Source: Cornwall Children & Young People's Plan Needs Assessment 2007

Figure 10.

% Children Aged 0-15 Living in Benefit Dependent Households November 2007

Source: JobCentre Plus
 Population denominator: Office for National Statistics mid year estimates 2006
 Displayed using quantile classification

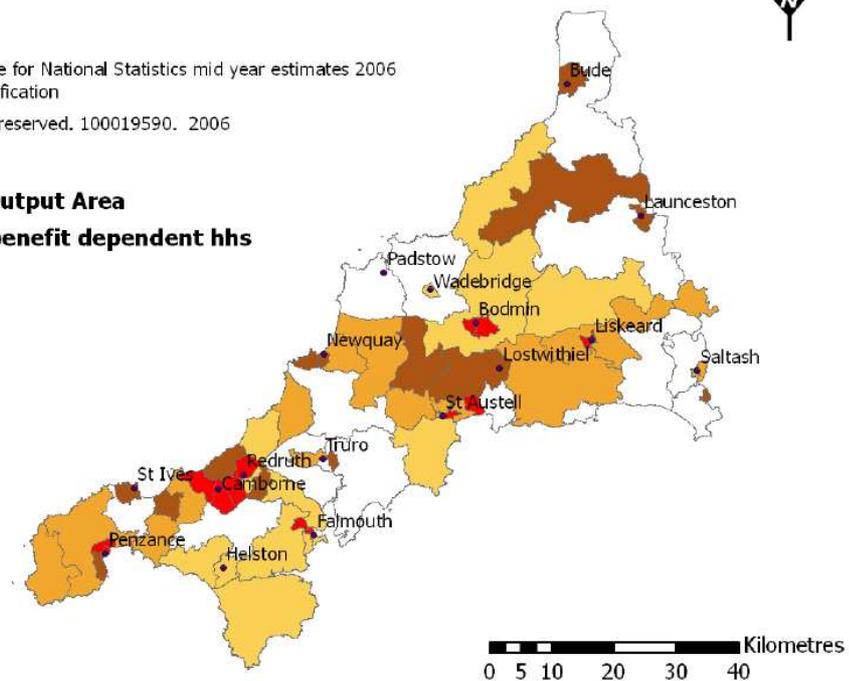
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Legend

Middle Layer Super Output Area

% children living in benefit dependent hhs

- 5.6% - 9.7%
- 9.8% - 12.4%
- 12.5% - 15.4%
- 15.5% - 22.5%
- 22.6% - 36.3%
- Main Towns



A recent initiative which aims to reduce child poverty, reducing worklessness and reduce health inequalities is “Real Choices – Tackling Child Poverty in Cornwall” which brings together Cornwall County Council, Jobcentre Plus, The Cornwall Strategic Partnership, Inclusion Cornwall, the Children and Young People’s Partnership (CYPP) and the Voluntary Sector Forum and other local organisations. Its objectives include to:

- Improve employment rates, especially for hard to reach groups
- Narrow inequalities of opportunity for poor children, especially educational opportunities

- Improve the full range of local services for children, including childcare and other early years activities, cultural and leisure activities and family support services
- Promote the take up of benefits and tax credits locally
- Show a cost saving resulting from new approaches to service delivery
- Recruit volunteers from the targeted group of families to build confidence and skills and improve job prospects
- Remove barriers that prevent families and communities from moving forward; these might be related to income, safety, aspirations, access, skills, health or other issues.

The approach Real Choices uses is new:

- ‘Virtual’ wards will be targeted i.e. families receive support due to a defined common need rather than where they live. This provides a solution to tackling pockets of deprivation, for example, hidden rural poverty, where families experience rural isolation, poor access to services and high transport costs
- Structured family get-aways as a way of identifying and planning future support and interventions
- Delegated flexible funds administered by the community and voluntary sector
- A relevant partner will take the lead in assisting families to tackle barriers to improving their children’s life chances utilising all current provision and resources and access delegated flexible budgets where required.

The Cornwall and Isles of Scilly Health and Well Being Strategy has also made the elimination of child poverty a target that has to be achieved by 2020 in CIOS. Delivery of this target will be monitored by the Health and Well Being Board and delivered through the LAA.

Improving housing quality and reducing housing overcrowding

Analysis of the 2001 census indicated that overcrowding was concentrated in towns in CIOS, particularly in St Ives, Penzance, Newquay and St Austell.²¹ Data from Restormel, which typifies housing problems being experienced across CIOS, shows homeless acceptances increased by 75% in the 4 years to 2004. Around 40% of homeless households are families with children, 28% are vulnerable due to medical circumstances 12% are due to pregnancy and 14% due to domestic violence or young people leaving care. The main reasons for homelessness are termination of private sector rented tenancies, relationship breakdown and parents no longer wishing to accommodate their teenage children. The council’s 2003 house condition survey estimated that 45% of the housing stock (19,014 dwellings), does not meet the Government’s Decent Homes Standard compared with the national average of 33%.

In CIOS 45,489 households live in fuel poverty and approximately 19,000 people are on waiting lists for social housing.

In the Health and Well Being Strategy for CIOS a number of actions have been identified to tackle these issues. These include:

- Increasing the numbers of homes that are warm, weatherproof and have reasonably modern facilities.
- Increasing the supply of homes that are flexible, affordable, adaptable and located in most sustainable locations.
- Continuing the reduction in homelessness.
- Increasing the opportunities for all to find settled homes and support.
- Reducing the number of accidents in the home.
- Ensuring that vulnerable households will receive the right help and support with their housing needs and choice.

INTERVENTIONS THAT WILL REDUCE INFANT MORTALITY OVERALL

Quality of healthcare

The National Service Framework for Children, Young People and Maternity Services states that the maternity standard is for women to have easy access to supportive, high-quality maternity services, designed around their individual needs and those of their babies.

Prevention of deaths from immaturity-related conditions involves preventing preterm births and ensuring that babies who are born prematurely receive high-quality healthcare. However, it is still not possible to accurately predict women at risk of preterm birth. The Project 27/28 Inquiry into the quality of neonatal care and its effect on survival of babies who were born at 27 and 28 weeks' gestation in England, Wales and Northern Ireland found that there is no evidence to suggest that the quality of care babies receive is socially patterned and so the impact on the target of reducing the gap in infant mortality rates is low. The Local Safeguarding Children's Boards has taken up the function of carrying out child death reviews on all child deaths from birth to 18 years from April 2008. These reviews will focus on identifying preventable and avoidable factors for child deaths.

A national review of maternity services by the Health Commission ranked the Royal Cornwall Hospitals Trust as in the 'best performing' category in the country. In 2006 the Royal Cornwall Hospitals Trust recorded the highest number of births for 16 years with 4,319 babies born in the county, and at the same time it also saw the lowest perinatal mortality rate in CIOS since records began. This rate was lower than the national figures.

Nationally ethnic inequalities in the uptake of antenatal screening have been identified but there is insufficient evidence to show whether there are social inequalities in antenatal screening uptake. Addressing inequalities in antenatal screening may have an impact on the gap by enabling women to be offered appropriate screening tests. Newborn screening is unlikely to contribute very much to reducing inequalities in infant mortality, although it will prevent infant deaths. Inequalities specifically in antenatal screening have not been examined as uptake is extremely good.

Immunisation uptake

Immunisation protects children against diseases that can kill or cause serious long-term ill health. Nationally it has been shown that there are persistent inequalities in immunisation practice which result in lower coverage for poorer families.²² The number of infants who die due to vaccine-preventable infections is too low to have an impact on the health inequalities infant mortality gap and the contribution to the target is low. However, the number of children who suffer illness and long-term disabilities due to vaccine-preventable illnesses makes a considerable impact on their families and the NHS and other local services.

Data on the uptake of vaccinations at age 2 years by GP practice is available and is to be analysed by the IMD score of the practice. This data is currently available to Public Health from Child Health only as a paper copy necessitating data entry before analysis can begin. This process is underway. It is important that should inequities in immunisation uptake rates be identified actions be prioritised to improve immunisation uptake for those most in need.

DATA

Data on the determinants of infant mortality

Although the small number of infant deaths makes local monitoring of infant mortality difficult, monitoring risk factors for infant deaths is feasible and can be achieved by strengthening local data collection. Data collection in CIOS could be improved. The recently published good practice guide for the Reducing Health Inequalities in Infant Mortality implementation plan lists data which could be used for monitoring and evaluation (see Table 14). There are a number of areas of data collection which have not been routinely carried out in CIOS.

At the moment it is difficult to obtain CIOS data on several of the risk factors for infant mortality and morbidity. The STORK data set holds maternity information on women who deliver at the Royal Cornwall Hospitals Trust. However it does not include those women resident in CIOS but who deliver outside the county nor does it include women who have a home birth. There is a system for obtaining information on breastfeeding and smoking from STORK systems from Royal Devon and Exeter Hospitals and Derriford Hospital. However presently information on factors such as birth weight and antenatal booking are not routinely collected at CIOS level. There is a need to be able to audit these factors regularly for all women resident in CIOS.

Data collection and record keeping is part of the Baby Friendly criteria. At present data collection on breastfeeding is less than optimal. Data on breastfeeding at discharge is available from the Royal Cornwall Hospital and from Derriford Hospital but the data currently collected for home births and the information from other hospitals is poor or is collected in ledgers and is not part of an electronic dataset. STORK (the obstetric data base) records breastfeeding intention as yes/no/undecided at booking. However it is not

considered to be good practice to ask women their feeding intention at their first booking. Work is ongoing to add a mandatory page on the STORK delivery page to record breast/breast milk or formula at delivery. The delivery page will be common across CIOS and so will improve data collection.

There is currently no reliable data on breastfeeding duration. Health visitors, community midwives and practice nurses are requested to complete tear-out forms in the parent held red book and return them to Child Health. If completed this would give data on breastfeeding at the first health visitor visit and at 6 weeks; unfortunately this information is not being consistently returned.

Health visitors play an important role in collecting data on smoking, breastfeeding and other factors that relate to infant health. Delay in entering data collected by health visitors has meant that there has been a lack of feedback which has affected motivation. Good feedback to the health visitor teams is now being planned into data collection and analysis.

The availability of routine data is crucial to the effective monitoring and evaluation of risk factors for infant deaths and identifying areas for intervention. There needs to be further development to ensure that routine data in CIOS is used to monitor outcomes on a county wide basis. Currently, in many cases data is being collected but needs to be refined in order to meet important information demands. For example whilst data on heights and weights are available from STORK data maternal BMI at booking is not routinely recorded. Given the national concern about the increasing BMI of mothers it would be wise to set up systems for this to be monitored so that the health services can respond, for example by setting up training in brief interventions for tackling obesity for staff involved in maternity care.

Recommendations

1. Raise awareness of the target of reducing inequalities in the infant mortality rate as a priority among key professionals and other partners through training and development.
2. Establish routine collection of data to enable monitoring and use this to improve local knowledge. Better collection and use of routine data is needed to obtain more information about teenage mothers and socially deprived groups.
3. Ensure that frontline staff who are required to collect data are given feedback to enable them to be actively engaged in the data collection process.
4. Set up a data set to enable the accurate recording of sole registrations (births registered by mothers alone).
5. Review current programmes on smoking and obesity to focus on disadvantaged groups and areas.

6. Carry out an assessment to identify the percentage of women who book for maternity care after 12 weeks of pregnancy and to establish whether there are social or ethnic inequalities and develop a strategy to reduce this.
7. Provide maternity services that are accessible to vulnerable groups e.g. teenage parents and those with learning disabilities.
8. Review how stop smoking services can most effectively be provided to teenage mothers.
9. Ensure that the recommendations in this Health Equity Audit are reviewed within 12 months and progress towards completing the health equity cycle assessed.

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Table 14. Useful routine data items to enable local monitoring of progress in infant and maternal health

TYPE OF DATA	SOURCE OF DATA	AVAILABILITY
Demographic data		
– Deprivation	PHO	Yes
– Ethnicity	Trust	Yes
– Maternal age at birth	Trust/ONS	Yes
– Child poverty rates	Regional/DWP*	Yes
Health service data		
– Maternal BMI at booking	Trust	Yes
– Maternal smoking status at booking, by age	Trust and quarterly report sent to PCT	Yes
– Teenage conception rates (under 18)	ONS	Yes
– Percentage of women who have received a health and social care needs assessment by the 12th week of pregnancy	Trust	Yes
– Antenatal screening uptake	Trust (Clinical Negligence Scheme for Trusts (CNST) level 2) and PCT	Yes
– Breastfeeding initiation and continuation rates	(1) Quarterly report by PCT at trust level (2) Only ones who have baby-friendly commitment at trust level	(1) Yes (2) Yes for some trusts
– Infant immunisation uptake	PCT	Yes
– Infant deaths as a consequence of a serious untoward incident	Trust (National Patient Safety Agency), CEMACH	Yes
Outcome data		
– Proportion of births that are very low birthweight (less than 1,500 g)	ONS	Yes
– Proportion of births that are low birthweight (less than 2,500 g)	ONS	Yes
– Proportion of babies born before 37 completed weeks	Child health system in trust	Yes
– Proportion of births to mothers aged under 20	ONS	Yes
– Proportion of babies who have a safeguarding plan for protection	Safeguarding board	Yes
– Overall IMR and IMR in disadvantaged groups	PHO	Yes
– Neonatal and post neonatal mortality rates	ONS	Yes
– Cause of death	Trust	Yes

*Households Below Average Income (HBAI) publication available on the DWP website at www.dwp.gov.uk/asd/hbai.asp

Source: Implementation Plan for Reducing Health Inequalities in Infant Mortality⁸