



Public Health
England

Protecting and improving the nation's health

Reducing infant mortality in London: An evidence-based resource

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***'It's hard to put into words. It is really devastating.
I wish my baby was here to hold, feed and look after.
Instead I have empty arms and a box of ashes'***

Stillbirth and Neonatal Death Charity (2009) Saving Babies' Lives Report 2009

Aims

This evidence resource aims to provide a snapshot of infant mortality and its known risk factors including strategies for prevention

The purpose of this document is to:

- provide a descriptive analysis of infant mortality in London
- describe the economic case for investment to reduce infant mortality
- provide a descriptive analysis of known risk factors for infant mortality
- describe what works to reduce infant mortality in order to facilitate improvements in service planning and delivery



The infant mortality rate (IMR) is defined as the number of deaths under the age of one year, per 1,000 live births. It consists of two components:

- the neonatal mortality rate: The number of neonatal deaths (those occurring during the first 28 days of life)
- the post-neonatal mortality rate: The number of infants who die between 28 days and less than one year

Mortality during the neonatal period is considered a good indicator of both maternal and newborn health and care

Infant deaths due to:

Immaturity-related conditions



Congenital anomalies



Other



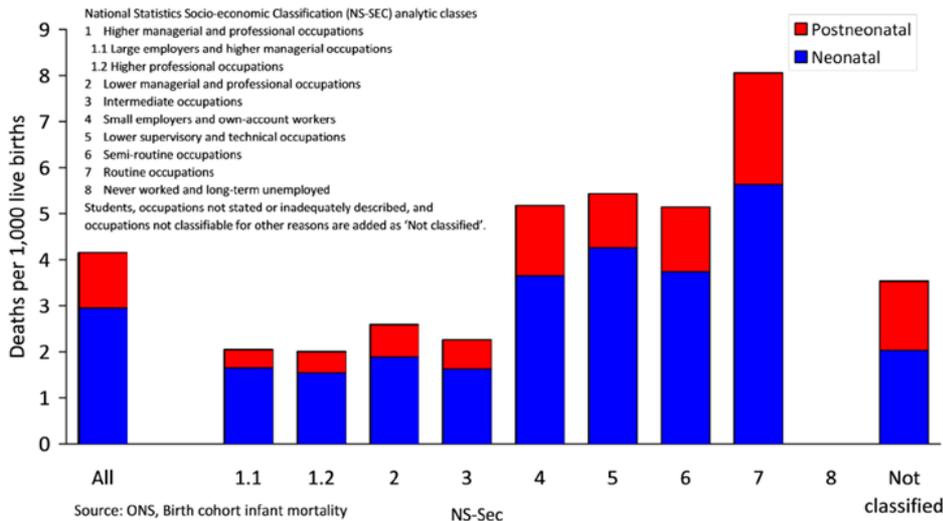
In 2013 in London, **466** babies did not live to see their first birthday... that is around:

- **10** babies per week
- **28x higher** than the number of children in London who were killed or seriously injured in a road traffic accident in 2010-12 (15.3 per 100,000)

1 in 278 babies

Infant mortality shows a socioeconomic gradient

Infant mortality rates by social class of most advantaged parent, babies born in England and Wales in 2011



Infant mortality in London (2010-12) compared to England

The infant mortality rate (IMR) in London (4.1 per 1,000 live births) **was the same as that of England**

There is a wide variation in infant mortality rates within London. The IMRs in Harrow and Enfield were about **3x higher** than in Bromley and Islington

Area	Value	Lower CI	Upper CI
England	4.1	4.0	4.2
London	4.1	3.9	4.3
Harrow	5.9	4.5	7.5
Enfield	5.8	4.6	7.1
Lambeth	5.5	4.4	6.8
Waltham Forest	5.5	4.3	6.8
Hackney	5.4	4.2	6.8
Tower Hamlets	5.3	4.1	6.6
Newham	4.7	3.8	5.8
Brent	4.7	3.7	5.9
Lewisham	4.7	3.6	5.9
Havering	4.7	3.3	6.3
Merton	4.5	3.3	5.9
Hounslow	4.4	3.4	5.7
Southwark	4.2	3.2	5.4
Greenwich	4.2	3.2	5.4
Camden	4.2	2.9	5.7
Barking and Dagenham	4.0	3.0	5.4
Hillingdon	4.0	3.0	5.2
Croydon	3.9	3.0	5.0
Haringey	3.9	2.9	5.1
Hammersmith and Fulham	3.8	2.6	5.4
Wandsworth	3.8	2.9	4.8
Westminster	3.8	2.6	5.3
Redbridge	3.8	2.8	4.9
Kingston upon Thames	3.6	2.3	5.3
Ealing	3.5	2.7	4.5
Kensington and Chelsea	3.1	1.9	4.8
Barnet	3.0	2.2	4.0
Richmond upon Thames	2.7	1.7	4.0
Bexley	2.6	1.7	3.9
Sutton	2.3	1.4	3.6
Islington	2.2	1.4	3.5
Bromley	1.9	1.2	2.9
City of London	0.0	0.0	18.8

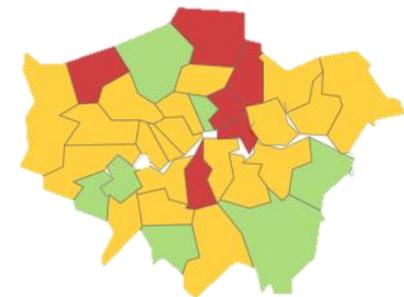
IMRs have reduced from 2001-03 to 2010-12



England
5.3 (2001 - 03)
4.1 (2010 - 12)



London
5.7 (2001 - 03)
4.1 (2010 - 12)



Better Similar Worse

Risk factors for infant mortality



The infant mortality rate for babies born to teenage mothers is **44% higher** than mothers aged 20-39



Low birth weight babies are **27x more likely** to die before the age of 1 year than babies of normal birth weight



The infant mortality rate for babies of mothers born in the Caribbean is **almost 2x higher** than for mothers born inside the UK



Babies born to mothers in the routine and manual group have a **4x** higher infant mortality rate than those born to mothers in higher managerial and professional groups

Economic impact of infant mortality



There are no current estimates of the total cost or economic impact of infant mortality at a regional or national level

Most costs can be attributed to the cost of treating preterm and low birth weight babies



Evidence demonstrates that spending on reducing teenage pregnancy is cost effective:

For every £1 spent on contraception, £11 is saved in other healthcare costs



Smoking in pregnancy accounts for 5-8% of preterm births. The **wider societal cost** of smoking in pregnancy in

London contributing to preterm births is estimated between **£24 million and £38 million**



The total annual cost to the public sector in **England** associated with children born

preterm until age 18 is around **£1.24 billion**, total societal costs (including parental costs and lost productivity) are about **£2.48 billion**

Reducing the rate of preterm birth even by a small amount, will have a significant impact on reducing this cost



Every **\$1** spent on prenatal care for low-income women saves **\$3.38** on infant medical care during the first year of life



Investment to increase and sustain breastfeeding rates will provide a rapid financial return on investment

Reducing infant mortality – what needs to be done



1

Co-ordination and leadership

Strong local leadership is vital for an effective cross agency approach to improving maternity and early years services and reducing infant mortality and to ensure that governance arrangements are in place so local areas can work together to deliver reductions in infant mortality



2

Commissioning

Integrated commissioning will ensure a whole systems approach to tackling infant mortality and improving infant and maternal health. Local authorities have to work closely with colleagues in CCGs, PHE and NHS England to ensure a seamless care pathway for families between services



3

Communication

Community engagement and understanding the preferences and needs of the local population is essential in developing flexible, responsive, acceptable services for the use of those who need them



4

Care pathways

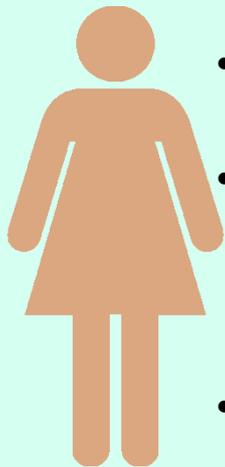
The development of clear care pathways is vital to support sustained improvements in service delivery and quality

Child poverty is **one of the biggest barriers** in improving outcomes for children and young people



3 in 10 children in London live in poverty

Mothers living in poverty are more likely to:



- be in poor health
- have more psychological problems in pregnancy
- smoke more

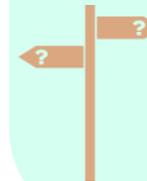
Babies born into poor families are:



- more likely to be born prematurely and have low birth weights
- 2x more likely to die within one year of birth than those born to affluent families

Addressing child poverty needs a long-term approach underpinned by:

- early intervention and prevention
- building on the assets of individuals and communities
- ensuring that children's and families' needs and abilities are at the centre of service design and delivery



Why it matters

1 in 46



teenage girls aged 15-17 years in London become pregnant every year

The impact of teenage pregnancy

44% higher risk of infant mortality



25% higher risk of low birth weight babies at term



63% higher risk of child poverty



6x higher rate of maternal smoking

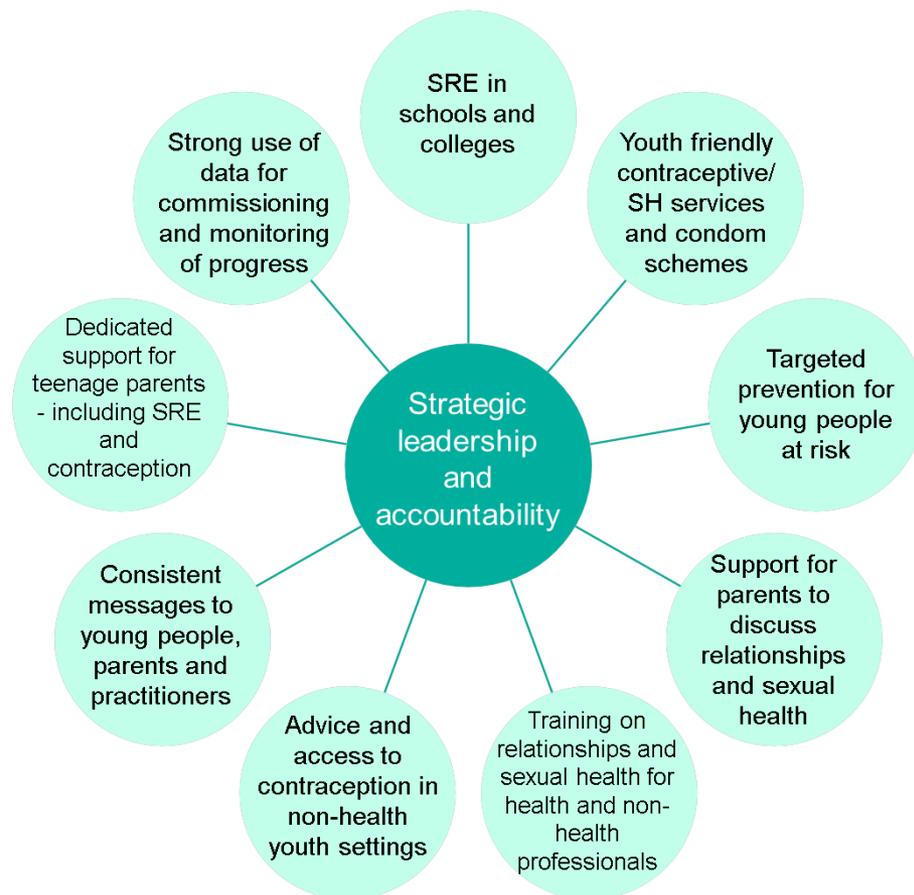


1/3 lower rate of breastfeeding initiation



Recommended actions

10 factors for an effective local strategy



Early booking is essential to ensure early engagement and assessment and for informed choice about screening options and antenatal care in general



Pregnant women should be supported to access antenatal care, ideally by 10 weeks and 0 days
In London **1 in 3** women book after 12 weeks gestation



Risk factors for late booking:

- Young age of mother (<20 years)
- High parity
- Mother from a minority ethnic group
- Mother living in temporary accommodation



16% of all pregnant women delay seeking maternity care until they are 5 months or more pregnant



Late booking and poor attendance for antenatal care are associated with poor outcomes for mothers and babies



1 in 20 women who dies during or after pregnancy booked after 20 weeks gestation



Booking for maternity care after 12 weeks is a risk factor for stillbirths and neonatal deaths



Promoting antenatal booking includes:

- Proactively providing information to women in a way they can understand
- Identifying barriers to early booking
- Providing accessible services
- Working with other service providers



Smoking is the **single most important modifiable risk factor** in pregnancy

Smoking in pregnancy accounts for:



1 in 12

premature births



1 in 5

cases of low birth weight in babies carried to full term



1 in 14

preterm-related deaths



1 in 3

SUDI



Pregnant women from unskilled occupations are **5x** more likely to smoke than professionals

Teenagers in England are **6x** more likely to smoke than older mothers aged 30-34



1 in 17 women smoke during pregnancy in London... **half** that of England (1 in 8 women)

Reducing smoking in pregnancy includes:

- identification and referral of pregnant women who smoke
- sufficient expertise in local stop smoking services to meet the needs of pregnant women
- smoking cessation training for all health professionals working with pregnant women
- effective communication with women and their families
- effective communication between health professionals
- implementation of NICE guidelines



Breastfeeding is

□ best nourishment for infants □ vital to improving maternal health □ FREE and readily available

Breastfeeding in the first year of a baby's life for the period indicated reduces disease risk by:

3 months

Childhood Asthma

27%

Type 1 Diabetes

23%

Childhood Obesity

7%

6 months

LRTI Admissions

72%

Gastroenteritis

64%

4-6 months EXCLUSIVE breastfeeding

SUDI

36%

In London about **9 out of 10** mothers breastfeed their babies in the first 48hrs after delivery



This decreases to about **7 out of 10** mothers continuing to breastfeed at 6-8 weeks



Mothers who breastfeed benefit from a **faster** return to pre-pregnancy weight and possible **lower** risk of breast and ovarian cancer

Barriers to breastfeeding include:

- Mother's ill-health
- Influence of sociocultural factors
- Inadequate information and support
- Lack of conducive surroundings outside the home

Increasing breastfeeding is **crucial** to **improving** infant outcomes. **Actions** to increase breastfeeding include:

- Expanding the baby friendly hospital initiative in health care systems
- Provision of education and support during pregnancy and postnatally
- Limiting the marketing of breast milk substitutes



1. WHO 2014 <http://www.who.int/topics/breastfeeding/en>

2. Unicef UK 2012, Preventing Disease and Saving Resources: potential contribution of increasing breastfeeding rates in the UK

3. Bartick M, Reinhold A, The burden of suboptimal breastfeeding in the United States: a pediatric cost analysis *Pediatrics* 2010 May;125(5):e1048-56

4. Public Health England 2014 <http://fingertips.phe.org.uk/profile/cyphof>



In London, **1 in 5** women aged 16+ years are obese

In England:

- age **over 35 years** is a predictive factor for maternal obesity
- **84.6%** of obese mothers are white Caucasian
- **1 in 3** pregnant women with BMI ≥ 35 kg/m² live in the **most deprived** quintile

London has the **lowest** prevalence of maternal obesity (about **1 in 30** women)



Health impacts of maternal obesity:

Poorer maternal health, including:

- cardiac disease
- spontaneous and recurrent miscarriage
- pre-eclampsia
- gestational diabetes

Poorer babies' health, including:

- macrosomia (weight more than 4.5kg)
- growth restriction
- congenital anomalies eg cleft lip and palate
- pre term or post date



Mortality and maternal obesity:

Maternal deaths, including:

- **1 in 5** maternal deaths from 2003 to 2005
- **1 in 2** maternal deaths from thromboembolism and heart disease

Stillbirths and infant deaths, including:

- **1 in 3** stillbirths
- **1 in 4** late foetal deaths
- **1 in 3** neonatal deaths



Women who are obese are grouped as high risk during pregnancy and require additional antenatal screening, intervention and monitoring.

Additional healthcare resources are essential due to pregnancy complications and increased use of neonatal intensive care

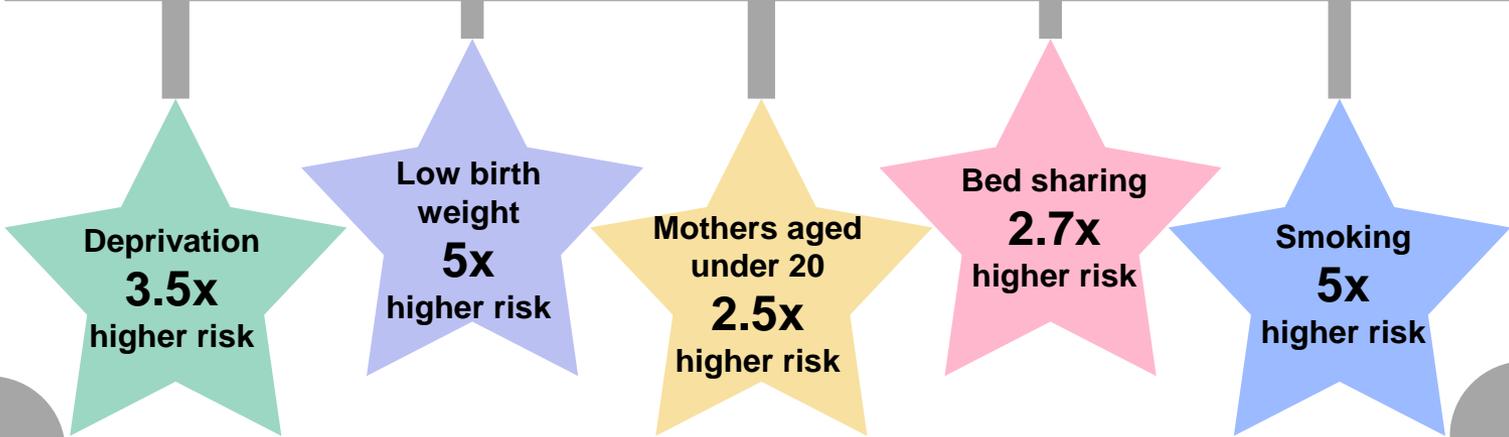
In France, healthcare costs both pre- and postnatally were **higher** in women with BMI greater than 29kg/m² due to longer hospital admissions



Addressing maternal obesity requires seamless collaboration between professionals incorporating community-based public health services starting from preconception. Interventions should include:

- provision of health education on weight management, healthy eating, physical activity and ongoing support before, during and after pregnancy
- modifying lifestyle and environmental factors through behaviour change techniques focusing health education and weight control interventions at maternity care units within neighbourhoods most at risk

Every **11 days** in London a baby dies from a SUDI, risk factors include:



What works to reduce Sudden Unexpected Deaths in Infancy (SUDI)

- Ensuring that infants sleep in the supine position – ‘back to sleep’
- Keeping the baby’s head uncovered by placing the baby in the ‘feet to foot’ position
- Ensuring that infants sleep in a separate cot
- Ensuring that infants sleep in the same room as their parents
- Reducing parental smoking
- Encouraging and supporting mothers to breastfeed their baby

Changing knowledge and behaviour through clear communication about the risk factors for SUDI

1. Child Death Review Programme and All Wales Perinatal Survey (2015) *Sudden Unexpected Death in Infancy - A Collaborative Thematic Review 2010-2012*
 2. <http://www.who.int/tobacco/media/en/mitchell.pdf>
 3. ONS (2014) *Statistical bulletin: Unexplained Deaths in Infancy - England and Wales, 2012*
 4. Carpenter R et al Bed sharing when parents do not smoke: is there a risk of SIDS? An individual level analysis of five major case-control studies *BMJ Open* 2013;3:e002299 doi:10.1136/bmjopen-2012-002299

VACCINES

Timely and complete immunisations of children is one of the **most important** aspects of prevention in primary care

There are infant deaths that could be **prevented** if a vaccine had been given on time

SAVE

DTaP/IPV/HiB coverage in London in 2012-13 was the **lowest** in England



1 in 10 children in London do not complete the primary immunisation course by their first birthday

LIVES

Actions to improve uptake include:

- improving **data collection** and reporting
- a **comprehensive commissioning** approach
- **staff engagement** to promote uptake
- **effective communication** to families

Useful resources

- Public Health England (2015) *Public Health Outcomes Framework, healthcare and premature mortality indicators* (accessed at: <http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000044/pat/6/ati/102/page/4/par/E12000007/are/E09000002>)
- Public Health Profiles (2015) (accessed at <http://fingertips.phe.org.uk/>)
- University of Oxford, National Perinatal Epidemiology Unit (2015) *Inequalities in Infant Mortality Work Programme Infant mortality* (accessed at: <https://www.npeu.ox.ac.uk/infant-mortality>)
- Public Health England London (2014) *The health and wellbeing of children and young people in London: An evidence based resource* (accessed at: <http://www.lho.org.uk/viewResource.aspx?id=18448>)
- Royal College of Paediatrics and Child Health and National Children's Bureau (2014) *Why children die: death in infants, children, and young people in the UK Part B* (accessed at: http://www.ncb.org.uk/media/1130502/rcpch_ncb_may_2014_-_why_children_die_part_b.pdf)
- National Institute for Health and Care Excellence (2014) clinical guideline 37 *Postnatal care* (accessed at: guidance.nice.org.uk/cg37)
- National Institute for Health and Care Excellence (2014) NICE guideline PH26 *Quitting smoking in pregnancy and following childbirth* (accessed at : <https://www.nice.org.uk/guidance/ph26/resources>)
- National Institute for Health and Care Excellence (2014) NICE advice LGB22 *Health visiting* (accessed at: <https://www.nice.org.uk/advice/lgb22>)
- Trust for London and New Policy Institute (2013) *London's Poverty Profile* (accessed at: http://www.londonpovertyprofile.org.uk/LPP_2013_Report_Web.pdf)
- National Institute for Health and Care Excellence (2012) NICE guidelines PH40 *Social and emotional wellbeing: early years* (accessed at : <http://www.nice.org.uk/guidance/ph40/resources>)

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About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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