Early Years

Topic information	
Topic title	*0-5 Years*
Topic owner	*Lynne McNiven*
Topic author(s)	*Sarah Diggle*
Topic quality reviewed	*24th February 2016*
Topic endorsed by	*Child Development Review Governance Group*
Topic approved by	*Child Development Review Governance Group*
Current version	*February 2016*
Replaces version	*N/A – new chapter*
Linked JSNA topics	*Pregnancy, Domestic Abuse, Child Abuse and Neglect, Oral health, Nutrition, physical activity , Obesity, Mental Health, Avoidable Injuries, Safeguarding, Asylum Seekers and Refugees, Disabilities and learning difficulties in children, Children in Care*

Executive summary

Introduction

One of the most important foundations for building caring, productive and healthy families and communities is the nurturing of children in early life. For this reason, helping children get a better start is both good for them and good for society[1].The first five years of a child's life are critical to their future development and opportunities. There is mounting evidence that shows the benefits and cost effectiveness of focusing on the development and health of infants and children. Conception to age two has been described as a crucial phase of human development and is the time when focused attention can reap great dividends for society[2].

A child's physical, social and cognitive development strongly influences how ready they are to start school and their educational attainment, as well as their health and employment prospects as an adult[3] . This development begins before birth when the health of a baby is affected by the health of their mother and is influenced by the socio-economic status of their parents. The best possible health underpins a child's ability to flourish, stay safe and achieve as they grow up; and lifestyles and habits established during childhood, influence a person's health throughout their life.

Loving, secure and reliable relationships with parents, together with the quality of the home learning environment, foster a child's:

- emotional wellbeing (sometimes referred to as infant mental health);
- capacity to form and maintain positive relationships with others;
- brain development (c.80% of brain cell development takes place by age 3);
- language development, physical literacy and
- ability to learn (the 'soft' skills that equip a child to relate to others, thrive and then go on to learn the 'hard' cognitive skills needed to succeed academically are embedded in the earliest months of life. Poor support, particularly a failure to

prevent abuse or neglect, at this stage can have a lifelong adverse impact on outcomes)[2].

Focusing on prevention and early intervention has a vital role to play in improving child health outcomes and breaking the cycle of health inequalities within families. The local authority became responsible for commissioning public health services for 0-5 year olds on October 1st 2015. This provides further opportunities to ensure a coordinated pathway of evidenced based preventative health care for all children from birth, all the way through their crucial developmental during preschool and school years.

Several of the issues that impact on the development of 0-5 year olds are covered in depth in other JSNA chapters, such as nutrition, physical activity, oral health, safeguarding and domestic abuse. This chapter therefore does not go into detail for these issues, although it is important that these chapters are also reviewed for a full understanding of the needs of this population.

Unmet need and gaps

- The health and well-being of children in Nottingham is generally worse than the England average for 0-5 year olds.
- An increasing number of Nottingham's babies are being born to mothers born outside of the UK, who are some of the least likely to access maternal and health services.
- More than a third of Nottingham's children aged 0-4 years are living in low income families. Children are particularly susceptible to economic and social deprivation resulting in unfair inequalities in health that contribute to generational cycles of deprivation.
- These inequalities mean delayed early development, lower educational achievement, lower aspirations and mental well-being and poorer health outcomes for many of the city's children, which continue into adulthood.
- Although the inequality gap in infant mortality between Nottingham and England is narrowing, Nottingham's rate of infants dying before their first birthday remains significantly higher than the England average.
- Local coverage is below the recommended target (of 95%) for several of the scheduled immunisations for 0-5s; this will be putting children at risk of infections that are most dangerous for the very young. Recent data appear to show that coverage is decreasing further.
- Babies of mothers aged less than 20 are four times more likely to die of Sudden Unexplained Infant Death (SUDI) than those of mothers aged 20 and over and babies of mothers who smoke during pregnancy or smoke at home are five times more likely to die of SUDI. Nottingham's high rate of teenage conception and smoking in pregnancy may partly explain why Nottingham's rate of SUDI is significantly higher than the England average.
- During 2013, 360 babies (8.4% of all births) born to Nottingham mothers had a low

birth weight.

- In 2014/15, the percentage of babies receiving their new-born bloodspot screening was below the national recommended target of 95%.
- Despite significant improvements in breastfeeding prevalence in Nottingham and narrowing of age related inequalities, there remains a substantial gap in breastfeeding rates between those aged under and over 25 years of age.
- Parental health and behaviours makes a significant contribution to the health and developmental outcomes of young children; this is an important consideration in Nottingham where there are high rates of adult alcohol consumption, smoking in pregnancy, obesity and poor mental health.
- It is estimated that 14% of Nottingham residents with dependent children have poor mental health putting children at risk of poor attachment and consequent poor cognitive, developmental and social and emotional health outcomes.
- More than a third of parents with dependent children in Nottingham smoke, placing a significant amount of young children at risk of poor health and developmental milestones. The post-natal period is a high risk time for relapse to smoking for those mothers who quit during pregnancy.
- New mothers who report that they are smokers at the time of delivery are not routinely provided with brief intervention and referral to smoking cessation services by hospital midwifery services.
- There are limited referrals from early years services (health visiting, FNP, Early Help and other early years providers) of mothers who smoke to smoking cessation services.
- It is estimated that at least 210 under 5s in Nottingham are affected by Foetal Alcohol Spectrum Disorders (FASD).
- It is estimated that there are 6,900 under 5s in Nottingham with poor attachment to at least one parent. The implications of this on school readiness, learning and academic success, behaviour and emotional health and wellbeing are significant.
- In 2015, approximately 1,560 reception children in Nottingham did not reach a good level of development by age five and there is a significant gender gap with boys being less likely to meet expected levels than girls. Literacy and mathematics were the areas of learning in which the lowest percentage of children achieved at least the expected level.
- It is estimated that 50% of children in areas of deprivation start school with language delay; this equates to approximately 1,850 reception aged children in Nottingham per annum.
- Low interest by fathers in their children's education (particularly boys) has a stronger negative impact on their achievement than contact with the police, poverty, family type, social class, housing tenure and child's personality.
- There is wide variation in participation in the free nursery education for 2 year olds (Early Learning Programme) across the City.
- There is varied and inconsistent provision of parenting programmes across the City.
- Stretched capacity within Early Help services (60 family support workers to cover the

city), coupled with high levels of need, make it challenging for Children's Centres to meet OFSTED requirements regarding reach.

Recommendations for consideration by commissioners

1. Maximise opportunities for greater partnership working to offer all children in Nottingham the best start in life and realise their full potential; integrated early years teams may help to build capacity reduce duplication.
2. Acknowledge the vital role that focusing on prevention and early intervention has to play in improving child health outcomes and breaking the cycle of health inequalities in Nottingham City.
3. Consider a local review in order to identify factors which might be responsible for Nottingham University Hospital's reported high rate of stillbirth, neonatal and extended perinatal mortality.
4. Ensure staff that has contact with families are aware of Sudden Infant Death prevention advice and share this in the antenatal and new-born period. This includes: always placing a baby on its back to sleep; keeping a baby smoke free environment during pregnancy and after birth; placing a baby to sleep in a separate cot in the same room as the parents for the first 6 months; and breastfeeding the baby.
5. Focus SUDI prevention programmes on families most at risk, in particular those with social circumstances that expose infants to more risk and promote parental behaviour change.
6. Midwifery, Health Visiting, breastfeeding peer supporters and Early Help to provide information to all pregnant women and new mothers on housing quality and tenancy rights, undertake home quality assessments and refer to the Safer Homes team as required.
7. Midwives, Health Visitors/FNP and Early Help to undertake financial assessments with parents with children aged 0-5 and refer to Debt Advice services as required.
8. Explore ways to nurture social and emotional development from the earliest stage for example through perinatal and maternal mental health programmes.
9. Midwifery services to implement brief sensitivity-focused interventions (e.g. Mother-Infant Transaction Programme; Nursing Systems Towards Effective Parenting-Preterm; Guided Interaction) in improving maternal sensitivity in mothers of preterm infants.
10. Promote Kangaroo Mother Care (KMC) in low birth weight infants.
11. Health Visitors to assess health behaviours of new mothers and refer appropriately.
12. During the 6 to 8 week postnatal check, or during the follow-up appointment within the next 6 months, health visitors should provide clear, tailored, consistent, up-to-date and timely advice about how to lose weight safely after childbirth and refer to weight management services as required.
13. Midwifery services to validate 'smoking at time of delivery' data via carbon monoxide monitoring.
14. Extend the New Leaf smoking in pregnancy service to include the postnatal period.
15. Include parents of children as a key priority group within the New Leaf service specification and explore the introduction of an intensive tailored smoking cessation

programme for families with children under 5 years.

16. Extend the ‘opt-out’ referral to smoking cessation services for pregnant smokers to include all smokers with children aged under 5 years through hospital midwifery, health visiting and Family Nurse Partnership.
17. Explore ways for ensuring that data on alcohol use in pregnancy is recorded by midwives in a way that enables it to be transferred to health visiting and other services; this would enable the identification and follow up of children exposed to alcohol during pregnancy.
18. Continue to embed the Baby Friendly Initiative within health visiting/FNP and the Early Help service, including the universal and targeted provision of Breastfeeding Peer Support.
19. Ensure the co-ordination of Healthy Start/Vitamin D is incorporated into the Health Visiting Specification including universal provision for infants and children.
20. Health professionals should take particular care to check women are following advice to take a vitamin D supplement during pregnancy and while breastfeeding.
21. Pregnant women (and those intending to become pregnant) should be informed that dietary supplementation with folic acid, before conception and throughout the first 12 weeks, reduces the risk of having a baby with a neural tube defect.
22. Consider expansion of cook and eat sessions for families with toddlers and young children provided by the Public Health Nutrition Team through Nottingham City Council Early Help service.
23. Health Visiting service to actively promote the flu vaccine with families.
24. Identify a named professional in every health and social setting where children and families attend who is responsible and provides leadership for the local childhood immunisation programme e.g. GP surgeries, nurseries, schools, colleges of further education and children centres.
25. Commissioners of children's services in primary care, children's centres and immigration services should improve access to immunisation services for those with transport, language or communication difficulties, and those with physical or learning disabilities. For example, provide longer appointment times, walk-in vaccination clinics, services offering extended hours and mobile or outreach services. The latter might include home visits or vaccinations at children's centres
26. Ensure there is a mechanism to assess the risks of children and families for targeted vaccinations e.g. BCG and Hepatitis B.
27. The nature of the mother-baby relationship should be assessed, including verbal interaction, emotional sensitivity and physical care, at all postnatal contacts through midwifery, health visiting and FNP.
28. Explore the feasibility of using Video-feedback Intervention to promote Positive Parenting (VIPP) to improve parental sensitivity and secure attachment.
29. Continue the provision of infant massage with disadvantaged mothers and those with low level anxiety/depression whilst implementing a robust evaluation to include outcomes on attachment and maternal wellbeing.
30. Parents and key professionals need to have the knowledge and understanding of

how to build social and emotional capability within children. Consider the implementation of 'attachment aware schools' and emotional coaching training for the early years workforce to support this.

31. Re-introduce the Leuven scale of wellbeing within early years settings.
32. Ensure there is a robust and systematic approach within Health Visiting to screen for domestic abuse within the perinatal period and refer to appropriate services.
33. Evaluate and develop the integrated 2 ½ year review with health visitors and early years providers.
34. Create and implement central data collection for the 2 ½ year integrated review.
35. Consider wider implementation of the Fathers Reading Every Day (FRED) programme through early years settings in line with SSBC, following a local evaluation.
36. Explore the opportunity of the 0-5 workforce to be trained in the Communication Trust evidence based competency framework in line with SSBC so that the early years workforce has strategies to support children with low level speech and language needs.
37. Raise awareness amongst parents/carers of expected developmental milestones.
38. Ensure all early years professionals (including the private, voluntary and independent (PVI) childcare sector) are aware of how to identify children who may need additional support around the 5 domains of the Early Years Foundation Stage (EYFS) and have knowledge of referral pathways (i.e. speech and language).
39. Evaluate and review the impact of enhanced book giving within Nottingham City (including Book Start, Dolly Parton Imagination Library).
40. Explore the opportunity for Midwives, Health Visitors, Early Years Providers and Early Help Teams to share language development messages at key developmental points using evidenced based resources such as Nottingham Natters Materials and training. Health Visitors to promote early language development and use of the Baby Buddy app at the 3-4 month additional contact.
41. Explore ways to promote and enable parent-implemented language interventions for young children with language impairments.
42. Review pathways to speech and language support to ensure adequate and accessible service provision at a range of levels, from early intervention to more specialist support.
43. Continue to ensure the provision of good quality childcare for pre-school children promoting social, emotional and mental development.
44. Increase the percentage of eligible 2 year olds participating in the Early Learning Programme and address inequalities in access across the city by implementing the actions which were developed from the 'Drill Down Project'.
45. Explore the opportunity for the Early Help Service to contribute to children's health outcomes through 'every contact counts' with parents (smoking, healthy weight, alcohol, physical activity, drugs, oral health).
46. Ensure all early years providers are aware of referral processes onto the behavioural, emotional or mental health pathway if there are concerns about the

child.

47. Provide an adequate level of evidence based parenting programmes to families of children under five; consider universal use of Triple P in line with Small Steps Big Changes (SSBC) through Nottingham City Council Early Help service.
48. Consider the evaluation of the New Forest Parenting Programme and implement more widely, if successful.
49. Explore the possibility of implementing a pilot of Family Foundations intervention.
50. Explore the contribution of Nottingham City Libraries towards School Readiness and how this can be optimised.
51. Health visitors to conduct a universal 'school readiness assessment' in the year prior to the child starting school; this would replace the universal 'school entrant health assessment' carried out by school nurses in Reception year. This earlier assessment will contribute to the identification of needs and the provision of necessary support prior to the child commencing school.
52. Develop a communication plan regarding what is meant by 'school ready' so that parents are aware of the expected development milestones and are knowledgeable about how to support their child in meeting them.
53. A flexible child-centred approach to supporting school readiness should be adopted in Nottingham which recognises the individual needs of children and families.
54. Increase co-ordination across planning and delivery of health, social and education services to support children and their families with Special Educational Needs and Disability (SEND), as required by the SEND reforms (Children and Families Act, 2014).
55. Expand and embed the role of specialist services to train universal services to support enabling early identification, early support and early intervention and prevention of problems (e.g. as in the Behavioural, Emotional, Mental Health pathway pilot).

Full JSNA report

What do we know?

1) Who is at risk and why?

1.1 Stillbirths

A stillbirth is a baby born dead after 24 completed weeks of pregnancy. If the baby dies before 24 completed weeks, it is known as a miscarriage or late foetal loss[4]. During 2013, there were 3,088 stillbirths in England which is 4.7 stillbirths per 1000 births. Although this rate has decreased from 5.8 stillbirths per 1000 births in 2003, one in every 200 births still end in stillbirth.

The leading cause of stillbirth is short gestation and low birth weight. There are social inequalities in stillbirth associated with differences in:

- access to care and early detection rates
- termination rates (women from disadvantaged areas and from some ethnic groups are less likely to terminate a pregnancy affected by a severe congenital anomaly)
- maternal lifestyle behaviours, such as obesity, unhealthy diet and smoking, which are associated with an increased risk of stillbirth
- psychological stress, which is positively associated with increased risk of stillbirth[5]

1.2 Infant mortality

Infant mortality is the death of a baby who dies before their first birthday. This is an important indicator of inequalities in health outcomes for children and society as a whole and contributes disproportionately to reduction in life expectancy within a population. The UK has one of the worst infant mortality rates in Europe and the developed world; the overall infant mortality rate in England is 5.2 deaths per 1000 births and there continues to be a gap in outcomes between the poorer and more affluent groups in society. Infant mortality is closely associated with all aspects of health inequalities and deprivation; housing quality and living environment, maternal lifestyle factors, infant feeding choice, access to services and so on.

Over half of infant deaths are attributed to conditions originating in the perinatal[a] period, with the leading cause being short gestation and low birth weight. Congenital anomalies, birth asphyxia and Sudden Death Syndrome are other leading causes[5]. There are social inequalities evident for all leading causes of infant death. The health inequalities interventions toolkit identifies the relative contribution of risk factors to the gap in infant mortality between groups with poorer outcomes and the England average. Key factors that contribute to this gap are:

- Maternal lifestyle behaviours during pregnancy including smoking in pregnancy
- Sudden unexplained death in infancy (SUDI) and uptake of recommended infant sleeping position (prone position).
- Maternal obesity
- Teenage pregnancy
- Not breastfeeding

The UK has the third highest rate in the EU19 of infant deaths by short gestation and low birth weight and the fourth highest rate of infant mortality overall. A recent study compared causes of death in young children in the UK with causes in Sweden (which has a low child

[a] Perinatal period describes the period surrounding birth, and traditionally includes the time from foetal viability from about 24 weeks of pregnancy up to either 7 or 28 days of life.

mortality rate) and concluded that action is needed to reduce the socioeconomic inequalities in the UK in order to reduce deaths occurring due to prematurity. It also found that the mortality rates from infections in the UK were almost twice those in Sweden. In the majority of cases, the infections were conditions for which there are effective treatments, suggesting that children may not be receiving timely diagnosis and treatment in the UK[6].

Sudden Unexpected Deaths in Infancy(SUDI)

SUDI is the sudden and unexpected death of an infant under the age of one year that remains unexplained after thorough investigation. It is the leading cause of death between one month and one year of age[7]. In 2013, more than 8 out of 10 unexplained infant deaths occurred in the postneonatal period (at least 28 days but less than 1 year after birth).The UK has the fifth highest rate of death by SUDI for infants under 1 above only France, Ireland, Belgium and Slovak Republic (ref ULA).

249 unexplained infant deaths occurred in England and Wales in 2013, a rate of 0.36 deaths per 1,000 live births (accounting for 9% of all infant deaths). This is the first rise in unexplained infant deaths since 2008. Before 2013, the rate had fallen steadily from 0.41 in 2008 to 0.32 in 2012[8]. The rate of SUDI rose from 0.92 to 1.27 for mothers aged under 20. Although numbers are very small this was four times greater than the combined categories of babies born to mothers aged 20 and over (0.32).The largest monthly rise in unexplained infant deaths was in February 2013. This coincided with a colder than average mean monthly temperature. Two risk factors for unexplained infant death are overheating and an unsafe sleeping environment, such as the baby's head being covered. These situations may be more likely to occur during winter, through the use of extra clothing or blankets, and central heating at night. Most babies (91%) who die from SUDI have one or more risk factor present, 75% have two or more risk factors present (table x)[8].

Table x: Risk factors for SUDI[7]

Age	Babies under the age of one year are most at risk and being a younger mother is associated with a higher of SUDI
Birth weight	Risk of SUDI is five times higher in low birth weight babies (less than 2,500g (5lb 5oz))
Poverty	Deprivation has been linked to the occurrence of SUDI and higher risk is observed when infants are within families of a lower socioeconomic group
Prematurity	Babies born preterm (less than 37 weeks gestation) are at four times the risk compared to babies born at term
Smoking	Babies are at five times the risk of SUDI when a mother smokes during pregnancy or if there is smoking in the home. An estimated one-third of SUDI deaths could be prevented if mothers did not smoke in pregnancy
Sleeping habits	Greater risk is associated with placing a baby on the front or side to sleep or in a room alone. Bed sharing with a baby when a parent is a smoker or under the influence of drugs or alcohol may also increase risk. Overcrowding has been identified as a factor affecting sleeping habits in the home. Unexpected infant deaths are also associated with overheating; overwrapping the baby or placing objects in the cot may increase heat

1.3 Low birth weight (LBW)

Babies are defined as having LBW when they weigh less than 2,500 grams at birth. LBW is linked to infant mortality and is also strongly tied to socio-economic group and smoking in pregnancy.

LBW has been found to be significantly associated with delay in achieving developmental milestones; LBW and delayed early childhood development may predict the occurrence of a wide range of behavioural and emotional problems in later childhood and adolescence[9].

A large American cohort study[10] based on an analysis of more than 35 years of data on more than 12,000 individuals found that compared to their normal birth weight siblings, low birth-weight children are 30 percent less likely to be in excellent or very good health in childhood. They also score significantly lower on reading, passage comprehension, and math achievement tests. Low birth weight was also found to have significant negative effects on adult health, equivalent to being 12 years older in one's 30s and 40s and reduces yearly earnings by about 15 percent.

The percentage of all births with low birth weight in England is 7.4% (2013) and the percentage of term babies with low birth weight is 2.4% (2012)[11].

In 2012 the infant mortality rate was 173.0 deaths per 1,000 live births for very low birthweight babies and 35.2 deaths per 1,000 live births for low birthweight babies. In comparison, the infant mortality rate for babies with a birthweight of 2,500g or more was 1.3 deaths per 1,000 live births[12].

1.4 Breastfeeding

Breast milk is the natural and best source of nutrition for babies. Exclusive breastfeeding is recommended for the first six months of an infants' life; with continued breastfeeding along with complementary food up to two years of age or beyond[13]. Babies who are not breastfed have a greater risk of developing infections, allergic diseases, insulin dependent diabetes mellitus and sudden unexpected death in infancy, while breastfeeding mothers have a reduced risk of pre-menopausal breast cancer and ovarian cancer[14].

Breastfeeding is associated with better infant health above and beyond the period of breastfeeding and a reduced risk of developing conditions such as heart disease and obesity[15]. Some evidence suggests breastfeeding promotes improved cognitive development, increased academic attainment, maternal/child bonding, better mental health outcomes and reduced behavioural problems in later childhood[16,17]. Interventions aimed at improving rates of breastfeeding are significant contributors to key outcomes including; reducing infant mortality, improving life expectancy and promoting healthy weight and optimal nutrition. A recent review illustrated the enormous costs to treating illness associated with not breastfeeding; it concluded that investments into evidence-based breastfeeding interventions could see a return on investment in as little as one year[18].

According to early results from the 2010 Infant Feeding Survey (IFS), breastfeeding initiation rates in England have steadily increased from 78% in 1995 to 83% in 2010. Data from NHS England indicates an initiation rate for England of 74.3% (2014/15)[19].

Mothers who are more likely to initiate breastfeeding include first-time mothers, older mothers, mothers working within a managerial or professional background, mothers with higher levels of education and mothers of black ethnic minority. These groups are also more likely to continue breastfeeding for a longer period of time, apart from first-time mothers that were seen to cease breastfeeding earlier than mothers of subsequent babies.

1.5 Immunisations

The immunisation schedule of childhood vaccinations has been designed to provide early protection against infections that are most dangerous for the very young. This is particularly important for diseases such as whooping cough, and those due to pneumococcal, Hib and

meningococcal serogroup C infection. Immunisation programmes provide protection to vaccinated individuals and can provide protection to the wider unvaccinated population. Where this occurs it is known as 'herd immunity'[20].

In 2014-15, vaccination coverage in England at 5 years was below the WHO target for all antigens with the exception of DTaP/IPV/Hib primary (table x).

Table x: Completed immunisations (%) by 5 years (2014/15)

Country	Coverage at 5 years				
	DTaP/IPV/Hib Primary	DTaP/IPV Booster	MMR1 First dose	MMR2 First and second dose	Hib/MenC Booster
United Kingdom	95.9	89.4	94.8	89.3	92.8
England	95.6	88.5	94.4	88.6	92.4

In addition to routine vaccinations, there are non-routine vaccines. Hepatitis B (birth to 12 months) and Bacillus Calmette-Guerin (BCG) (birth onwards) given to at risk groups. BCG is given to those at increased risk of developing severe disease and/or of exposure to tuberculosis (TB) infection.

If children coming to the UK are not known to have been completely immunised, it is recommended that they should be assumed to be unimmunised and a full course of immunisations should be planned. Likewise, where there is no reliable history of previous immunisation, it should be assumed that children are unimmunised and the full UK recommendations should be followed[21].

1.7 Child mortality (age 1–4 years)

Child mortality rates in the UK are higher than in many other European countries[22]. During 2010, 0.3% of all premature deaths in the UK were due to deaths in children aged 1 to 4 years (561 deaths)[5]. 'Injuries and poisoning' is the leading cause of death for boys whereas cancer is the leading cause for girls. Social inequalities are found in all leading causes of death among young children, including unintentional drowning and suffocation, and deaths from leukaemia, Hodgkin lymphoma and cerebral palsy. The mechanisms suggested as underlying these social inequalities include social differences in:

- adherence to treatment
- intake of vitamin, folate or iron supplementation
- birth weight, linked to maternal lifestyle behaviours[5].

1.8 Attachment

An important developmental milestone in every child's life is the formation of an attachment bond to the parent. Secure attachment relationships have a long-lasting impact on development, the ability to learn, capacity to regulate emotions and form satisfying relationships[23]. Recent neuroscientific evidence demonstrates that warm, responsive relationships and interactions (attunement) build children's brains, and help them to learn to self-regulate their behaviour. Connections, relationships and attachments are vital for the development of the brain and mind and support learning at an anatomical, physiological, psychological, social and environmental level. Research has inextricably linked attachment to school readiness and school success[24].

The following factors may present a risk to the quality of attachment between child and parent:

-Poverty
-Parental mental health difficulties
-Exposure to neglect, domestic violence or other forms of abuse
-Parental alcohol/drug use
-Multiple home and school placements
-Premature birth
-Abandonment
-Family bereavement

Vulnerable groups may include:

-Children in areas of social and economic deprivation
-Children in care
-Adopted children whose early experiences of trauma continue to affect their lives
-Disabled children
-Children with medical conditions or illness
-Children who have moved home frequently during the early years e.g. forces families
-Refugees and children who have been traumatised by conflict or loss

However, insecure attachments may also occur within non-vulnerable children. It is estimated that at least one third of children have an insecure attachment with at least one caregiver[25]. The Allen Report[26]and the Marmot Review[3] advocate that parents and key professionals need to have the understanding and knowledge of how to build social and emotional capability within children and therefore empower individuals to break inter-generational cycles of dysfunction and underachievement.

1.9 Developmental milestones

The EYFS sets standards for the learning, development and care of children from birth to 5 years of age. There are assessments when a child is aged between 2 and 3 years and at the end of the academic year when they turn 5. Early years learning concentrates on seven areas split between prime and specific areas of learning.

The prime areas of learning are:

- communication and language
- physical development
- personal, social and emotional development

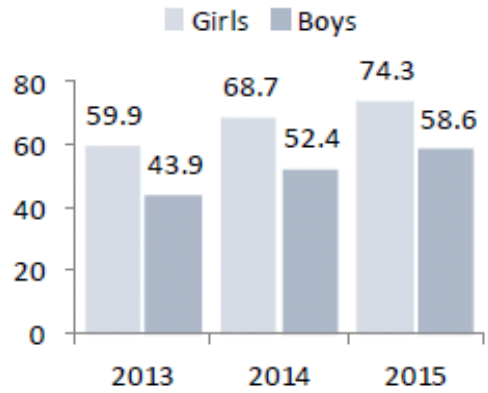
The specific areas of learning are:

- literacy
- mathematics
- understanding the world
- expressive arts and design

Nationally, 66.3% of children achieved a good level of development[b] at age 5 in 2015, an increase of 5.9% percentage points on 2014[27]. During 2013/14, 44.8% of children with free school meal status achieved a good level of development, clearly demonstrating inequalities by family income.

Girls continue to do better than boys, but the gender gap has decreased for two of the three key measures. The gender gap for percentage achieving a good level of development has reduced from 16.3 percentage points in 2014 to 15.6 percentage points in 2015 (figure 1)[27]. Several reliable studies have shown that high levels of interest by a father in his child's schooling and education are associated with improved outcomes. Conversely, low interest by fathers in their children's education (particularly boys) has a stronger negative impact on their achievement than contact with the police, poverty, family type, social class, housing tenure and child's personality[28].

Figure 1: Percentage of children achieving a good level of development at age 5 by gender



Source: Department of Education, 2015

1.9.1 Language development

Communication underpins learning and development in children of all ages. Children need adults to nurture and support their communication and language development. Lots of children struggle to develop their communication skills. About 1 million children in the UK will have long term difficulties and in areas of social deprivation more than 50% of children start school with delayed language[29].

Attachment security is associated with better learning and language outcomes because it gives the child a secure base from which to explore the world. Play with babies, which involves verbal exchanges, also lays the foundation for later, more complex verbal interaction. In toddlerhood, engagement and verbal stimulation by parents continues to contribute to language development. Household chaos also affects children's ability to express and understand language at 36 months, which can have a long-term impact on cognitive development and the child's ability to interact positively with peers[1].

1.9.2 Social and emotional development

A key task of infancy and early childhood is learning how to begin to regulate one's emotions[1]. Children who have a good capacity for this are much less likely to develop

[b]Children achieving a good level of development are those achieving at least the expected level within the following areas of learning: communication and language; physical development; and personal, social and emotional development; literacy; and mathematics.

emotional and behavioural problems. Children who develop secure parental attachments are likely to learn how to regulate their emotions. In contrast, children who experience parenting during the first two years of life that frightens rather than comforts them are at significant risk of developing a 'disorganised' attachment, which severely compromises their long-term well-being. 'Positive stress' can help children to develop healthy stress response systems. But 'toxic stress' leads to changed brain architecture and reduced thresholds for stress, with potential long-term harmful consequences for behaviour, learning and health. Parenting practices, including discipline and monitoring and supervision also affect behaviour and later functioning.

1.10 Parental health behaviours

Parental health behaviours prenatally and during childhood can have an enormous impact on the health and development of babies and young children. Parental obesity for example and the family environment have a strong influence on a child's eating and activity habits and predisposition to overweight.

Maternal drug and alcohol use poses significant health risks to the foetus as well as long term impacts on social and behavioural development[30]. In England, 12% of mothers report to be smokers at the time of delivery[31]; infants of these mothers are at increased risk of poor health outcomes both during and after pregnancy. Infants are more vulnerable to the health effects of cigarette smoke because they have higher oxygen demands, smaller airways and faster breathing rates. Small children receive a higher nicotine dose from smoke compared to adults and this can: increase their risk of SUDI, respiratory disorders (asthma, wheezing, chronic cough) and middle ear infections. In addition to these physical health risks, recent studies show a negative effect of prenatal nicotine exposure on infant neurobehaviour as well as on long-term behaviour, cognition, language, and achievement[32,33,34].

Alcohol remains the most widely studied prenatal drug of abuse, and the evidence is strong for foetal growth problems, congenital anomalies, and abnormal infant neurobehaviour[35, 36]. Foetal alcohol syndrome (FAS) and foetal alcohol spectrum disorders (FASD) describe the range of disorders caused by prenatal alcohol exposure to the developing foetus. Ongoing longitudinal studies continue to document long-term effects on growth, behaviour, cognition, language, and achievement, and alcohol is the most common identifiable teratogen associated with intellectual disability[37,38,39.] It is estimated that 1% of live births will be affected by FASD[40]. Children in the UK Child Care system (including those moved on to adoption) are at significantly increased risk; it is estimated that around 30% of these children are affected by FASD[41].

A summary of the effects of nicotine, alcohol and other substances is given in table 1.

Table 1: Summary of effects of prenatal drug exposure[30]

	Nicotine	Alcohol	Marijuana	Opiates	Cocaine	Methamphetamine
Short-term effects/birth outcome						
Fetal growth	Effect	Strong effect	No effect	Effect	Effect	Effect
Anomalies	No consensus on effect	Strong effect	No effect	No effect	No effect	No effect
Withdrawal	No effect	No effect	No effect	Strong effect	No effect	*
Neurobehavior	Effect	Effect	Effect	Effect	Effect	Effect
Long-term effects						
Growth	No consensus on effect	Strong effect	No effect	No effect	No consensus on effect	*
Behavior	Effect	Strong effect	Effect	Effect	Effect	*
Cognition	Effect	Strong effect	Effect	No consensus on effect	Effect	*
Language	Effect	Effect	No effect	*	Effect	*
Achievement	Effect	Strong effect	Effect	*	No consensus on effect	*

* Limited or no data available.

1.11 Poverty

Growing up in poverty has a negative impact on the first five years of a child's health and development[42]. There is a strong association between the economic situation of families and children's nutrition, social emotional development and language: children from poorer backgrounds tend to do worse than those who are better-off. For example, babies from poor families are less likely to be breastfed and, as they become toddlers, more likely to have lower nutritional status. They are more likely to start primary school with lower social and emotional skills than their peers, and to have lower school readiness and vocabulary skills aged three than their better-off counterparts. A family's economic situation has direct effects on children's well-being, for example through housing and life-chances, but it also has indirect effects, by influencing how a parent is able to parent their children (e.g. what they feed them and how they interact with them)[1].

Although poor health outcomes among young children clearly correlate with growing up in a disadvantaged area, there is also variation *among* the most deprived areas. For example in 2013–14 there were 100 cases (per 10,000) of a child under five being admitted to hospital due to an injury in Haringey compared to 241 in Middlesbrough despite both having the same level of deprivation. Similarly five out of the most deprived 30 local authority areas are in the top two-fifths for children achieving a good level of development by the end of Reception. This suggests that, despite their challenging circumstances, there is an opportunity for local authorities and their health partners to do more to improve young children's health and well-being[42].

2) Size of the issue locally

2.1 Demography

There are an estimated 21,000 infants aged 0-4 years resident in the City[43]. Population projections, based on 2011 baseline, by the Office for National Statistics suggest that the population of Nottingham's 0-4 years olds will increase by 4.4% in the decade from 2011 and 2021[44]. The Children's Centre area with the highest number of under 5s is Sneinton and St Anns (4,480) followed by Aspley, Bilborough and Broxtowe (4,015).

In 2014, 27.0% of births were to mothers born outside of the UK, compared to 16.5% in 2001[45]. Almost half (48%) of school children are from a black or minority ethnic group[46].

Over a third (36%) of Nottingham's children aged 0-4 years are living in low income[c] families which is statistically higher than the England average of 20.9%[47]. The rate of family homelessness[d] is 2.8 per 1000 households which is also statistically higher than the England average (1.7 per 1000)[46]. Nottingham Citizen Survey data estimate that 13.2% of households are lone parent households and 12.7% of families with dependent children do not have any qualifications.

The Index of Child Well-being (CWI) is an index of child well-being rather than an index of deprivation, mainly because it contains variables that are not strictly related to deprivation. Child well-being is generally represented by how children are doing in a number of different domains of their life. Nottingham is ranked 141 of 152 top tier local authorities in the overall Child Well Being Index, with the area ranked at 1 having the highest levels of overall child well-being[48].

2.2 Stillbirth

During 2011-2013, there were 4.8 stillbirths per 1000 births in Nottingham which is a similar rate to the England average. This equated to 64 stillbirths.

[c] Families in receipt of out of work benefits, or in receipt of Child Tax Credits AND whose income is less than 60 per cent of the national median income

[d] Family homelessness defined as statutory homeless households with dependent children or pregnant women

2.3 Infant mortality

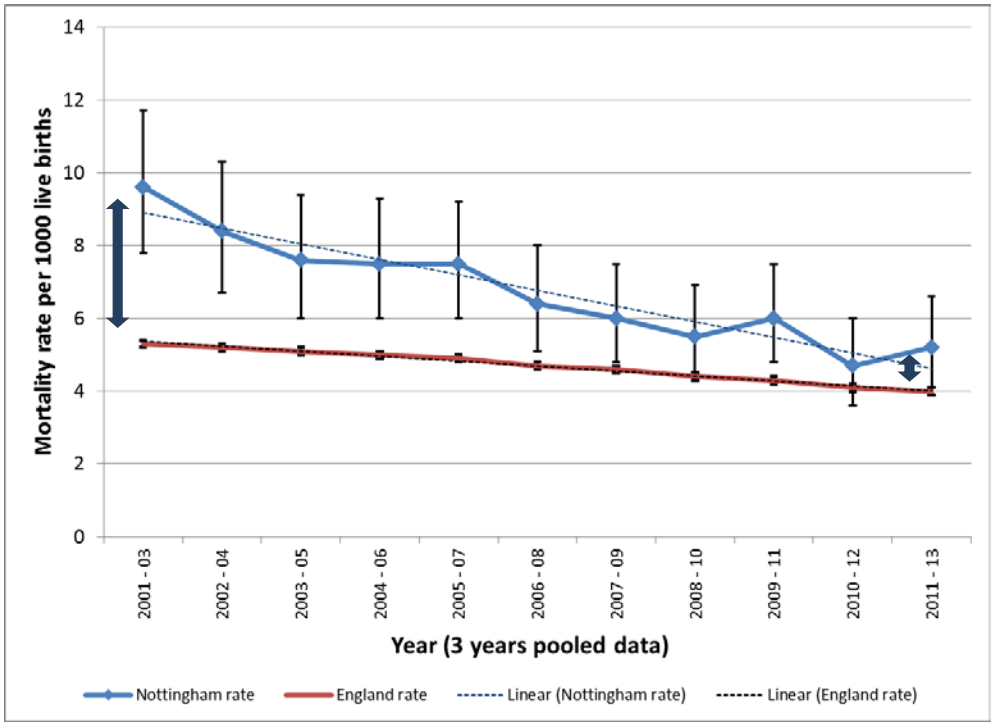
In Nottingham (2011-2013) there were 69 deaths of infants aged less than one year. Nottingham mirrors the national picture in respect to the causes of death in the first year of life. Infant mortality (and the gap between Nottingham and England) has been reducing (figure 2); however the three-year infant mortality rate for Nottingham remains significantly higher than the England average (5.2 per 1000 compared to 4.0 per 1000) and remains higher than the European Union average (3.7 per 1000)[11].

During 2013, Pakistani, Black Caribbean and Black African babies (6.7, 6.6 and 6.3 deaths per 1,000 live births respectively) had the highest infant mortality rates. This may be explained as these ethnicities are more likely to live in a deprived area and more likely to have parents in a less advantaged socio-economic position.

During 2009-2013, there were 88 neonatal deaths in Nottingham (death of a baby aged under 28 days old) which is significantly higher than the England average (4.0 per 1000 live births compared to 2.9 per 1000)[49].

The first perinatal mortality surveillance report was produced by MBRRACE-UK in December 2015. Perinatal mortality is reported for Trusts and Health Boards in the UK; NUH is categorised as amber; this is because their stabilised & adjusted extended perinatal mortality rate is up to 10% higher than the average for the comparator group. MBRRACE-UK recommend that Trusts whose stabilised and adjusted stillbirth, neonatal or extended perinatal mortality rate falls within the amber band should consider a local review in order to identify factors which might be responsible for their reported high rate[50].

Figure 2: Infant mortality in Nottingham and England, 2001-2013[e]



[e]This infant mortality indicator is a shared indicator between the PHOF and the NHS Outcomes Framework and is based on the year the death occurred in. Other figures published, such as those by the HSCIC and elsewhere in some other products produced by PHE are based on the year the death was registered in, and will therefore be different to those published in the PHOF.

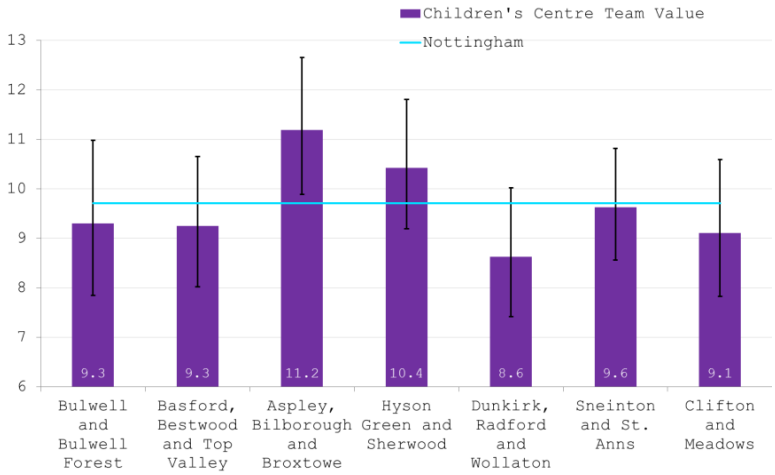
2.3.1 Sudden Unexpected Deaths in Infancy

During 2004 and 2013, there were 18 Sudden Unexpected Deaths in Infancy in Nottingham, which translates to a rate of 0.43 per 1000 live births. This is higher than the England average rate of 0.36 per 1000[51].

2.4 Low Birth Weight

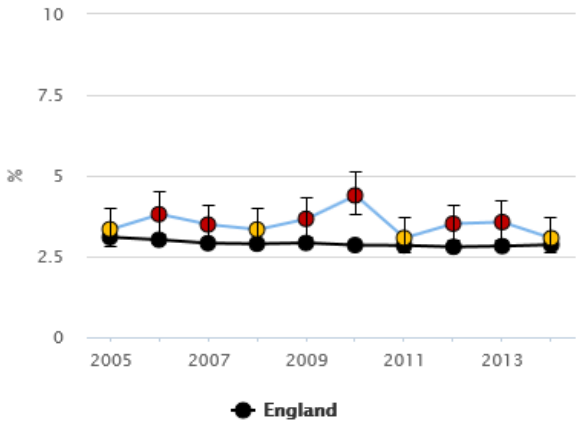
There were 360 babies (8.4% of all births) born in Nottingham during 2013 with a low birth weight. This is statistically higher than the England average (7.4%). However, there are large variations across the city. Local pooled data (2010-2012) shows that the children's centre area with the highest percentage of low birth weight babies is Aspley, Bilborough and Broxtowe (11.9%) followed by Hyson Green and Sherwood area (figure 3) [52].

Figure 3: Percentage of all births that are low birth weight by Children's Centre teams (2010-2012)



The low birth rate of live, full term babies in Nottingham has been consistently higher in Nottingham than the England average over recent years but was similar to the England average in 2014 (3.1% compared to 2.9%) (figure 4).

Figure 4: Percentage of all live, full term babies that are low birth weight in Nottingham compared to England (2005-2014)

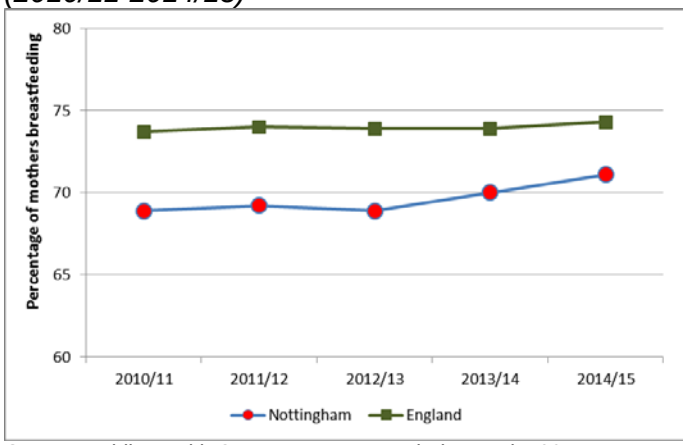


Source: Public Health England[11]

2.5 Breastfeeding

Since 2012/13, breastfeeding initiation in Nottingham appears to be increasing (figure 5), although it continues to be significantly lower than the England average (71.1% compared to 74.3% in 2014/15). The gap between England and Nottingham however appears to be narrowing.

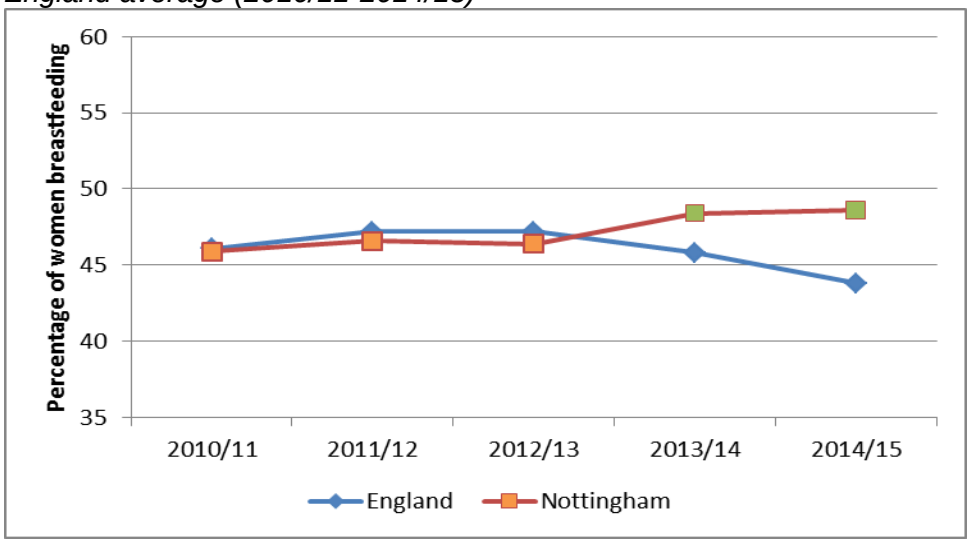
*Figure 5: Trend in Nottingham's **breastfeeding initiation** compared to England average (2010/11-2014/15)*



Source: Public Health Outcomes Framework data tool – 2015

Figure 6 shows that breastfeeding prevalence at 6-8 weeks was statistically similar to the England average from 2010/11 to 2012/13. There appears to be a relatively steep increase in prevalence from 2013/14. Nottingham's prevalence in 2014/15 (48.6%) is significantly higher than the England average (43.8%).

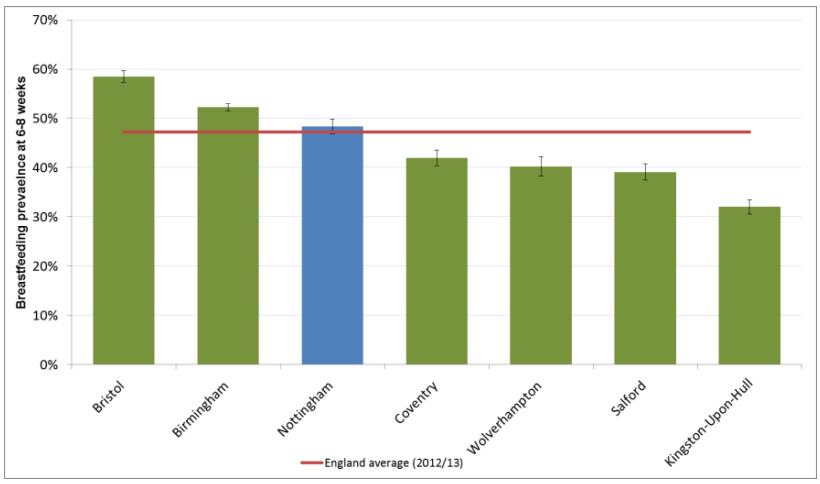
*Figure 6: Trend in Nottingham's breastfeeding prevalence at **6-8 weeks** compared to England average (2010/11-2014/15)*



Source: Public Health Outcomes Framework data tool – 2015

When compared to its statistical neighbours (where data is available), Nottingham has statistically lower breastfeeding prevalence than Bristol and Birmingham, yet statistically higher prevalence than Coventry, Wolverhampton, Salford and Kingston (figure 7).

Figure 7: Breastfeeding prevalence at 6-8 weeks in Nottingham compared to statistical neighbours and the England average (2013/14)

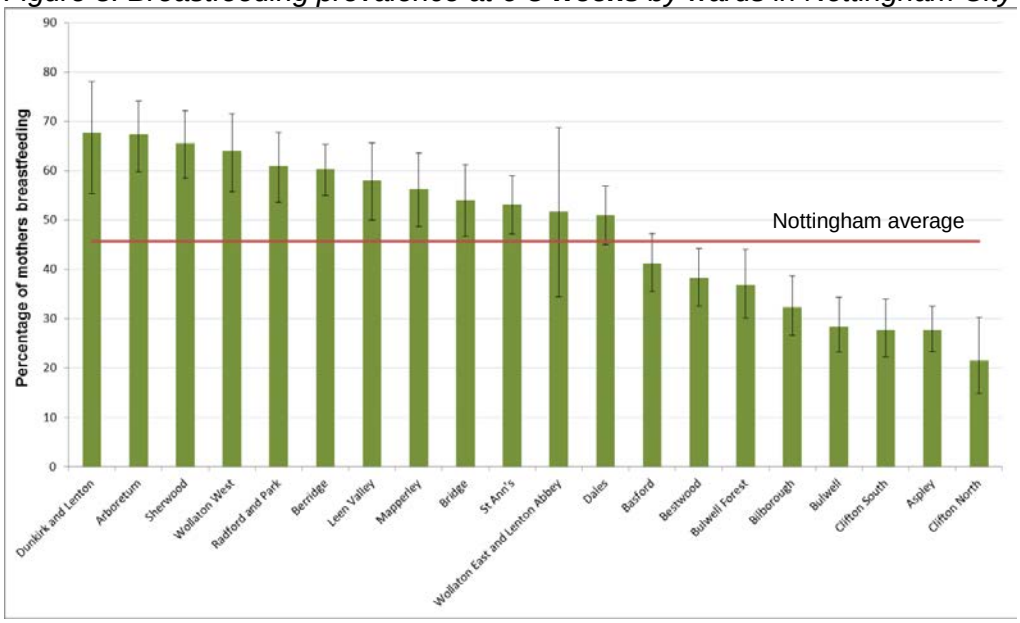


So, it appears that the percentage of Nottingham women who breastfeed at birth may be starting to increase and, those women who do breastfeed are more likely to breastfeed for longer. This improvement in local breastfeeding rates is likely to be due to developments in the breastfeeding peer support service and the achievement of Baby Friendly Initiative in Maternity and Community Health services. However, underlying overall breastfeeding rates there is considerable variability between different groups and geographic areas in Nottingham:

Geographic areas

The geographic distribution of 6-8 week breastfeeding prevalence varies between 21.5% in Clifton North and 67.7% in Dunkirk and Lenton (figure 8). Seven wards have rates which are significantly lower than the City average value (Clifton North, Aspley, Clifton South, Bulwell, Bilborough, Bulwell Forest and Bestwood).

*Figure 8: Breastfeeding prevalence at **6-8 weeks** by wards in Nottingham City 2012/13*



Source: NHS Nottingham City Information Team: Breastfeeding data 2012/13

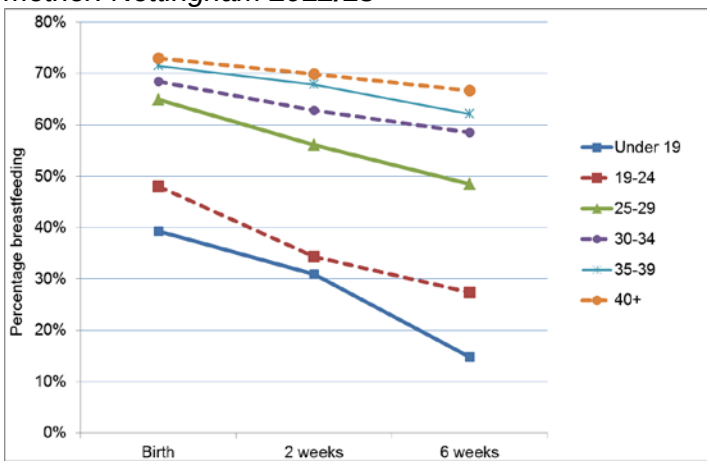
Age of mother

Logistic regression analysis of Nottingham's infant feeding data (Apr 2009 – Sep 2013) showed that the strongest factor *independently* associated with breastfeeding initiation in Nottingham is **maternal age**:

- Mothers aged 30+ are six times more likely to breastfeed than those aged less than 19 years.
- 25-29 years olds are almost four times more likely to breastfeed than the youngest group.

When comparing Nottingham's breastfeeding prevalence data by maternal age in 2012/13 with that of 2008/09, it appears that the age inequality gap between the youngest and oldest mothers has narrowed with the largest improvement in rates seen in mothers aged under 19 years. Despite this improvement, there remains a substantial gap between those aged under and over 25 years of age (figures 9).

*Figure 9: Percentage of mothers who breastfed at different times after birth by age of the mother: Nottingham **2012/13***



Source: Nottingham City Public Health Information Team

Ethnicity and deprivation

Maternal ethnicity and level of deprivation were also independently associated with breastfeeding in Nottingham, although their influence is not as strong as maternal age. Mothers in White ethnic groups are less likely to breastfeed than those in the Asian and Black ethnic groups (68% and 44% less likely respectively) and mothers living in the least deprived quintile of Nottingham are more than two times more likely to breastfeed than those living in the most deprived quintile.

2.7 Attachment

Based on the estimate that one in three children will have insecure attachment to at least one parent, it can be estimated that there are approximately 6,900 0-4 year olds with insecure attachment in Nottingham. This is likely to be an underestimation due to the high levels of social issues including poverty, children in care, domestic abuse and maternal mental health issues. The implications of this on school readiness, learning and academic success, behaviour and emotional health and well-being are significant.

2.8 Developmental milestones

In 2015, 58% of Nottingham's children achieved a good level of development by the age of 5 years, statistically lower than the England average (66.3%). This translates to approximately 1,560 reception children not reaching a good level of development. There was a similar gender gap to that seen nationally in that 66.3% of Nottingham's girls achieved a good level

of development compared to 50% of boys (16.2% point gap).

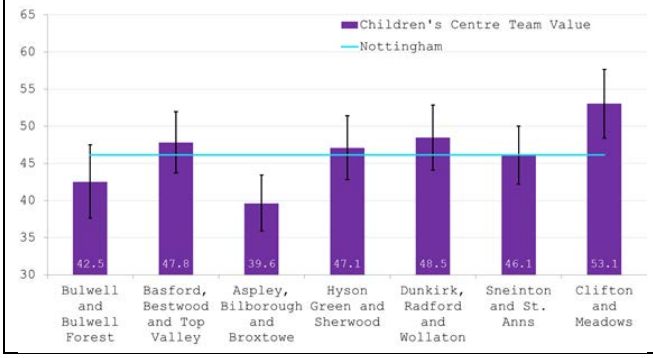
The percentage of children achieving the expected level across all the learning goals in each area of learning is lower in Nottingham than the England average with the exception of communication and language; there was a 9% point increase in this area on the previous year (table 2). The areas of learning in which the lowest percentage of children achieved at least the expected level were literacy and mathematics (57% and 69% respectively); although these also increased on the previous year. Overall, it appears that progress is being made in terms of the percentage of children achieving expected learning goals; however, Nottingham remains significantly lower than the England average in the majority of learning areas and there remains a significant gender gap.

***Table 2** – Percentage of Nottingham children at age 5 achieving at least expected across all learning goals in each learning area compared to England average (2014 and 2015)*[53]

Area of Learning	Nottingham City average **2013/14**	Nottingham City average **2014/15**	National Average **(2014/15)**
Prime areas	% achieving at least expected across all learning goals in area		
Communication and Language	68%	77%	76%
Personal, Social and Emotional Development	81%	80%	84%
Physical Development	75%	85%	87%
Specific areas			
Literacy	52%	57%	70%
Mathematics	61%	69%	76%
Understanding the world	70%	76%	82%
Expressive arts and design	74%	81%	85%

There are also variations across the city; Aspley, Bilborough and Broxtowe Children's Centre area had the lowest proportion of children achieving a good level of development in 2013/14 (39.6%) and Clifton and Meadows had the highest proportion (53.1%).

Figure 10: Percentage of children achieving a good level of development at age 5 (2013/14)

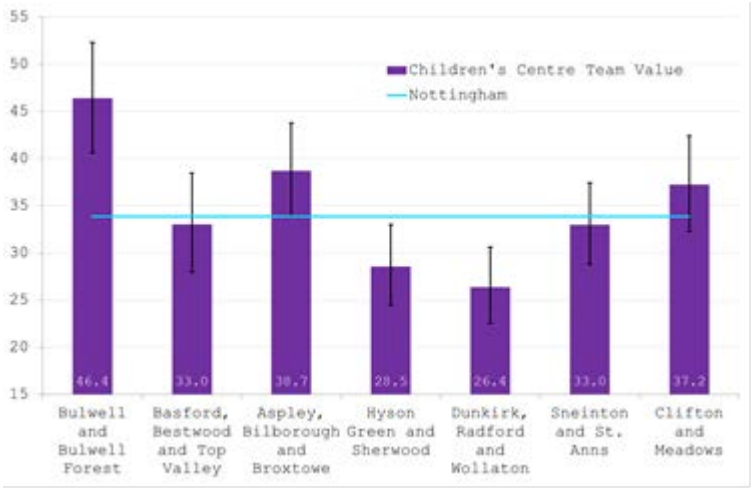


2.9 Parental health

According to the Nottingham Citizen Survey (2014), 46% of Nottingham's parents with dependent children are overweight or obese[54]. Due to the important influence of parental obesity on the risk of child obesity, this is an important consideration locally.

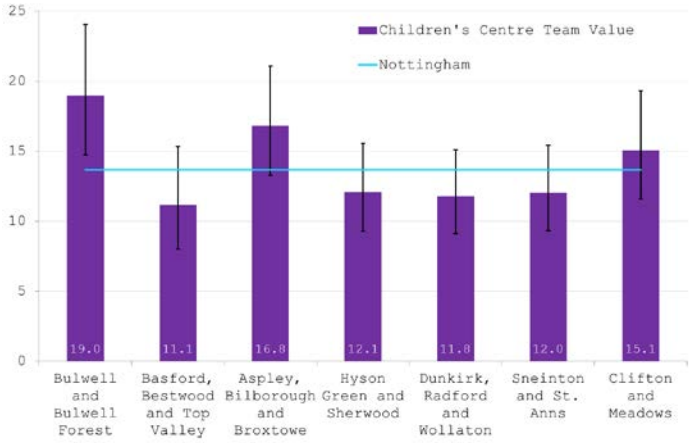
More than a third (34%) of residents with dependent children smoke, potentially placing a significant amount of young children at risk of poor health and developmental outcomes. There appears to be variation in parental smoking prevalence across Children's Centre areas (figure x). Bulwell and Bulwell Forest has the highest prevalence (46.4%) and Dunkirk, Radford and Wollaton the lowest prevalence (26.4%) (figure 11).

Figure 11: Of the residents with children, the percentage who smoke (2014)



It is estimated that 14% of Nottingham residents with dependent children have poor mental health putting children at risk of poor attachment and consequent poor cognitive, developmental and social and emotional health outcomes. Variation across Children's Centre areas mirrors that of parental smoking in that Bulwell and Bulwell Forest appear to have the highest prevalence of poor mental health (19%). Basford, Bestwood and Top Valley has the lowest prevalence (11.1%) (figure 12).

Figure 12: Of the residents with children, the % that have poor mental health



Based on the WHO estimate for FASD, it can be assumed that approximately 210 0-4 year olds in Nottingham are affected by FASD. This is likely to be an underestimation due to the higher proportion of looked after children and higher levels of alcohol use in the City.

Data on maternal alcohol consumption during pregnancy is collected by midwifery. However this is not recorded in a way which enables it to be transferred to health visiting and other services; this hinders the identification and follow-up of children who have been exposed to alcohol during pregnancy.

3) Targets and performance

Nottingham Children's and Young People's Plan (CYPP) (2015/16)
There are many objectives and priorities within the Nottingham CYPP which relate to this chapter. The key ones are:

'Promoting the health and wellbeing of babies, children and young people':

- % of women reporting smoking at the time of delivery
- % of mothers who breastfeed their babies 6-8 weeks after delivery
- Rate of infant mortality per 1,000 live births (aged under 1 year)
- % of eligible children who have received 3 doses of Dtap/IPV/Hib vaccine by their first birthday

'*Supporting achievement and academic attainment':*

- % of eligible 2 year olds accessing free nursery provision
- % of children achieve a good level of development in their Early Years Foundation Stage Profile in the following areas of learning: Communication and language, Physical development, Personal, social and emotional development, Literacy and Maths.

'*Empowering families to be strong and achieve economic wellbeing':*

- The proportion of children living in poverty (locally defined as those who live in households dependent on out-of-work benefits

Public Health Outcomes Framework (PHOF) 2013-2016
There are indicators in the PHOF related to 0-5 year olds as shown in table 3.

Table 3: PHOF indicators related to 0-5s, and current performance compared to England

Domain	Indicator	Current performance	England average	Comparison
Wider determinants of health	Domestic abuse (2013/14)	22.3 per 1000	19.4 per 1000	This is not compared for statistical differences due to data quality
	Children living in poverty (aged under 16 years) (2012)	33.7 %	19.2%	Statistically higher
	Children achieving a good level of development at age 5 (2015)	58.0%	66.3%	Statistically lower
	Children with free school meal status achieving a good level of development at age 5 (2014)	37.2%	44.8%	Statistically lower
Health improvement	Smoking status at time of delivery (2013/14)	18.5%	12%	Statistically higher
	Under 18 conception rate	37.5 per	24.3 per	Statistically

	(2013)	1000 (age 15-17)	1000 (age 15-17)	higher
	Low birth weight of term babies (2014)	3.1%	2.9%	Similar
	Breastfeeding initiation (2014/15)	71.1%	74.3%	Statistically lower
	Breastfeeding at 6-8 weeks (2014/15)	48.6%	43.8%	Statistically higher
	MMR vaccination by age 2	91.7%	92.7%	Exceeds target
	Diphtheria, tetanus, polio, pertussis, Hib immunisations by age 2	96.2%	96.1%	Exceeds target
Healthcare and preventing premature mortality	Infant mortality (2011/13)	5.2 per 1000 live births	4.0 per 1000 live births	Statistically higher

NHS Outcomes Framework 2015/16
Indicators related to 0-5s in the NHS Outcomes Framework include:

- Preventing people from dying prematurely domain:
  - Infant mortality
  - Neonatal mortality and stillbirths
  - Five year survival from all cancers in children

- Helping people to recover from episodes of ill health or following injury:
  - Emergency admissions for children with lower respiratory tract infections

- Ensuring that people have a positive experience of care domain:
  - Improving children and young people's experience of healthcare

- Treating and caring for people in a safe environment and protecting them from avoidable harm:
  - Improving the safety of maternity services - Admission of full-term babies to neonatal care
  - Delivering safe care to children in acute settings -Incidence of harm to children due to 'failure to monitor'

CCG Outcomes Framework 2015/16
The outcomes framework for CCGs had eight indicators relating to 0-5 year olds in 2015/16[55].

Table 4: CCG indicators related to 0-5s, and current performance compared to England

Domain	Indicator	Current performance	England average	Comparison
Preventing people from dying prematurely	Neonatal mortality and still births	7.7 per 1000 births	7.3 per 1000 births	Statistically higher
	Maternal smoking at delivery	18.5%	12%	Statistically higher

	Low birth weight of term babies	3.1%	2.9%	Similar
	Breastfeeding prevalence at 6-8 weeks	48.6%	43.8%	Statistically higher
Helping people to recover from periods of ill-health or following injury	Emergency admissions for children with lower respiratory tract infections	392 per 100,000	394.9 per 100,000	Similar
Ensuring that people have a positive experience of care	Improving children and young people's experience of healthcare	No measure at present	No measure at present	NA
Treating and caring for people in a safe environment and protecting them from harm	Admission of full term babies to neonatal care	No data	6.1%	No comparison made
	Delivering safe care to children in acute settings	No measure at present	No measure at present	NA

Social Care Outcomes Framework
The social care outcomes framework does not contain any specific indicators relating to under-fives.

4) Current activity, service provision and assets

4.1 Strategic Leadership

Nottingham City Council, Nottingham City CCG and NHS England are currently undertaking a Strategic Child Development Review (CDR) which aims to make recommendations to inform the development of an integrated and evidence-based child development offer for universal and early help services and approaches that will support health, social and educational outcomes for pregnant women, babies, children and young people and their families in Nottingham within the resources available. The CDR Governance Group oversees this process.

Services for 0-5 Year olds are commissioned by a range of organisations including NHS England, Nottingham City CCG and Nottingham City Council.

4.1 Maternity services

Maternity services in Nottingham are commissioned by Nottingham City CCG and provided by Nottingham University Hospitals NHS Trust (NUH) and include community midwifery services, obstetric care, and manage the whole pathway of antenatal, intrapartum and postnatal care, and also foetal and perinatal medicine. More detailed information can be found in the Pregnancy JSNA chapter. Access to Midwifery services by 12 weeks gestation is critical to ensuring the best outcomes for pregnant women and their babies and ensuring the best antenatal care can be delivered.

The Community Midwifery service provides four postnatal contacts with the mother (within 36 hrs, 72 hours, between 5-8 days and between 10-28 days), and 10-28 days is the point of handover to Health Visitor service following a birth depending on any on-going needs of the

mother and/or the baby.

The midwife conducts a comprehensive health and social care risk assessment for mother and baby and refers to services as required (e.g. Early Help services, safeguarding). Other interventions include:

- Follow up of BCG if required.
- Referral of all breastfeeding mothers to peer support.
- New-born infant physical examination (NIPE)
- New-born hearing screening
- New-born blood spot test
- Reassess physical and emotional needs:
    - Continence
    - Sexual Health
    - Emotional Health
    - Nutrition
    - Health and Safety
    - Social needs
    - Health Promotion
    - Infant weight

Safe sleeping practices

A Safe Sleeping strategy is being developed across Nottingham and Nottinghamshire to ensure standardised information and training is available to multiple agencies involved with parents/carers utilising the Lullaby Trust[f] evidence based work.

4.2 Community services for children with disabilities or complex health needs: Community Paediatrics

Nottingham City CCG is responsible for commissioning health services for children with disabilities and complex health needs. It commissions a range of services most of which are delivered in community settings, including in health centres, school settings and special schools.

Since September 2014, Clinical Commissioning Groups in England became subject to new statutory duties in regards to children and young people with special educational needs and disability, under the Children and Families Act 2014 (CFA 2014). The implications of the reforms for services and commissioners are wide ranging and cross-cutting to health, social care and education and require a more joined up approach to planning, commissioning and integrated assessment and service delivery.

Community Paediatrics

This service is commissioned by Nottingham City CCG and provided by Nottingham University Hospitals (NUH). The service provides a consultant led community based paediatric service for children and young people under the age of 19 who are vulnerable due to disease, disability and/or disadvantage. General community paediatric assessment, diagnosis, treatment and follow up of children identified as in need of the service. This may be for a range of conditions including:

Common clinical paediatric problems

E.g. head size shape, headache, funny turns, recurrent abdominal pain, soiling and constipation limp and gait problems, growth

[f] The Lullaby Trust is the leading charity working to provide specialist support for bereaved families, promote expert advice on safer sleep and raise awareness on sudden infant death.

Development concerns
E.g. motor delay, communication difficulties, activity concerns.
Pathways being written regarding ASD and ADHD

Chronic illness / disability
E.g. Down's, neurodisabling conditions or conditions that require a health care plan for school and community settings

The Community Paediatrician service is for any child with an identified need for the service from age 0-19. Data on referrals and access to these services of children aged 0-5 years is not currently reported.

4.3 Community services for children with disabilities or complex health needs : Therapy services

Therapy services are commissioned by Nottingham City CCG and provided by Health Partnerships.

Paediatric Speech and Language Therapy (SLT) Service
The SLT service supports children with targeted needs in speech, language and communication, and swallowing difficulties (Dysphagia). The service delivers interventions based on assessment of an individual's need in conjunction with environmental factors and requirements associated with the most appropriate agent of change e.g. parent, support worker, school staff, to improve or maintain speech language and communication skills, and facilitate safe swallowing.

Paediatric physiotherapy
The core purpose of the Paediatric Physiotherapy Service is to ensure the child/young person reaches their maximum physical potential. The service provides physiotherapy intervention through assessment, treatment, management, education and evaluation for children and young people who have disorders of movement and posture, disabilities or illness which may be improved or controlled by therapeutic skills and use of specialist equipment.

Occupational therapy
The core purpose of the Paediatric Occupational Therapy Service is to facilitate the child/young person to reach their maximum functional potential. The service provides an evidence based integrated service that anticipates and responds to the needs of specific at risk groups of children and young people aged 0-18 who have disabilities or disorders of movement or function which may be improved or controlled by therapeutic input and use of equipment. The service is provided within an integrated multi-disciplinary team approach with physiotherapists and working with the paediatric team, Speech and Language Therapists, Health Visitors, School Nurses, GP's, Education and Social Care and other specialist children's services.

The therapy services are for any child with an identified need for the service age 0-19. Data on referrals and access to these services of children aged 0-5 years is not currently reported

4.4 Pathway for Children and Young People with Behavioural, Emotional or Mental Health

Nottingham City Clinical Commissioning Group has implemented a pathway for Nottingham City to support children and young people with behavioural, emotional or mental health

needs and their parents/carers. The pathway is to facilitate early intervention approaches, appropriate and timely multi-disciplinary assessment and diagnosis of behavioural, emotional or mental health needs wellbeing needs (if clinically indicated) and ensure on-going care planning and support for the children and young people and family/carers including inter-agency packages of care. It coordinates involvement between different agencies and promotes partnership working with parents/carers and children and young people.

The pathway is set up (this includes but not limited to) to develop and improve services for target groups for children and young people with autism and ADHD, decrease the number of children, young people and families affected by behavioural problems, decrease the number of children and young people going on to develop mental health problems in adulthood and increase the number of parents and carers who feel well equipped to have a positive influence on their children's behaviour.

The service is available to parents or carers of a child/young person aged 0-24 and children and young people aged 0-24 who are registered with a Nottingham City GP. It is anticipated that children and young people 19-24 will be supported where they have special educational needs or learning disabilities and may be supported in some circumstances where they do not meet the threshold for adult mental health services.

4.5 NHS new-born screening programme

All babies are offered screening tests in their first six to eight weeks and a 95% coverage rate is recommended. These include:

- newborn and infant physical examination (NIPE)
- newborn hearing screening
- newborn blood spot (heel prick) screening

Newborn and infant physical examination (NIPE)

NIPE screens newborn babies within 72 hours of birth, and then once again between 6 to 8 weeks for conditions relating to their heart, hips, eyes and testes. The 6 to 8 week screen is necessary as some conditions appear later in a child's development.

Newborn hearing screening

The NHS newborn hearing screening programme (NHSP) aims to identify moderate, severe and profound deafness and hearing impairment in newborn babies. The programme offers all parents in England the opportunity to have their baby's hearing tested shortly after birth (within 4-5 weeks).Early identification of hearing impairment gives children a better chance of developing speech and language skills, and of making the most of social and emotional interaction from an early age.

Newborn blood spot screening

The newborn blood spot test involves taking a small sample of blood to screen it for nine rare conditions that can lead to serious illness, development problems and even death. This test is carried out by the midwife at around five days of age. The test screens for:

- sickle cell disease (SCD)
- cystic fibrosis (CF)
- congenital hypothyroidism (CHT)
- inherited metabolic diseases (IMDs). These are genetic diseases that affect the metabolism.
- phenylketonuria (PKU)
- medium-chain acyl-CoA dehydrogenase deficiency (MCADD)
- maple syrup urine disease (MSUD)
- isovalericacidaemia (IVA)

- glutaric aciduria type 1 (GA1)
- homocystinuria (HCU)

During 2014/15, 98.7% of infants in Nottingham received hearing screening within 4 weeks of birth which is above the acceptable coverage and slightly higher than the England average (98.0%). However, coverage for the newborn bloodspot screening did not meet the 95% target; 91% of babies were screened within the recommended timeline compared to 95.8% nationally[56]. Reasons for this are unknown. Local data on NIPE coverage is not available; nationally 93% of eligible babies received the NIPE within 72 hours of birth which is below the recommended target.

4.6 National Immunisation programme

The schedule for the national immunisation programme can be found here: UK Childhood Immunisation Schedule. Currently the European Region of the World Health Organization (WHO) recommends that on a national basis at least 95% of children are immunised against diseases preventable by immunisation (specifically, diphtheria, tetanus, pertussis, polio, Hib, measles, mumps and rubella). The routine childhood immunisation programme for the UK includes these immunisations recommended by WHO, as well as a number of others as defined by Public Health England (PHE) in 'Immunisation against infectious diseases – the Green Book. In 2013-14, the introduction of influenza vaccination for healthy children began with vaccines offered to all children aged two and three years of age. In 2014-15 this was extended to also include all children aged four years of age. In addition, the rotavirus vaccination was introduced in July 2013.

GPs provide immunisations for children up to school age.

During 2014/15, Nottingham's immunisation coverage for MMR, Hib/MenC and PCV vaccinations by age 2 did not reach the national 95% target (90.8%) and was lower than the England average. Coverage for diphtheria, tetanus, polio, pertussis, Hib by age 2 exceeded the target (95.9%) and was similar to the England average (table 5). Data for quarters 1 and 2, 2015/16 show a further reduction in coverage for all immunisations by age 2.

Nottingham's immunisation coverage by age 5 was also below target for Diphtheria, Tetanus, Polio, Pertussis (86.7%), MMR -1st and 2nd dose (86.5%) and Hib/Men C (92.5%) (table 6). However, 95.1% of Children in Care had immunisations that were up to date by the age of 5.

Table 5: Percentage of children immunised by their 2nd birthday (2014/15)

	Diphtheria, Tetanus Polio Pertussis Hib (DTaP/IPV/Hib)	MMR (1st dose)	Hib/Men C	Pneumococcal Conjugate Vaccine (PCV)
England	95.7	92.3	92.1	92.2
Nottingham	**95.9**	**90.8**	**90.8**	**90.8**

Table 6: Percentage of children immunised by their 5th birthday (2014/15)

	Diphtheria Tetanus Polio Pertussis Hib (DTaP/IPV/Hib)	Diphtheria Tetanus, Polio, Pertussis	MMR (1st dose)	MMR (1st and 2nd dose)	Hib/Men C
England	95.6	88.5	94.4	88.6	92.4
Nottingham	**95.2**	**86.7**	**93.5**	**86.5**	**92.5**

4.7 Nottingham CityCare Partnership – Health visiting service

The HCP is an evidenced-based early intervention and prevention public health programme for children and families which is led by health visitors. The HCP's universal reach provides an invaluable opportunity to identify families that are in need of additional support and children who are at risk of poor outcomes.

The HCP (0-5) offers every family a programme of screening tests, immunisations, developmental reviews, and information and guidance to support parenting, health, social and educational outcomes. There are five mandated reviews that all families can expect under the universal level of service;

- Antenatal
- New birth
- 6 – 8 weeks
- 9 – 12 months
- 2 – 2 ½ years

Effective implementation of the HCP (0-5) leads to[g]:

• Strong parent–child attachment and positive parenting, resulting in better social and emotional wellbeing among children;
• Care that helps to keep children healthy and safe;
• Appropriate portion size, healthy eating and increased activity, leading to a reduction in obesity;
• Prevention of some serious and communicable diseases;
• Increased rates of initiation and continuation of breastfeeding;
• Readiness for school and improved learning;
• Early recognition of growth disorders and risk factors for obesity;
• Early detection of – and action to address – developmental delay, abnormalities and ill health, and concerns about safety;
• Identification of factors that could influence health and wellbeing in families; and
• Better short- and long-term outcomes for children who are at risk of social exclusion.

According to data in the Health Visitor dashboard for Q1-3 2015/16:

- 2,609 out of 3,292 eligible infants (79%) received a face-to-face New Birth Visit within 14 days from birth and a further 639 (19%) received this visit after 14 days.
- 2,970 (91%) infants received a 12 month review by the age of 15 months; 1,998 (65%) infants received a 12 month review by the age of 12 months.
- 2,934 (92%) of infants received a 2-2 ½ year review by the age of 2 ½ years; 99% of these reviews were conducted using ASQ 3.

[g] Department for Education and The Department of Health (2009). The Healthy Child Programme https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167998/Health_Child_Programme.pdf

The above universal offer plus the provision and co-ordination of tailored packages of additional care is provided to those families with additional or complex health or social needs, including maternal mental health & wellbeing, safeguarding issues, families at risk of poor outcomes and children with additional health needs.

Health visitors also provide an additional contact at 3-4 months which includes:

-Mental health assessment
-Support and information regarding parenting including local and national services
-Information on early help services and Family Information service
-Immunisation status check (3 and 4 mths)
-Baby growth assessment if required.

Healthy Start and Vitamin D

The Health Visiting service also coordinates the Vitamin D programme which aims to ensure that all families are informed of the importance of children taking the Healthy Start supplements. The service also coordinates the provision of free vitamins in community settings. Nottingham City Council provide additional funding so that there is universal provision of vitamins to all pregnant and breastfeeding mothers, all breastfed infants from 6 months until age 1 and children aged 1 to their 4th birthday if they belong to a high risk ethnic group (non-White). This is in addition to the groups eligible for free vitamins through the Department of Health Healthy Start programme (mothers aged under 18 and families in receipt of certain benefits and tax credits). Uptake is unknown.

4.8 Nottingham CityCare Partnership – Family Nurse Partnership (FNP)

The Family Nurse Partnership (FNP) is an integral part of local services forming the targeted, intensive end of the prevention and early intervention pathway in pregnancy and the first 2 years of life. FNP is a one-to-one programme of education and empowerment, commenced in Nottingham in 2008. Intensive nursing support to teenage parents (to promote bonding, support breastfeeding, signposting to wider social support for parenting and promotion of healthy lifestyles, longer term educational attainment and reduced crime levels) has been shown to improve life outcomes for both mother and child. FNP is available to Nottingham residents who are under 19 years of age having their first baby or for mothers under 20 years who have additional health or social problems.

The FNP in Nottingham City currently has 12 ½ full time equivalent (FTE) FNP practitioners who can each see around 25 clients: it is clear therefore that not all eligible women in Nottingham City can be seen on the programme. FNP currently reaches 40% of eligible women. Equity of access is unknown.

During the **first 3 quarters of 2015/16**:

- 255 clients were enrolled on the FNP programme.
- Over 2,300 visits occurred during the time period in addition to 740 telephone contacts.
- 50% of clients were recruited by 16 weeks gestation against a target of 60%.
- 57% of clients initiated breastfeeding, 22% were breastfeeding at 6 weeks and 15% at 6 months (against targets of 60%, 20% and 10% respectively).
- 6.8% of infants were born prematurely against a target of no more than 3.85%
- Only half of the FNP workforce is reported as being up to date with domestic violence

training.

- 29% of clients reported to be smokers[h] at the time of enrolment; this declined to 23% at 36 weeks gestation, yet increases to 36% at 6 weeks post-partum and 38% by 12 months post-partum.
- The proportion of infants not meeting developmental milestones in the five areas of development at 4 months (ASQ) are minimal (2.7% did not meet problem solving milestones and 1.4% did not meet fine motor milestones).
- 27 group FNP sessions were held with 128 individuals attending.

4.9 Breastfeeding support services

A range of breastfeeding interventions have been commissioned to improve breastfeeding initiation rates amongst all mothers and address key health inequalities across the city:

Baby Friendly Initiative (BFI) in Maternity and Community Health Services

BFI accredits maternity and community health care facilities that have implemented best practice for breastfeeding through implementation of evidenced based standards. Nottingham started this process in 2010 and in 2015 successfully achieved full accreditation in both maternity and community services. In 2011/12, BFI was embedded into mainstream midwifery and health visiting services to ensure sustainable implementation.

Breastfeeding peer support service

Nottingham CityCare Partnership launched a breastfeeding peer support programme in September 2012 across the City. This service is commissioned by Nottingham City Council and offers intensive one-one support for mothers aged less than 25 years by paid peer supporters, as well as group-based support provided by trained volunteers for all other mothers.

During 2014/15, 774 women aged less than 25 years accessed the targeted peer support service and 438 (57%) of these initiated breastfeeding, 373 (85% of those who initiated) were breastfeeding at 2 weeks and 285 (67%) were still breastfeeding at 6-8 weeks which exceeds the target set by commissioners of the service. A time series analysis found that since the targeted breastfeeding peer support service commenced, breastfeeding initiation and prevalence at 2 weeks has increased 0.6% points and 0.5% points respectively each month[57]. In addition, 337 group breastfeeding peer support sessions were provided with 1304 pregnant women/new mothers accessing them over the year.

Breastfeed: Be A Star campaign

This campaign uses a social marketing approach to celebrate mothers who breastfeed as 'Stars', and support them through the breastfeeding process, via a vibrant online community and comprehensive range of informative and practical materials. The campaign communicates with those mums who are currently least likely to breastfeed, as identified by Nottingham's Breastfeeding Strategy, with a focus on reaching those aged 16–24 from areas of deprivation. The campaign launched in October 2012. However it is felt that resources are not being routinely utilised by all services in contact with young pregnant women and new mothers.

4.10 Nottingham CityCare Partnership - New Leaf Smoking Cessation service

New Leaf is commissioned by Nottingham City Council. The service provides an evidence-based smoking cessation service for smokers (age >12 years old) wanting to quit. The service is focused on the needs of disadvantaged smokers and hard-to-reach groups including routine and manual workers, mental health patients, and pregnant mothers as well

[h] Smoked in the last 48 hours

as their families.

Community midwifery has an opt-out referral to New Leaf for all pregnant smokers and data suggest that this referral system is effective. However there are very few referrals from *hospital* midwives. Community Midwives are trained in smoking brief interventions and have their own Carbon Monoxide (CO) monitors; screening is part of scheduled care. However, hospital midwives have not received training and they do not have access to CO monitors. Therefore although hospital midwives ask the mother about her smoking status at the time of birth, this is not validated. Also, new mothers who report that they are a smoker are not likely to receive brief intervention or referral to smoking cessation services immediately following the birth.

Health visitors and FNP are trained in brief intervention as part of mandatory training. It is unknown how many referrals to New Leaf come specifically via Health visiting and FNP, however overall referrals from CityCare Partnership are low. It also appears that the number of referrals from Nottingham City Council Early Help services is low.

4.11 Nottingham City Council Early Help service

There are 18 Children's Centres consisting of six main hubs and 12 spoke sites across the city. The six teams consist of 10 Family Support Workers, one Early Support Specialist, six Community Family Support Managers, one Assistant Family Community Support Manager and one Early Learning Specialist per locality.

Children's Centre teams work with children under 5 and their families to provide both universal services and additional support around three main areas of focus:

1. Learning City
2. Healthy minds and relationships
3. Resilient children, families and communities

The Centres' offer includes 1:1 work with parents/carers and open-access groups such as stay and play which support parenting and child development. Targeted groups (referral only) deliver interventions addressing issues such as domestic abuse, parenting and attachment.

The number of under 5s registered at Children's Centres during 2014/15 was 14,784 (approximately 70% of the population). Current capacity makes it difficult for all Children's Centres to achieve initial reach figures which would translate into 'Good' under Ofsted inspection framework.

Healthy Children Centre standards

Nottingham City Council Healthy Schools team will be reinvigorating the Healthy Children's Centre standards based on the Healthy Schools Model.The Healthy Children's Centre Standard is a complete set of criteria, which each Children's Centre needs to fulfil in order to meet the standard. Each Children's Centre is supported to achieve best practice criteria within a number of core themes. The overall aim is to promote a whole centre/whole child approach to health. The Healthy Children's Centre Standard supports Children Centres in addressing national and local strategies and aims to provide a common language when relating current practices with policies and evidence-based research. Consultation with relevant health related partner agencies to scope out the proposed new standards is currently being undertaken.

4.12 Nottingham City Council Early Years team

The Early Years Team works within Access and Learning as part of the Children and Adults

Directorate. The Team's purpose is to support the Family Nottingham Plan, support the provision of funded places for 2, 3 and 4 year olds and deliver on the various statutory duties placed on the Local Authority by relevant early years legislation. The team supports schools and all early years settings including day nurseries, pre-schools, nursery schools and foundation stage provision in schools, academies, free and independent schools, out of school provision and childminders.

All three and four-year-olds and eligible 2 year olds are entitled to 15 hours of free early education a week across 38 weeks of the year. Eligibility criteria can be found here. During 2015:

- 59.6% of eligible two year olds participated in the Early Learning Programme (ELP)
- 100% of 3-4 year olds participated in Nursery Education Funding[i] (NEF) [58]

Providers of early education are either part of the state education system (Local Authority Maintained) or run by private, voluntary or independent sector organisations (PVI)

NEF (3 and 4 year olds)

There are sufficient early education places for 3 and 4 year olds as demonstrated by the maximum percentage take-up across the city. The Local Authority continues to assess sufficiency on an annual basis and the Early Years team are responsive to any sufficiency issues which may arise, including the quality of early years provision.

ELP (2 year olds)

In Nottingham City it is estimated there will be approximately 2,690 2 year olds entitled to a funded place per annum. The Early Years team report that there are sufficient ELP places across the city to meet need. Aspley, Bilborough and Clifton South have sufficiency pressures but these are being addressed by new and expanding provision during 2016.

During 2015, there was wide variation in ELP participation across Children's Centre areas from 42% in Dunkirk and 44.3% in Clifton accessing the Early Learning Programme to 82.6% in Bulwell Forest. The Early Years team in partnership with the Early Help team have conducted a Drill Down project to better understand the factors affecting take-up (positive and negative). This has led to a number of recommendations for action which are being implemented across the city; it is expected that the impact of these actions will start to emerge during 2016.

A large number of families continue to access the Families Information Service in order to confirm their eligibility however not all of these families go on to participate in the ELP. Efforts have been focused on improving strategies to keep in contact with eligible families in order to unblock any barriers they may face to secure and access early years provision.

Integrated 2-2 ½ year review

From September 2015, local authorities, health visiting services and early years providers are expected to bring together health and early education reviews for young children at the age of two to two-and-a-half. The integration of the existing health and education reviews at age two will help to identify problems and offer effective early intervention for those children who need more support, at an age where interventions can be more effective than they would be for an older child. A local partnership group is currently shaping the Nottingham approach to the Integrated 2 Year old Review. The approach has been tested and reviewed across the city and local guidance is being developed.

[i] Eligible 2 year olds are entitled to 15 hours of free early education a week across 38 weeks of the year.

Outside of the 2 year review, it is expected that if a childcare provider or health visiting staff member identify concerns regarding the physical, social or emotional, speech and language development or wellbeing of a child under their care, they should gain parental consent to liaise with partner agencies. There is a significant opportunity for childcare providers to identify families and children who would benefit from additional support and services such as smoking cessation, domestic abuse, drugs and alcohol support, nutrition and so on. Training and clear pathways are lacking in some areas in order to maximise this opportunity.

4.13 Small Steps Big Changes (SSBC)

SSBC is a 10 year Lottery funded programme to improve the lives and life chances of children. The programme focuses on pregnancy and the first three years of life and targets four Nottingham Wards (Aspley, Bulwell, St Ann's and Arboretum). The programme has three developmental outcomes:

- Communication and language
- Nutrition
- Social and emotional development

SSBC is not a separate service; much of what is in the SSBC plan relies on the continuation of existing services, delivered through the existing workforce. Some of the interventions that will be additional or enhanced in SSBC wards include:

Baby Buddy is a free mobile phone app for parents and parents-to-be with personalised content that spans from conception right through to the first six months after birth. Designed for young parents, but used by parents of all ages, Baby Buddy is parents-to-be personal baby expert who guides them through their pregnancy and the first six months of their baby's life. SSBC is working with health and early years providers to populate the 'Bump Around' and 'Baby Around' section of the app which will help expectant families locate local groups, activities and services.

Family Nurse Partnership – SSBC will be funding the employment of two Family Nurses which will extend the offer of the FNP in the four wards to **all** eligible young parents.

Family Mentors will be a new and innovative 'peer workforce' in Nottingham who will deliver an innovative Home Visiting Programme (Small Steps at Home) for all new babies born in Aspley and Bulwell from 1 Sept 2015 (1 Sept 2016 in St Ann's and Arboretum). Visits will be weekly until the baby is 8 weeks old, every two weeks from 9 weeks to 6 months and then monthly. Visits will involve discussion and activities covering a range of topics on the 3 SSBC Child Development Outcomes (Communication and Language, Social & Emotional Development and Nutrition). Mentors work in partnership with existing health and early years services.

Family Mentors will also establish and run additional groups for the local community, delivering to these Child Development Outcomes and increasing community connection. An example would be 'Creative Cook & Eat' which will be practical cooking sessions around healthy foods for babies and children.

Triple P - Positive Parenting Program® is a system of evidence-based education and support for parents and caregivers of children. The system increases parenting skills and parenting confidence, by engaging, encouraging and empowering families to address common child emotional and behavioural problems. Through Family Mentors, Child Development Practitioners and existing workforces, SSBC will deliver a range of universal preventative Triple P interventions at different levels. This will include discussion groups, seminars and one off 8 week courses.

Infant Massage - is accepted as a way to engage parents and provides teaching

opportunities in relation to baby cues, parental self-awareness and regulation and parenting strategies. These classes are being offered to parents/carers of babies aged 8 weeks – 6 months. Training of facilitators is still ongoing; it is anticipated delivery will be at scale by 2017/18.

Imagination Library and related activities – Additional to existing book gifting (Book Start) Dolly Parton Imagination Library book gifting began to be offered to all new-borns from April 2015. This is offered universally through the Health Visiting teams in all four SSBC wards. Books are delivered to each registered child in their homes every month until their 5th birthday. Uptake of the offer is high.

4.14 Parenting programmes

There is a range of parenting programmes delivered by the Early Help Service in Children's Centres. These include Incredible Years, Solihull, 123 Magic, Webster Stratton, Be a Confident Parent, STEPS, Parent Survival Programme, Freedom, Positive Parenting and Triple P Levels 1 – 5. The type and level of provision is not consistent across the City.

4.15 Public Health Nutrition Team

Nottingham CityCare Partnership is commissioned by Nottingham City Council to provide a Public Health Nutrition service. One of the two elements is to focus on improving the diet and nutrition of children and young people. Qualified community food workers and nutritionists provide evidenced based community nutrition interventions such as:

- Tiny Cooks – a healthy cooking course for parents and pre-school children. Each session promotes key healthy eating messages and combines cooking, play and craft activities (6 sessions per course)
- Feeding a baby (practical session in parent and baby groups)
- Healthy eating and good nutrition for toddlers
- Summer parent and child healthy cooking programmes (e.g. Cook and Move, Tiny Cooks)
- One to one sessions for highly vulnerable families – a bespoke course for highly vulnerable families delivered in the individual's home where appropriate to promote healthy eating messages and advice.

The service is available to everyone but with a clear focus on those living on low income in deprived areas of the City and target groups at greatest need depending on the specific issue. In particular the service prioritises:

- Families living on low income in deprived areas of the City namely; Aspley, Bulwell, Arboretum & St. Ann's
- Target groups at greatest need, depending on the specific nutrition/health issue.
- Teenage and young parents.

The service performs well against targets.

4.16 The wider environment

The physical environment of families, and the social networks, facilities and institutions that surround them, can affect children directly or indirectly (via parents) and be supportive or harmful. For example, parks and playgrounds help encourage children to exercise and make friends, whereas pollution, violence and a lack of support and facilities can make raising young children harder and even threaten their development[1].

5) Evidence of what works

5.1 The Marmot Strategic Review of Health Inequalities[3]

The Marmot Review advises that the highest priority recommendation is to give every child the best start in life. As part of this priority Marmot recommends the following:

1. Reduce inequalities in the development of physical and emotional health and cognitive, linguistic and social skills
2. Ensure high quality maternity services, parenting programmes, childcare and early years education to meet need across the social gradient.
3. Build resilience and well-being of young children across the social gradient.

Below are the factors affecting child development which were most commonly supported as having impact on positive or negative child development:

- Maternal health
- Attachment in early childhood
- Socio-economic status/ situational risk factors
- Positive parenting

5.2 Healthy Child programme (DH 2009)

The Healthy Child Programme (HCP): Pregnancy and the first five years of life (2009), originally developed in 2004 was refreshed in 2009 by the Department of Health. This is aimed at commissioners in health and local authorities as well as providers of services. There is great emphasis on the development of integrated services led by health professionals. The universal element of the HCP programme is provided for all families and additional preventive elements (progressive HCP) for children with additional risk factors.

Healthy Child Programme Rapid Review[59]

The aim of this rapid review of the evidence was to synthesise relevant systematic review level evidence about 'what works' in key areas of public health for 0-5s, including pregnancy.

5.3 Early Years Foundation Stage Framework

Guidance on the standards that school and childcare providers must meet for the learning, development and care of children under 5 can be found here: early-years-foundation-stage-framework

5.4 Conception to age 2

'The age of opportunity, tackling the roots of disadvantage' by the Wave Trust emphasises the importance of the 0-2 period in creating solid psychological and neurological foundations to optimise lifelong social, emotional and physical health, and educational and economic achievement. Authors recommend that policy emphasis needs to shift to reflect, in particular, that:

- the nature of day-to-day relationship between the child and primary care giver is crucial;
- parental mental health (before and after birth) is a key determinant of the quality of that relationship, and of the ability to provide a number of other conditions for foetal and child development; it is also a key factor in safeguarding children from abuse and neglect;
- policy debates have not given enough emphasis to the impact of multiple risk factors on the likelihood of really poor outcomes for children. These factors impact both practical parenting and levels of secure attachment; and to take account of:

- the numerous evidence-based approaches already in use, which support either improved early relationships or perinatal mental health.

5.5 'Building Blocks' Randomised Controlled Trial[60]

The Department of Health commissioned the 'Building Blocks' Randomised Controlled Trial (RCT) from Cardiff University to provide independent evidence on the effectiveness of the FNP programme in improving short term outcomes for young parents and their babies. The trial began in 2009 and the findings which cover the period from pregnancy to the child's second birthday were published in October 2015. The study did not find any impact on the four primary outcomes (pre-natal tobacco use, birth weight, subsequent pregnancy by 24 months and A&E attendances and hospital admissions in first two years of life). However, there did appear to be an effect on some of the secondary outcomes; it appeared to improve early child development, particularly early language development at 24 months and may also help protect children from serious injury, abuse and neglect through early identification of safeguarding risks. There were also some small improvements in mothers' social support, relationship quality and self-efficacy. It is possible that the lack of effect on the four primary outcomes may be due to using age as a proxy measure for poverty; this may have resulted in a cohort who were less disadvantaged than in US trials, hence less impact. The greatest short-term effects seen in the US trials were amongst those with 'multiple risk factors or very little psychological resources'.

Another key consideration when thinking about the relevance of this study is that the group assigned to usual care (the control group) received on average an additional 8 visits from their Health Visitor than the FNP group. Therefore the control group actually received more than 'usual care' which likely diluted the intervention effect.

Therefore this study does not necessarily mean that FNP is not effective in impacting the primary outcomes, but there may need to be greater priority given to reaching the right clients (most vulnerable) in order to demonstrate impact and cost effectiveness. A follow up study funded by the National Institute of Health Research is underway examining child outcomes to age six and due to report in 2018. This will be invaluable in informing future development of FNP in the UK. In the meantime it would be beneficial to:

- Conduct a health equity audit to determine the extent that the service is meeting the most vulnerable mothers.
- Include further eligibility criteria around vulnerability into the service specification.
- Prioritise brief intervention and opt-out referral to smoking cessation services

5.6 NICE Guidance and Quality Standards

The following provide recommendations relevant to 0-5 year olds:

PH11	Maternal and child nutrition	2008
PH26	Quitting smoking in pregnancy and following childbirth	2010
PH27	Weight management before, during and after pregnancy	2010
CG45	Antenatal and postnatal mental health	2007
QS70	Nocturnal Enuresis	
PH40	Social and emotional wellbeing: early years	2012
PH28	Looked-after children and young people	2010
PH17	Physical activity for children and young people	2009

QS94	Obesity in children and young people: prevention and lifestyle weight management programmes	2015
CG37	Postnatal care up to 8 weeks after birth	2006
CG47	Feverish illness in children: assessment and initial management in children younger than 5 years	2007
CG89	Child maltreatment: when to suspect maltreatment in under 16s	2009
CG84	Diarrhoea and vomiting caused by gastroenteritis in under 5s: diagnosis and management	2009

6) What is on the horizon?

Projected service use and outcomes in 3-5 years and 5-10 years

Although the number of births is lower this year than last year, the number is likely to continue to be fairly high, which is reflected by a projected increase in the number of under 5s in both the short and medium term. Given the changes in ethnic groups between the 2001 and 2011 Census, and the younger age profile of BME groups in the City, the percentage of the 0-5 population in BME groups is likely to continue to rise.

Increasing levels of poverty are likely to have a detrimental impact on the health, social and developmental outcomes of the 0-5 population.

7) Local Views

The Early Years Team led an online School Readiness consultation in September 2014 to identify the priorities of our partners in ensuring children are ready for school. A questionnaire was used to gather views of Children's Centre Workers, Health Visitors, Primary Head Teachers, Foundation Staff in Schools, Childcare Practitioners, the Voluntary Sector and Parents/Carers. 54 (33%) respondents were parents/carers.

For parents and carers, '7 Essentials' for school readiness were identified:

- Communication skills
- Settles happily without parent or carer
- Follows instructions
- Independent self-help skills
- Relationships with other children and adults
- Ready to learn
- Understands acceptable behaviour

Whilst aspects of Physical Health and Development and Communication and Language Development were identified in these priorities, the majority of aspects identified as priorities were related to Personal, Social and Emotional Development.

The following recommendations were made following this consultation about school readiness:

- Identify mechanisms for ensuring that any development concerns are identified as early as possible (prior to starting school) so that the appropriate support and services can be put in place.
- Explore ways to nurture social and emotional development from the earliest stage for

example through perinatal and maternal mental health programmes.

- Ensure all early years providers refer onto the behavioural, emotional or mental health pathway if there are concerns about the child.
- Provide adequate level of evidence based parenting programmes to families of children under five.
- Expected developmental milestones and expectations of early years providers and schools should be communicated to all families.
- Explore ways to ensure effective communication between all early years providers.
- A flexible child-centred approach to supporting school readiness should be adopted in Nottingham which recognises the individual needs of children and families.
- Develop the early years workforce so that it is equipped with the skills to offer consistent evidence based interventions to support school readiness including the Healthy Child Programme and the EYFS.

In 2014, a focus group was facilitated with young women who had used the targeted breastfeeding peer support service. The key themes that came from the groups were:

- The **relationship** they formed with the peer supporter was very important. They felt comfortable with them and able to discuss issues openly and safely. The supporters were seen to be non-judgemental and like a friend:

  'They didn't make you feel bad for struggling'.

  'Prefer that it is not a medical professional. Peer supporter knows what they are talking about. Don't have to worry about what you are saying'.

- **Practical support** was very helpful such as how to latch on to the breast.
- **Face to face visits** were the preferred option but telephone contacts were also seen to be beneficial

  '*I knew when they were going to call – could think of what to ask them beforehand'.*

- The mums felt that the service had supported them to breastfeed and to breastfeed for longer, giving them encouragement and **confidence**.

  'They go the whole hog. Yesterday I thought I can't do it, but with the knowledge and support I know I can. The service has given me the encouragement and support to do it for longer – given me the confidence'.

  'Encouraged me to carry on. Being given the information on how breastfeeding is good for the both of us. Now I know everything, I can't take the best thing from him. Glad I had the information from them. Good to have reassurance to get past the hard bit. They offer that little bit extra'.

What does this tell us?

8) Unmet needs and service gaps

- The health and well-being of children in Nottingham is generally worse than the England average for 0-5 year olds.
- An increasing number of Nottingham's babies are being born to mothers born outside of the UK, who are some of the least likely to access maternal and health services.
- More than a third of Nottingham's children aged 0-4 years are living in low income families. Children are particularly susceptible to economic and social deprivation resulting in unfair inequalities in health that contribute to generational cycles of

deprivation.

- These inequalities mean delayed early development, lower educational achievement, lower aspirations and mental well-being and poorer health outcomes for many of the city's children, which continue into adulthood.
- Although the inequality gap in infant mortality between Nottingham and England is narrowing, Nottingham's rate of infants dying before their first birthday remains significantly higher than the England average.
- Local coverage is below the recommended target (of 95%) for several of the scheduled immunisations for 0-5s; this will be putting children at risk of infections that are most dangerous for the very young. Recent data appear to show that coverage is decreasing further.
- Babies of mothers aged under 20 are four time more likely to die of Sudden Unexplained Infant Death (SUDI) than those of mothers aged 20 and over and babies of mothers who smoke during pregnancy or smoke at home are five times more likely to die of SUDI. Nottingham's high rate of teenage conception and smoking in pregnancy may partly explain why Nottingham's rate of SUDI is significantly higher than the England average.
- During 2013, 360 babies (8.4% of all births) born to Nottingham mothers had a low birth weight.
- In 2014/15, the percentage of babies receiving their new-born bloodspot screening was below the national recommended target of 95%.
- Despite significant improvements in breastfeeding prevalence in Nottingham and narrowing of age related inequalities, there remains a substantial gap in breastfeeding rates between those aged under and over 25 years of age.
- Parental health and behaviours makes a significant contribution to the health and developmental outcomes of young children; this is an important consideration in Nottingham where there are high rates of adult alcohol consumption, smoking in pregnancy, obesity and poor mental health.
- It is estimated that 14% of Nottingham residents with dependent children have poor mental health putting children at risk of poor attachment and consequent poor cognitive, developmental and social and emotional health outcomes.
- More than a third of parents with dependent children in Nottingham smoke, placing a significant amount of young children at risk of poor health and developmental milestones.
- New mothers who report that they are smokers at the time of delivery are not routinely provided with brief intervention and referral to smoking cessation services by hospital midwifery services.
- There are limited referrals from early years services (health visiting, FNP, Early Help and other early years providers) of mothers who smoke to smoking cessation services.
- It is estimated that at least 210 under 5s in Nottingham are affected by Foetal Alcohol Syndrome (FASD).
- It is estimated that there are 6,900 under 5s in Nottingham with poor attachment to at least one parent. The implications of this on school readiness, learning and academic success, behaviour and emotional health and wellbeing are significant.
- In 2015, approximately 1,560 reception children in Nottingham did not reach a good level of development by age five and there is a significant gender gap with boys being less likely to meet expected levels than girls. Literacy and mathematics were the areas of learning in which the lowest percentage of children achieved at least the expected level.

- It is estimated that 50% of children in areas of deprivation start school with language delay; this equates to approximately 1,850 reception aged children in Nottingham per annum.
- Low interest by fathers in their children's education (particularly boys) has a stronger negative impact on their achievement than contact with the police, poverty, family type, social class, housing tenure and child's personality.
- There is wide variation in participation in the free nursery education for 2 year olds (Early Learning Programme) across the City.
- There is varied and inconsistent provision of parenting programmes across the City.
- Stretched capacity within Early Help services (60 family support workers to cover the city), coupled with high levels of need, make it challenging for Children's Centres to meet OFSTED requirements regarding reach.

9) Knowledge gaps

- A review of the new-born blood spot screening would be beneficial in identifying barriers to meeting the national coverage target.
- Due to the integral importance of attachment to child development, an understanding of factors (i.e. maternal age, ethnicity, level of deprivation) most strongly associated with positive attachment would be beneficial in informing strategies and interventions for promoting positive attachment. Data collected by health visitors and FNP regarding attachment could be analysed for this purpose.
- Further analysis is required to understand the reasons that some infants do not receive their mandated healthy child programme reviews (from health visiting) within the recommended timeline, including an exploration of equity of access.
- Healthy Start/Vitamin D uptake amongst pregnant women, breastfeeding mothers and young children is unknown.
- There is a lack of understanding about which groups of children are more or least likely to reach developmental milestones. Analysis and interpretation of local EYFS and ASQ data by factors such as gender, ethnicity and level of deprivation for each developmental milestone would be beneficial to help determine inequalities and develop priorities for targeted work.
- An understanding of the ethnic groups least likely to access the ELP for 2 year olds would help to inform strategies for improving uptake and reducing inequalities in access.

What should we do next?

10) Recommendations for consideration by commissioners

1. Maximise opportunities for greater partnership working to offer all children in Nottingham the best start in life and realise their full potential; integrated early years teams may help to build capacity reduce duplication.
2. Acknowledge the vital role that focusing on prevention and early intervention has to play in improving child health outcomes and breaking the cycle of health inequalities in Nottingham City.
3. Consider a local review in order to identify factors which might be responsible for Nottingham University Hospital's reported high rate of stillbirth, neonatal and extended perinatal mortality.
4. Ensure staff that has contact with families is aware of Sudden Infant Death prevention advice and share this in the antenatal and new-born period. This includes: always

placing a baby on its back to sleep; keeping a baby smoke free environment during pregnancy and after birth; placing a baby to sleep in a separate cot in the same room as the parents for the first 6 months; and breastfeeding the baby.

5. Focus SUDI prevention programmes on families most at risk, in particular those with social circumstances that expose infants to more risk and promote parental behaviour change.
6. Midwifery, Health Visiting, breastfeeding peer supporters and Early Help to provide information to all pregnant women and new mothers on housing quality and tenancy rights, undertake home quality assessments and refer to the Safer Homes team as required.
7. Midwives, Health Visitors/FNP and Early Help to undertake financial assessments with parents with children aged 0-5 and refer to Debt Advice services as required.
8. Health Visitors to assess health behaviours of new mothers and refer appropriately.
9. During the 6 to 8 week postnatal check, or during the follow-up appointment within the next 6 months, health visitors should provide clear, tailored, consistent, up-to-date and timely advice about how to lose weight safely after childbirth and refer to weight management services as required.
10. Explore ways to nurture social and emotional development from the earliest stage for example through perinatal and maternal mental health programmes.
11. Midwifery services to implement brief sensitivity-focused interventions (e.g. Mother-Infant Transaction Programme; Nursing Systems Towards Effective Parenting-Preterm; Guided Interaction) in improving maternal sensitivity in mothers of preterm infants.
12. Promote Kangaroo Mother Care (KMC) in low birth weight infants.
13. Midwifery services to validate 'smoking at time of delivery' data via carbon monoxide monitoring.
14. Extend the New Leaf smoking in pregnancy service to include the postnatal period.
15. Include parents of children as a key priority group within the New Leaf service specification and explore the introduction of an intensive tailored smoking cessation programme for families with children under 5 years.
16. Extend the 'opt-out' referral to smoking cessation services for pregnant smokers to include all smokers with children aged under 5 years through hospital midwifery, health visiting and Family Nurse Partnership
17. Continue to embed the Baby Friendly Initiative within health visiting/FNP and the Early Help service, including the universal and targeted provision of Breastfeeding Peer Support.
18. Ensure the co-ordination of Healthy Start/Vitamin D is incorporated into the Health Visiting Specification including universal provision for infants and children.
19. Health professionals should take particular care to check women are following advice to take a vitamin D supplement during pregnancy and while breastfeeding.
20. Pregnant women (and those intending to become pregnant) should be informed that dietary supplementation with folic acid, before conception and throughout the first 12 weeks, reduces the risk of having a baby with a neural tube defect.
21. Consider expansion of cook and eat sessions for families with toddlers and young children provided by the Public Health Nutrition Team through Nottingham City Council Early Help service.
22. Health Visiting service to actively promote the flu vaccine with families.

23. Identify a named professional in every health and social setting where children and families attend who is responsible and provides leadership for the local childhood immunisation programme e.g. GP surgeries, nurseries, schools, colleges of further education and children centres.
24. Commissioners of children's services in primary care, children's centres and immigration services should improve access to immunisation services for those with transport, language or communication difficulties, and those with physical or learning disabilities. For example, provide longer appointment times, walk-in vaccination clinics, services offering extended hours and mobile or outreach services. The latter might include home visits or vaccinations at children's centres
25. Ensure there is a mechanism to assess the risks of children and families for targeted vaccinations e.g. BCG and Hepatitis B.
26. The nature of the mother-baby relationship should be assessed, including verbal interaction, emotional sensitivity and physical care, at all postnatal contacts through midwifery, health visiting and FNP.
27. Explore the feasibility of using Video-feedback Intervention to promote Positive Parenting (VIPP) to improve parental sensitivity and secure attachment.
28. Continue the provision of infant massage with disadvantaged mothers and those with low level anxiety/depression whilst implementing a robust evaluation to include outcomes on attachment and maternal wellbeing.
29. Parents and key professionals need to have the knowledge and understanding of how to build social and emotional capability within children. Consider the implementation of 'attachment aware schools' and emotional coaching training for the early years workforce to support this.
30. Re-introduce the Leuven scale of wellbeing within early years settings.
31. Ensure there is a robust and systematic approach within Health Visiting to screen for domestic abuse within the perinatal period and refer to appropriate services.
32. Evaluate and develop the integrated 2 ½ year review with health visitors and early years providers.
33. Create and implement central data collection for the 2 ½ year integrated review.
34. Consider wider implementation of the Fathers Reading Every Day (FRED) programme through early years settings in line with SSBC, following a local evaluation.
35. Explore the opportunity of the 0-5 workforce to be trained in the Communication Trust evidence based competency framework in line with SSBC so that the early years workforce has strategies to support children with low level speech and language needs.
36. Raise awareness amongst parents/carers of expected developmental milestones.
37. Ensure all early years professionals (including the private, voluntary and independent (PVI) childcare sector) are aware of how to identify children who may need additional support around the 5 domains of the Early Years Foundation Stage (EYFS) and have knowledge of referral pathways (i.e. speech and language).
38. Evaluate and review the impact of enhanced book giving within Nottingham City (including Book Start, Dolly Parton Imagination Library).
39. Explore the opportunity for Midwives, Health Visitors, Early Years Providers and Early Help Teams to share language development messages at key developmental points using evidenced based resources such as Nottingham Natters Materials and training. Health Visitors to promote early language development and use of the Baby Buddy app

at the 3-4 month additional contact.

40. Explore ways to promote and enable parent-implemented language interventions for young children with language impairments.
41. Review pathways to speech and language support to ensure adequate and accessible service provision at a range of levels, from early intervention to more specialist support.
42. Continue to ensure the provision of good quality childcare for pre-school children promoting social, emotional and mental development.
43. Increase the percentage of eligible 2 year olds participating in the Early Learning Programme and address inequalities in access across the city by implementing the actions which were developed from the 'Drill Down Project'.
44. Explore the opportunity for the Early Help Service to contribute to children's health outcomes through 'every contact counts' with parents (smoking, healthy weight, alcohol, physical activity, drugs, oral health).
45. Ensure all early years providers are aware of referral processes onto the behavioural, emotional or mental health pathway if there are concerns about the child.
46. Provide an adequate level of evidence based parenting programmes to families of children under five; consider universal use of Triple P in line with Small Steps Big Changes (SSBC) through Nottingham City Council Early Help service.
47. Consider the evaluation of the New Forest Parenting Programme and implement more widely, if successful.
48. Explore the possibility of implementing a pilot of Family Foundations intervention.
49. Explore the contribution of Nottingham City Libraries towards School Readiness and how this can be optimised.
50. Health visitors to conduct a universal 'school readiness assessment' in the year prior to the child starting school; this would replace the universal 'school entrant health assessment' carried out by school nurses in Reception year. This earlier assessment will contribute to the identification of needs and the provision of necessary support prior to the child commencing school.
51. Develop a communication plan regarding what is meant by 'school ready' so that parents are aware of the expected development milestones and are knowledgeable about how to support their child in meeting them.
52. A flexible child-centred approach to supporting school readiness should be adopted in Nottingham which recognises the individual needs of children and families.
53. Increase co-ordination across planning and delivery of health, social and education services to support children and their families with Special Educational Needs and Disability (SEND), as required by the SEND reforms (Children and Families Act, 2014).
54. Expand and embed the role of specialist services to train universal services to support enabling early identification, early support and early intervention and prevention of problems (e.g. as in the Behavioural, Emotional, Mental Health pathway pilot).

Key contacts

Helene Denness, Consultant in Public Health, Nottingham City Council
helene.denness@nottinghamcity.gov.uk

Chris Wallbanks, Strategic Commissioning Manager (Children), Nottingham City Council.
chris.wallbanks@nottinghamcity.gov.uk

References

[1] The Social Research Centre at Dartington (2013). Better Evidence for a Better Start The 'science within': what matters for child outcomes in the early years. Available at: http://betterstart.dartington.org.uk/wp-content/uploads/2013/08/The-Science-Within.pdf. [Accessed 28.01.16]

[2]Wave Trust (2013).Conception to age 2– the age of opportunity. Available at:http://www.wavetrust.org/sites/default/files/reports/conception-to-age-2-full-report_0.pdf [Accessed 09/09/2015]

[3]The Marmot Review (2010) *Fair Society, Healthy Lives* London: The Marmot Review. Available at: http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review. [Accessed 28.01.16]

[4]NHS Choices (2015).Stillbirth. Available at: http://www.nhs.uk/conditions/Stillbirth/Pages/Definition.aspx. [Accessed 10/09/2015]

[5]UCL Institute of Health Equity (2015). Social Inequalities in the Leading Causes of Early Death: A Life Course Approach

[6]Tambe P, Sammons HM, Choonara I (2015). Why do young children die in the UK? A comparison with Sweden. Available at: http://adc.bmj.com/content/early/2015/08/19/archdischild-2014-308059.full.pdf+html. [Accessed 20.10.15]

[7]Public Health England (2015).London Child Safety Update – Sudden Unexpected Deaths in Infancy: Advice for people working with children, young people and families. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/431396/London_sudden_deaths_in_infancy_update_factsheet.pdf [Accessed 25.09.15]

[8]ONS (2015).Statistical bulletin: Unexplained Deaths in Infancy: England and Wales, 2013. Available at: http://www.ons.gov.uk/ons/rel/child-health/unexplained-deaths-in-infancy--england-and-wales/2013/stb-unexplained-deaths--2013.html. [Accessed 27.10.2015]

[9]LiuaX,Sunb Z, Neiderhiser JM, Uchiyamad M, Okawad M (2001). Low birth weight, developmental milestones, and behavioral problems in Chinese children and adolescents. *Psychiatry Research*. Available at: http://www.motoriek.nl/userfiles/file/laaggebgew_mijlpalen_gedragsprobl.pdf. [Accessed 25.09.15]

[10]Johnson, Rucker C., and Robert F. Schoeni.(2007). The Influence of Early-Life Events on Human Capital, Health Status, and Labor Market Outcomes Over the Life Course. PSC Research Report No. 07-616. Available at:http://www.psc.isr.umich.edu/pubs/pdf/rr07-616.pdf. [Accessed 25.09.15]

[11] Public Health England (2015). Public Health Outcomes framework data tool. Available at: http://www.phoutcomes.info/. [Accessed 18.09.15]

[12]National Child and Maternal Health Intelligence Network (2015).Demographic profile Nottingham. Available at: http://atlas.chimat.org.uk/IAS/profiles/profile?profileId=35&geoTypeId= [Accessed 26.10.15].

[13]World Health Organization.*Global Framework for Action for infant and young child feeding*. 2003. Geneva, Switzerland. Available from: http://www.who.int/nutrition/topics/global_Framework for Action/en/ [Accessed 9th August 2013]

[14]Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, Trikalinos T, Lau J.(2007) Breastfeeding and maternal and infant health outcomes in developed countries. http://www.ncbi.nlm.nih.gov/pubmed/17764214

[15]Horta B, Bahl R, Martines J, Victora C (2007). Evidence on the Long-Term Effects of Breastfeeding: Systematic Reviews and Meta-Analyses. Geneva: World Health Organisation. Available at: http://whqlibdoc.who.int/publications/2007/9789241595230_eng.pdf. [Accessed 26.11.2015].

[16]McCrory C and Layte R. (2011). The effect of breastfeeding on children's educational test scores at nine years of age: results of an Irish cohort study. *SocSci Med*, 72(9): 1515-21.

[17]Heikkilä K, Sacker A, Kelly Y, Renfrew MJ, Quigley MA. (2011). Breast feeding and child behaviour in the Millennium Cohort Study.*Archives of Disease in Childhood*. Available from: http://adc.bmj.com/content/early/2011/03/24/adc.2010.201970.full.pdf+html [accessed 16.11.12].

[18]UNICEF UK (2012). *Preventing disease and saving resources: the potential contribution of increasing breastfeeding rates in the UK.* Available from: http://www.unicef.org.uk/Documents/Baby_Friendly/Research/Preventing_disease_saving_resources.pdf?epslanguage=en .[Accessed 09.08.13].

[19] NHS England (2015). Statistical Release Breastfeeding Initiation & Breastfeeding Prevalence 6-8 weeks (Quarter 1 2015/16: September 2015). Available at: http://www.england.nhs.uk/statistics/statistical-work-areas/maternity-and-breastfeeding/ [Accessed 12.10.15]

[20]Health and Social Care Information Centre (2015).*NHS Immunisation Statistics: England 2014-1.* Available at: http://www.hscic.gov.uk/searchcatalogue?productid=18810&topics=1%2fPublic+health%2fHealth+protection&sort=Relevance&size=10&page=1#top*. [*Accessed 14.10.15]

[21]Public Health England (2015).UK immunisation schedule: the green book, chapter 11. Available at: https://www.gov.uk/government/publications/immunisation-schedule-the-green-book-chapter-11. [Accessed 14.10.15]

[22]The State of the World's Children. Children with disabilities. New York, USA:UNICEF, 2013.

[23]Siegel, D. (2012) *The Developing Mind: How relationships and the brain interact to shape who we are.* New York: Guildford Press.

[24]Commodari, E. (2013) Preschool teacher attachment, school readiness and risk of learning difficulties. *Early Childhood Research Quarterly* 28 (2013) 123– 133.

[25]Bergin, C. and Bergin, D. (2009) Attachment in the Classroom. *Educational Psychology Review,* 21, 141-170.

[26]Allen. G. (2011*). Early intervention: the next steps: an independent report to HM Government*. London: The Cabinet Office.

[27] Department of Education (2015). *Early Years Foundation Stage Profile results in England, 2015.* Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/467070/SFR_36-2015_Main_Text.pdf [Accessed 03.11.15]

[28] Blanden, J. (2006). 'Bucking the trend': What enables those who are disadvantaged in childhood to succeed later in life? *Working Paper No 31 Corporate Document Services*. London: Department for Work and Pensions

[29] The Communication Trust (2015). Universally Speaking; The ages and stages of children's communication development-From birth to 5 years. Available at: https://www.thecommunicationtrust.org.uk/media/363847/tct_univspeak_0-5.pdf. [Accessed 27.10.2015]

[30] Marylou Behnke, MD, Vincent C. Smith, MD, COMMITTEE ON SUBSTANCE ABUSE, and COMMITTEE ON FETUS AND NEWBORN (2013). TECHNICAL REPORT: Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus. *Pediatrics.* Available at: http://pediatrics.aappublications.org/content/pediatrics/131/3/e1009.full.pdf. [Accessed 06.11.2015]

[31] Health and Social Care Information Centre (2015). Statistics on Smoking England 2015 http://www.hscic.gov.uk/catalogue/PUB17526/stat-smok-eng-2015-rep.pdf

[32] Kristjansson EA, Fried PA, Watkinson B (1989). Maternal smoking during pregnancy affects children's vigilance performance. *Drug Alcohol Depend* 24(1):11–19

[33] Thapar A, Fowler T, Rice F, et al. (2003). Maternal smoking during pregnancy and attention deficit hyperactivity disorder symptoms in offspring. *Am J Psychiatry* 160(11): 1985–1989

[34] Fried PA, O'Connell CM, Watkinson B. (1992) 60- and 72-month follow-up of children prenatally exposed to marijuana, cigarettes, and alcohol: cognitive and language assessment. *J Dev Behav Pediatr* 13(6):383–391

[35] Mattson SN, Riley EP (1998). A review of the neurobehavioral deficits in children with fetal alcohol syndrome or prenatal exposure to alcohol. *Alcohol Clin Exp Res* 22(2):279–294

[36] Coggins TE, Timler GR, Olswang LB (2007). A state of double jeopardy: impact of prenatal alcohol exposure and adverse environments on the social communicative abilities of school-age children with fetal alcohol spectrum disorder. *Lang Speech Hear Serv Sch*. 38(2):117–127

[37] Nanson JL, Hiscock M (1990). Attention deficits in children exposed to alcohol prenatally. *Alcohol Clin Exp Res* 14(5):656–661

[38] Al. Streissguth AP, Sampson PD, Olson HC, et al. Maternal drinking during pregnancy: attention and short-term memory in 14-year-old offspring—a longitudinal prospective study.

[39] Mattson SN, Riley EP (1998). A review of the neurobehavioral deficits in children with fetal alcohol syndrome or prenatal exposure to alcohol. *Alcohol Clin Exp Res*. 22(2):279–294

[40] Sampson PD1, Streissguth AP, Bookstein FL, Little RE, Clarren SK, Dehaene P, Hanson JW, Graham JM Jr (1997) Incidence of fetal alcohol syndrome and prevalence of alcohol-related neurodevelopmental disorder. *Teratology*. 56(5):317-26. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9451756. [Accessed 10.12.15]

[41] The FASD Trust. http://www.fasdtrust.co.uk/cp5.php. [Accessed 10.12.15].

[42] National Children's Bureau (2015). Poor Beginnings: Health inequalities among young children across England. Available at: http://www.ncb.org.uk/media/1228318/ncb_poor_beginnings_report_final_for_web.pdf. [Accessed 28.01.16]

[43]Nottingham Insight. Estimated resident population mid-2014 by single year of age and sex.

[44]National Child and Maternal Health Intelligence Network (2015).Demographic profile Nottingham. Available at: http://atlas.chimat.org.uk/IAS/profiles/profile?profileId=35&geoTypeId= [Accessed 26.10.15].

[45] ONS (2015). Births by Parents Characteristics: England 2014. Available at: http://www.ons.gov.uk/ons/search/index.html?content-type=Publication&pubdateRangeType=allDates&sortBy=none&sortDirection=none&newquery=parents+country+of+birth&pageSize=50&applyFilters=true. [Accessed 28.01.16]

[46] Public Health England (2015). Child Health Profile (June 2015) Nottingham.

[47] Public Health England (2015).Stillbirth and Infant Mortality Profiles – Nottingham. Available at: http://atlas.chimat.org.uk/IAS/dataviews/report/fullpage?viewId=368&reportId=521&geoId=4&geoReportId=4597 [Accessed 04.11.2015]

[48]National Child and Maternal Health Intelligence Network (2015).Demographic profile Nottingham. Available at: http://atlas.chimat.org.uk/IAS/profiles/profile?profileId=35&geoTypeId= [Accessed 26.10.15].

[49]Public Health England (2015).Stillbirth and Infant Mortality Profiles – Nottingham. Available at: http://atlas.chimat.org.uk/IAS/dataviews/report/fullpage?viewId=368&reportId=521&geoId=4&geoReportId=4597 [Accessed 10.09.2015]

[50] MBRRACE-UK (2015) Perinatal Mortality Surveillance Report - UK Perinatal Deaths for births from January to December 2013 ; Supplementary Report UK Trusts and Health Boards. Available at: https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20-%20Perinatal%20Surveillance%20Report%202013%20-%20Supplementary.pdf. [Accessed 30.12.15]

[51]ONS (2015). Unexplained deaths in infancy. Available at: http://www.ons.gov.uk/ons/rel/child-health/unexplained-deaths-in-infancy--england-and-wales/index.html. [Accessed 28.01.16]

[52] Nottingham City Council (2015) 0-5 Years Area Profiles. Available at: http://www.nottinghaminsight.org.uk/f/123196/Library/Public-Health/0-5-Years-Area-Profiles-2014-15/ [Accessed 28.01.16]

[53] Department for Education (2015). Early years foundation stage profile results: 2014 to 2015. Available at: https://www.gov.uk/government/statistics/early-years-foundation-stage-profile-results-2014-to-2015. [Accessed 8.12.15]

[54] Nottingham City Council (2014). Nottingham Citizen survey results. Available at: http://www.nottinghaminsight.org.uk/insight/library/citizens-survey.aspx. [Accessed 28.01.16]

[55] NHS England 2015. Clinical Commissioning Group Outcome Indicator Set (CCG OIS). Available from: http://www.england.nhs.uk/ccg-ois/ [Accessed 13.05.2015]

[56] Public Health England (2015). NHS screening programmes: KPI reports 2014 to 2015. Available at: https://www.gov.uk/government/publications/nhs-screening-programmes-kpi-reports-2014-to-2015. [Accessed 12.11.2015]

[57] Scott S, Pritchard C, Szatkowski L (2016). The impact of breastfeeding peer support for mothers aged under 25: a time series analysis. *Maternal and Child Nutrition*; DOI: 10.1111/mcn.12241

[58] Nottingham City Council (2015). Early Years data

[59] Public Health England (2015). Rapid Review to Update Evidence for the Healthy Child Programme 0–5. Available at: https://www.gov.uk/government/publications/healthy-child-programme-rapid-review-to-update-evidence [Accessed 18.09.15]

[60] Robling M, Bekkers MJ, Bell K, Butler CC, Cannings-John R et al (2015). Effectiveness of a nurse-led intensive home-visitation programme for first-time teenage mothers (Building Blocks): a pragmatic randomised controlled trial. *The Lancet*. Available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)00392-X.pdf . [Accessed 21.12.15]