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Executive summary

Introduction

'The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens during these early years (starting in the womb) has lifelong effects on many aspects of health and well-being - from obesity, heart disease and mental health, to educational achievement and economic status'[1]

- *Michael Marmot*

In particular, the first 1001 days - from conception to the age of 2, are widely recognised as a critical period of development[2]. This is because the earliest experiences, starting in pregnancy, shape a baby's brain development: during the first two years of life the brain develops a remarkable capacity to absorb information, and adapt to its surroundings[3], and by 2 years of age the brain will be about 80% of its adult size[4].

Pregnancy is a critical period during which the physical and mental wellbeing of the mother can have lifelong impacts on the child. Maternal stress, diet and alcohol or drug misuse can place a child's future development at risk[5].

Loving, secure and reliable relationships with parents, together with the quality of the home learning environment, support a child's emotional wellbeing, brain development, language development, ability to learn, and capacity to develop and maintain good relationships with others[5].

This chapter explores the factors from conception to the age of 2, 'the critical 1001 days' that influence a child's development, helping us to identify which children will be at greater risk of poorer development, school readiness, and life chances.

A child's physical, social, emotional, and brain development from conception to the age of 2 is shaped by these key factors:

- good maternal mental health
- parent-infant interaction: sensitive and attuned parents
- secure attachment
- healthy pregnancies and the protection and promotion of health in infancy
- quality of the home learning environment

A parent's ability to support their child's health and development can be adversely affected by a range of issues, including:

- domestic abuse
- maternal stress
- level of income
- teenage parenthood
- their own adverse childhood experiences
- having multiple vulnerabilities or complex social needs

Unmet need and gaps

Unmet needs and service gaps are explored fully in section 2. Gaps and opportunities have been identified in relation to a number of key areas:

- maternal mental health, parent-infant interaction and attachment: there are opportunities to better identify and support women with mild to moderate mental health needs and those with parent-infant interaction difficulties

- healthy pregnancies and the promotion and protection of health in infancy: smoking in pregnancy rates are very high in some areas of the county, and breastfeeding rates low

- child development: some families decline 1- and 2-year development reviews, and some children are not achieving 'a good level of development' at 2

- families with multiple vulnerabilities: there are opportunities to strengthen pathways of care for these groups, and to improve information sharing

Recommendations for consideration by commissioners

Recommendations	**Lead organisation (s)**				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
System-wide:					
1. Recognising the importance of the first 1001 days in supporting child development, school readiness and the life-long impact on health, wellbeing and prosperity: • Prioritise the earlier identification of need and provision of evidence-based support for families in the 1001 days. Ensure interventions currently delivered reflect best available evidence. • Establish a multi-agency, strategic Best Start Group and accompanying strategy to ensure every child in Nottinghamshire has the best possible start in life, beginning in pregnancy and across their early years,	/				
2. Local Maternity Systems, public health leads, Healthy Family teams, children's centres services should work in close partnership to support health and wellbeing in pregnancy, with a specific focus on:	/	/	/	/	/

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
• Smoking in pregnancy: to reduce the proportion of women smoking in pregnancy in line with locally agreed trajectories • Breastfeeding: to increase the proportion of women breastfeeding at 6 to 8 weeks • Continuity of care: to increase opportunities for women to receive continuity of carer across maternity services, and to improve communication and handover of care between maternity services and Healthy Family teams • Information sharing and partnership working, including information technology • Maximising opportunities to improve health and wellbeing between pregnancies • Promoting and supporting early access to maternity care					
3. Review and strengthen pathways of care and partnership working for women with complex social needs or vulnerabilities.	/	/	/		
4. There are inequalities in outcomes across districts, most likely linked to levels of household income, which should be considered when planning and targeting services and interventions.	/			/	
5. Continue to recognise the skill and expertise of the early year's workforce and further invest in evidence-based training to support a wide range of professionals to recognise the importance of the 1001 days and to work to engage and support families collaboratively, building relationships based on trust.	/		/		
Health promotion:					
6. Ensure women are accessing maternity care early, ideally by 10 weeks, but usually by 12 weeks and 6 days.		/	/	/	

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
7. Radically improve the uptake of Healthy Start vitamins by pregnant women and infants from the age of 4 weeks.	/	/	/		
8. Develop pathways of care between maternity services, Healthy Family teams, children's entre services and the new integrated wellbeing service in relation to weight management, smoking cessation and alcohol use in pregnancy and infancy.	/	/	/	/	
9. Continue efforts to improve breastfeeding prevalence, focused on areas of the county with the lowest rates.	/	/	/		
10. Increase the awareness and uptake of vaccinations in pregnancy and early childhood.	/	/			/
Maternal, mental health, attachment and parent-infant interaction:					
11. Improve uptake of the antenatal review by better understanding the barriers to this.	/		/		
12. Ensure the actions identified to strengthen the pathway of care for women with perinatal mental health needs are implemented, including the implementation of a new assessment tool in maternity services, improved referral pathways to psychological therapy services and a rolling training programme.		/	/	/	
13. Develop clear and consistent universal messages about the importance of sensitive, attuned and face-to-face interactions from birth onwards	/				
14. Identify opportunities to assess parent-infant interaction in the first few weeks and consider how interventions to support this could be delivered. Please note: this recommendation may have significant resource implications, for further exploration.	/		/		
15. Support clinicians working in neo-natal units to identify maternal mental health needs.		/			

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
Child development:					
16. Support parents to develop good home learning environments from birth, targeted at at-risk groups such as families with low incomes / those living in areas of multiple deprivation. Consider developing clear and consistent universal messages about the importance of home learning, from birth.	/		/		/
17. Replicate the robust pathways from the 2 year review to sources of appropriate support e.g. children's centre programmes, for the antenatal, new birth, 6 to 8 week and 1 year reviews, and identify any gaps in appropriate support.	/		/		
18. Review, and wherever possible, implement the recommendations from PHE's pathway for children aged 0-5 with speech, language and communication needs, once published.	/				

Full JSNA report

What do we know?

1) Who is at risk and why?

1.1) The 1001 Days

'The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens during these early years (starting in the womb) has lifelong effects on many aspects of health and well-being - from obesity, heart disease and mental health, to educational achievement and economic status[1]*'*

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In particular the first 1001 days - from conception to the age of 2, are widely recognised as a critical period of development[2]. This is because the earliest experiences, starting in pregnancy, shape a baby's brain development: during the first two years of life the brain develops a remarkable capacity to absorb information, and adapt to its surroundings[3], and by 2 years of age the brain will be about 80% of its adult size[4].

Pregnancy is a critical period during which the physical and mental wellbeing of the mother can have lifelong impacts on the child. Maternal stress, diet and alcohol or drug misuse can place a child's future development at risk[5].

Loving, secure and reliable relationships with parents, together with the quality of the home learning environment, support a child's emotional wellbeing, brain development, language development, ability to learn, and capacity to develop and maintain good relationships with others[5].

Positive early experiences that support a child's physical, social and intellectual development, influence how ready children are to learn, how ready they are to start school, and will influence their life chances into adulthood[3]. This chapter explores the factors from conception to the age of 2, 'the critical 1001 days' that influence a child's development, helping us to identify which children will be at greater risk of poorer development, school readiness, and life chances.

A child's physical, social, emotional, and brain development from conception to the age of 2 is shaped by these key factors:

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A parent's ability to support their child's health and development can be adversely affected by a range of issues, including:

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- level of income

- teenage parenthood
- their own adverse childhood experiences
- having multiple vulnerabilities or complex social needs

1.2) Maternal mental health, parent-infant interaction and attachment

A women's mental health before and after the birth, attachment, and parent-infant interaction are intrinsically linked. Mental health issues can impact a mother's ability to bond with her baby and be sensitive and attuned to her baby's emotions and needs, and this in turn can affect the baby's ability to develop a secure attachment[3].

Mental health

Depressive symptoms are more prevalent during the weeks after childbirth than at any other point in women's lives[6]. Up to 20% of women will experience a mental health problem during pregnancy or within the first year after having a baby[7], however at least half of all mental health problems occurring in this time remain unrecognised or untreated.[6] This is partly due to a lack of recognition and awareness of mental ill health and its signs and symptoms, particularly amongst some black and ethnic minority groups. Across all cultures, some women are reluctant to disclose how they're feeling due to the stigma associated with mental health problems and fears that they may be judged to be an unfit mother[8].

Mental health problems can impact on a mother and her partner's ability to bond with their baby, to be sensitive and attuned to their emotions and needs[8] and can lead to less nurturing and less engaged parenting. Fathers can find the transition to parenthood challenging and may also need support for their mental health.[8]

Some women are at a higher risk of experiencing perinatal mental health problems, problems that occur within pregnancy or in the first year following the birth of a child. Risk factors include[8]:

- history of abuse in childhood
- previous history of mental illness
- being a teenage mother
- having a traumatic birth
- history of stillbirth or miscarriage
- relationship difficulties
- social isolation

Parent-infant interaction and sensitive and attuned parenting

Parenting behaviour and the quality of the parent-child relationship are strongly associated with children's outcomes. Effective, loving, authoritative and responsive parenting gives children confidence, a sense of wellbeing and self-worth, and stimulates brain development and the capacity to learn. In contrast negative or inconsistent discipline, lack of emotional warmth, and parental conflict all increase the risk of emotional and behavioural problems.[5]

From a baby's perspective, their environment is made up almost entirely of the relationships with their parents or carers. The quality of this environment influences the development of their brain and social behaviours in a way that forms a foundation for a child's future experiences, and the way they'll be equipped to respond to them[5].

Sensitive and attuned parenting has a significant influence on the baby's developing brain and is the foundation of attachment. If a parent is responsive to a baby's signals and 'takes turns' to communicate with them from birth onwards, babies develop a secure attachment to their parent[3].

Parent's ability to recognise and respond to their baby's individual cues also provides the foundation for future language development[2]. From birth, children's learning comes from their interaction with people and their environment, they need a natural flow of affectionate stimulating talk to support their cognitive and language development[5].

Attachment

The emotional bond between a parent and child is known as attachment. Attachment is described as either 'secure', where there is a feeling of confidence and trust in the relationship, or insecure, where the feeling of confidence and trust is reduced.

Secure attachment, established during the first two years of life, supports a child's development. It reassures a child that their needs will be met, which helps them regulate their emotions and supports resilience into adulthood[3].

Good quality relationships and secure attachment enable a growing brain to become socially efficient, providing a basis for good intellectual development. Where there are difficulties in the parent-child relationship, it's more likely there will be attachment difficulties and poorer future life chances[5].

In summary, attachment and good maternal mental health shape a child's later emotional, behavioural and intellectual development.

1.3) Healthy pregnancies and the protection and promotion of health in infancy

Supporting women's health in pregnancy is important for many reasons, including for the safe delivery of babies, to prevent adverse health outcomes, and to promote a good birth weight, important because premature and small babies are more likely to have poor outcomes[3].

Smoking

Smoking is associated with a range of serious infant health problems, including lower birth weight and perinatal mortality (the loss of a baby between 24 weeks gestation and 7 days after birth)[5].

Smoking is a huge cause of inequality in the health outcomes of mothers and children and is the biggest modifiable risk factor for poor outcomes at birth. Smoking in pregnancy can cause premature births and miscarriage. It also increases the risk of developing respiratory conditions, of still birth, of giving birth to a child with a congenital abnormality, gastrointestinal issues, some learning disabilities, and obesity[7].

Exposure to second-hand smoke during infancy is associated with a range of poor health outcomes for children, including Sudden Infant Death Syndrome (SIDS), increased respiratory tract infections, and asthma[6].

Substance and alcohol use

Maternal misuse of drugs during pregnancy increases the risk of low birth weight, premature delivery, perinatal mortality and sudden unexpected death in infancy (sometimes known as cot death)[5].

A number of risks are associated with drinking alcohol during pregnancy, including[5]:

- Increased risk of miscarriage
- Risk of Foetal Alcohol Syndrome (FAS), which can include poor growth for height and weight, a pattern of facial features and physical characteristics, and problems with the central nervous system
- Risk of Foetal Alcohol Spectrum Disorders (FASD), which develop at lower levels of drinking and have some characteristics of FAS
- Increased risk of learning disability

Parental drug dependence is generally associated with some degree of child neglect or emotional abuse as parents will have difficulty in organising their own or their children's lives, they may have difficulty meeting children's needs for safety and basic care and may be emotionally unavailable[5].

Healthy weight and nutrition

Obesity in pregnancy can compromise health in the following ways:[7]

- For the mother: decreased fertility; increased risk of miscarriage, gestational diabetes and perinatal complications.
- For the developing baby: increased risk of stillbirth, metabolic abnormalities and developmental abnormalities.
- For the child: increased risk of obesity, diabetes and hypertension (high blood pressure).

Obesity is a complex problem with many drivers, explored further in the Excess Weight JSNA chapter.

Good nutrition acts as a protective factor for the health of babies and mothers, increasing children's chances of leading a future healthy life[5]. Women and families in lower income groups have been found to have less vitamins in their diets[9] . In pregnancy it's important that women eat a healthy and varied diet to avoid vitamin or nutrient deficiencies which can affect the health of mum and the developing baby. Taking a folic acid supplement until 12 weeks of pregnancy is important to reduce the risk of neural tube defects such as spina bifida, caused by folic acid deficiency.

In the first few months, adequate nutrition is vital to a child's physical and intellectual development[5] and physical activity supports muscle and bone strength and the development of gross motor skills. Introducing a healthy diet and encouraging very young children to be physically active reduces the risk of childhood obesity and tooth decay.

Diet and nutrition are explored further in the Diet and Nutrition JSNA chapter.

Breastfeeding

The government's advice is that infants should be exclusively breastfed, receiving only breastmilk for the first 6 months of life. Breastfeeding promotes a strong emotional bond between mother and child, and improves children's physical health by reducing infections, obesity, diabetes, allergic disease and sudden infant death, and it also improves educational achievements and reduces social inequalities[7].

Those least likely to breastfeed are mothers living in areas of deprivation and mothers aged under 20 years[10]. Breastfeeding is explored further in the Breastfeeding and Healthy Start programme JSNA chapter.

Screening and vaccination

The antenatal screening programme aims to detect conditions that may have an impact on mother or baby. Similarly, the new-born screening programme aims to detect rare but serious disorders present at birth and prevent the serious consequences of these. Pregnant women should access the pertussis vaccine between 16 and 32 weeks of pregnancy to maximise the baby's protection against whooping cough, as well as the seasonal flu vaccination to protect both mother and baby. A range of immunisations for children should also be delivered.

It has been highlighted that access to immunisation services should be improved for specific groups, including those with[3]:

- Transport difficulties
- Language or communication difficulties
- Physical or learning difficulties.

Low birth weight

Low birth weight is associated with poorer long-term health and educational outcomes, including poorer child development. Disadvantaged mothers are more likely to have low birth weight babies and smoking, maternal stress, maternal nutrition, and maternal education have also been associated with low birth weight[5].

1.4) Home learning environment

What happens at home in the 1001 days is critical, and home learning is one of the biggest influences on early year's outcomes[11]. The home learning environment refers to the physical characteristics of the home, but also the quality of learning support received from parents and carers. Every day conversations, make-believe play, and reading activities have particular influence, although daytime routines, trips to the park and visits to the library have also been shown to make a positive difference to children's language development[12].

The early communication environment in the home provides the strongest influence on language development at 2, even more so than social background. This includes things like the number of books available, being read to by a parent, being engaged in a range of activities and the number of toys[5].

The amount of time and effort that parents and carers invest in home learning varies significantly. Evidence shows that parents with lower qualifications engage less often than

better educated parents in some home learning activities, such as reading[5]. It's important to note that a good quality home learning environment has also been found to moderate the effects of disadvantage, which are explored further under 1.5[12].

1.5) Issues that may affect a parent's ability to support development in the 1001 days

Domestic abuse

There's an increased likelihood of domestic abuse during or shortly following pregnancy. One in four women experience domestic abuse over their lifetimes and over a third of domestic abuse starts or gets worse when a woman is pregnant[3].

Domestic abuse in pregnancy can:

- make it harder for pregnant women to receive antenatal care
- impact on the development of the growing baby and future development of the child
- increase the risk of premature birth
- increase the risk of low birth weight

Domestic abuse can have damaging effects at any point from conception, during pregnancy, and in the early years. In pregnancy, domestic abuse harms the physical and emotional wellbeing of the mother, and the level of emotional distress, stress and anxiety can adversely impact the developing baby. In infancy, there's increased risk of child maltreatment, and witnessing domestic abuse in itself is extremely harmful to a child[13]. It's reported that around a quarter of children witnessing domestic abuse develop serious social and behavioural problems[5].

Domestic abuse is explored further in the Domestic Abuse JSNA chapter.

Maternal stress

People experience different levels of stress and find different situations or experiences stressful, and this is no different for women in pregnancy. A mother experiencing stress during pregnancy produces the stress hormone cortisol which can be harmful to baby brain development. The impact of this rises in line with the level of stress experienced[13]. Some studies have found that new born babies respond to stress by producing high levels of cortisol, which can be harmful to brain development in infancy too[5]. It is important to note that many of the effects of stress in pregnancy can be helped by sensitive, attuned and responsive parenting in the baby's first year[13].

Conflict between parents can also be a source of maternal stress, and when conflict between parents is frequent, intense and poorly resolved it puts children's mental health and long-term outcomes at risk - children as young as 6 months show symptoms of distress when exposed to parental conflict[14].

Parents who are experiencing stress, including social stress, may be less able to provide a secure, healthy, nurturing environment[15].

Level of income

Across the UK, at the end of the Early Years Foundation Stage, figures highlight that children from the poorest 30% of neighbourhoods are 11% less likely to reach the expected level in communication and language and 9% less likely to reach the expected level in personal, social and emotional development[16]. By age 3, there is a 17-month income-related language gap, with children from disadvantaged groups twice as likely to experience language delay[4].

Children growing up in households with low or even modest incomes tend to experience less advantageous home lives than their better-off peers. At age 3, children from poorer backgrounds have fallen behind in terms of cognitive outcomes, social skills and whether they experience behavioural issues[17].

Good quality home learning environments are associated with middle and upper income families, with children from these families more likely to be read to and go on educational outings than their low-income peers. They are also more likely to experience language rich home learning environments[12].

Having a low or modest income can add to the emotional strain that adults experience as they become parents. Adults on low pay are more likely to be in insecure jobs and working unsociable hours, increasing stress levels and reducing the amount of time available for education-related activities with their children. Also, it can make it harder for secure attachment to develop in families[17].

Having a low income is a major factor for other risks - smoking in pregnancy, low rates of breastfeeding and obesity in pregnancy, all of which adversely affect a child's health and are more prevalent among poorer households[15].

A two to three-fold increased risk of emotional or conduct disorder in childhood has been found if children have an unemployed parent, and a three-fold risk of mental health problems if children are in families with lower income levels[5].

It's important to note that whilst deprivation is associated with a number of risks, maternal mental health issues, and the associated impact on attachment and parent-infant interaction, are just as likely to be experienced by mothers who are not deprived[13].

This doesn't mean that every young child growing up in relatively advantaged circumstances will necessarily experience good development, nor that children facing disadvantages won't achieve positive outcomes; however, young children facing various disadvantages are less likely than others to experience good development[5].

Teenage parenthood

It's widely understood that teenage pregnancy and early motherhood are associated with:

- poor antenatal health
- lower birth weight
- higher infant mortality

Young parents are one third less likely to breastfeed, three times more likely to smoke and three times as likely to have poor mental health[18]. Due to their parenting responsibilities,

young mothers are also less likely to complete education and may be further economically disadvantaged by not entering employment[19].

Teenage pregnancy is explored further in the Teenage Pregnancy JSNA Chapter.

Their own adverse childhood experiences

Events in childhood can have a profound effect on adult's lives. Adverse Childhood Experiences (ACE's) include:

- Physical, emotional or sexual abuse
- Witnessing domestic abuse in the home
- Substance misuse by adults in the home
- Losing a parent (by bereavement, divorce or separation)

ACE's predispose people to higher than average levels of mental and health problems in adulthood and can influence a person's parenting behaviour. This can also result in a cycle of disadvantage that may pass from one generation to the next[15].

In turn, ACE's impact a child or young person's development, their relationships with others and increase the risk of engaging in health-harming behaviours, and of experiencing poorer mental and physical health outcomes in adulthood[20].

Having multiple vulnerabilities or complex social needs

It's well known that the most vulnerable families have the most difficulties in accessing universal services, these difficulties include the availability or distance of services, transport costs, or perceived stigma.[15]

Complex social needs might include being a young parent, experiencing domestic abuse, having alcohol or substance use issues, being homeless or a recent migrant or having difficulties with English.

Women experiencing complex social needs are more likely to present late to maternity services meaning they miss out on important early maternity care.

There's an increased risk of poor outcomes where more than one risk factor is combined. One study found that children facing more than one identified risk have poorer behavioural development at ages 3 and 5, and children with low income as well as more than one identified risk, fared worst in most developmental outcomes[5]

The presence of parental mental illness, substance misuse and domestic abuse, sometimes known as the toxic triangle, increases the likelihood of harm to children.

2) Size of the issue locally

Nottinghamshire covers a wide area, both rural and urban with some areas of high deprivation. Children and young people make up around 23% of the population and in general, outcomes for children and young people in Nottinghamshire are similar to the national average, however, there are large disparities within the county with some facing greater disadvantage than others.

There are 496 Lower Super Output Area's (LSOA) in the county; 25 of which rank in the 10% most deprived in England, a decrease from 31 in 2010. The most deprived LSOA's are concentrated in the districts of Ashfield (9 LSOA's), Mansfield (6), Bassetlaw (6) and Newark and Sherwood (3). In total, there are 71 Nottinghamshire LSOA's in the 20% most deprived in England, a decrease from 104 in 2010.[21]

Further information about the demographics of the county can be found in the People of Nottinghamshire JSNA Chapter.

The data presented in this section highlights some of the inequalities at a county and/or district level and provides a local context of where service provision could be targeted.

Birth rates

National and regional birth rates have remained steady between 2013 and 2016. In Nottinghamshire the birth rate, as measured by the General Fertility Rate (GFR), has fluctuated slightly but overall remained constant, at 61.3 births per 1,000 in both 2013 and 2016. The birth rate is below the national average which in 2016 was 62.5 per 1,000 population.

Table 1: General fertility rate

	2013	**2014**	**2015**	**2016**
East Midlands	60.3	60.7	61.3	60.9
England	62.4	62.2	62.5	62.5
Notts	61.3	60.4	61.6	61.3

Source: Office for National Statistics

Table 2 highlights the numbers of live births by district, which have also remained relatively constant since 2013.

Table 2: Live births by mother usual are of residence

Area	**2013**	**2014**	**2015**	**2016**
Ashfield	1,530	1,449	1,488	1,442
Bassetlaw	1,207	1,189	1,231	1,274
Broxtowe	1,220	1,206	1,196	1,195
Gedling	1,274	1,243	1,305	1,269
Mansfield	1,309	1,305	1,284	1,281
Newark and Sherwood	1,191	1,233	1,225	1,187
Rushcliffe	1,087	1,037	1,069	1,039
Nottinghamshire	**8,818**	**8,662**	**8,798**	**8,687**

Source: Office of National Statistics

Based on Office of National Statistics data from 2016, the birth rate in Nottinghamshire is projected to increase by 2.3% between 2019 and 2023 from 8,700 to 8,900 births per year[22].

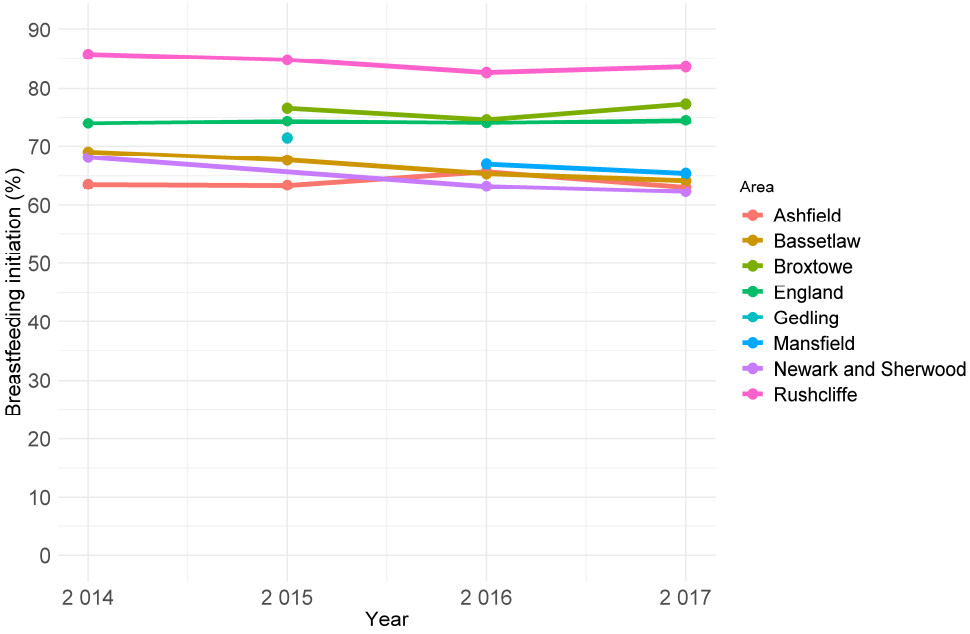
Breastfeeding

It's well known that breastfeeding rates are particularly low in areas of deprivation and amongst young mothers. UNICEF have highlighted a number of areas where moderate increases in breastfeeding would result in cost savings for the NHS. They also highlight that

increasing breastfeeding rates could lead to around a 5% reduction in childhood obesity which would save around £1.6 million nationally each year, and that if the number of babies receiving any breastmilk at all rose by 1% this could lead to a small increase in IQ that, across the entire UK population, could result in more than £278 million gains in economic productivity each year[23]. When applied to Nottinghamshire, approximately and with caveats, a one percentage point increase in breastfeeding initiation could equate to estimated gains in economic productivity of £2.8million.

Initiation of breastfeeding is measured by maternity services at birth. As figure 1 illustrates, in Nottinghamshire only Rushcliffe and Broxtowe had initiation rates higher than the England average of 74.5% in 2016-17, with Newark and Sherwood (62.3%), Bassetlaw (64.2%), Ashfield (63.1%) and Mansfield (65.4%) significantly lower.

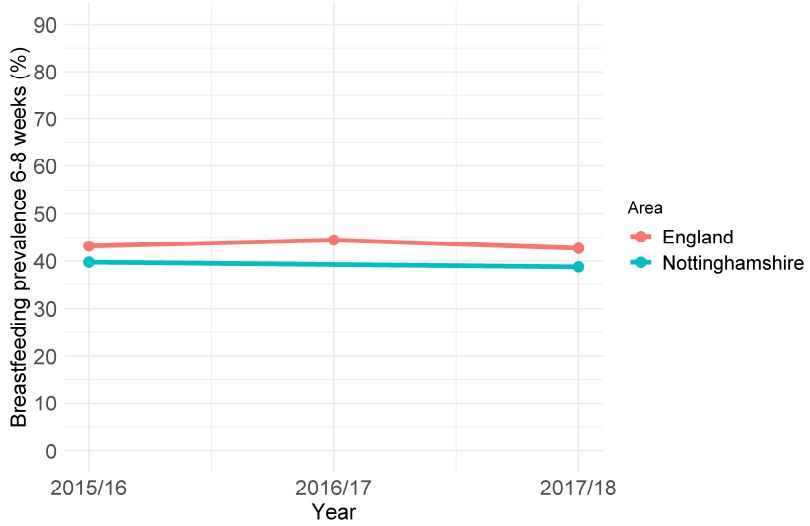
Figure 1: Breastfeeding initiation



Source: Public Health Outcomes Framework

Breastfeeding prevalence is measured at 6 to 8 weeks by health visiting services and is a key public health measure. Figure 2 highlights that prevalence of breastfeeding in Nottinghamshire in 2017-18 was 38.8% compared to an England average of 42.7%.

Figure 2: Breastfeeding prevalence



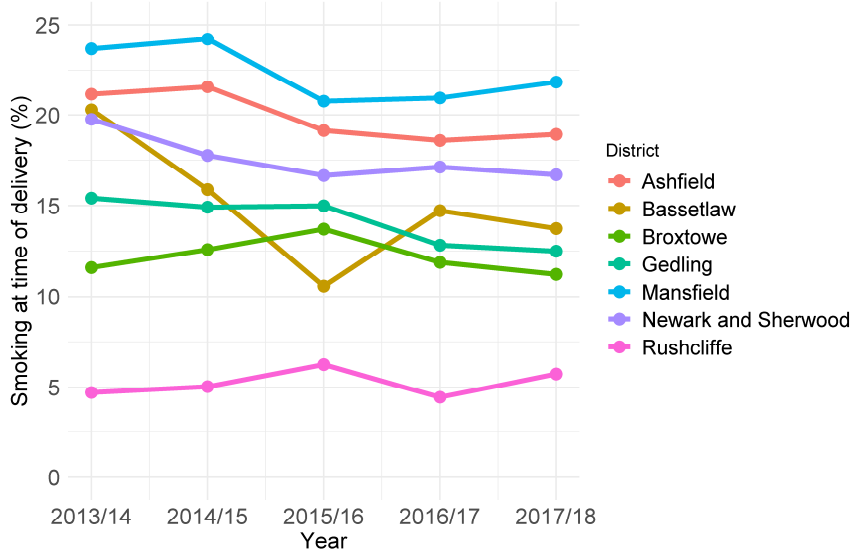
Source: Public Health Outcomes Framework

Locally collated data reported by Nottinghamshire Healthcare NHS Foundation Trust for 2017-18 highlights that the districts of Ashfield (32%), Bassetlaw (32%) and Mansfield (34%) have a vastly lower prevalence of breastfeeding at 6-8 weeks than elsewhere in the county, with Newark and Sherwood (40%) also significantly lower.

Smoking in pregnancy

Smoking in pregnancy is measured by collecting smoking status at the time of delivery and is of particular concern as 14.7% of Nottinghamshire mothers are smokers when their babies are delivered compared with 10.8% nationally (2017-18), with more pregnant women smoking in areas of greater need. There is a significant variation in smoking rates at time of delivery across Nottinghamshire. Data shows that babies born to mothers that smoke in pregnancy weigh on average, 200g less than babies born to non-smokers.[24]

Figure 3: Smoking at the time of delivery



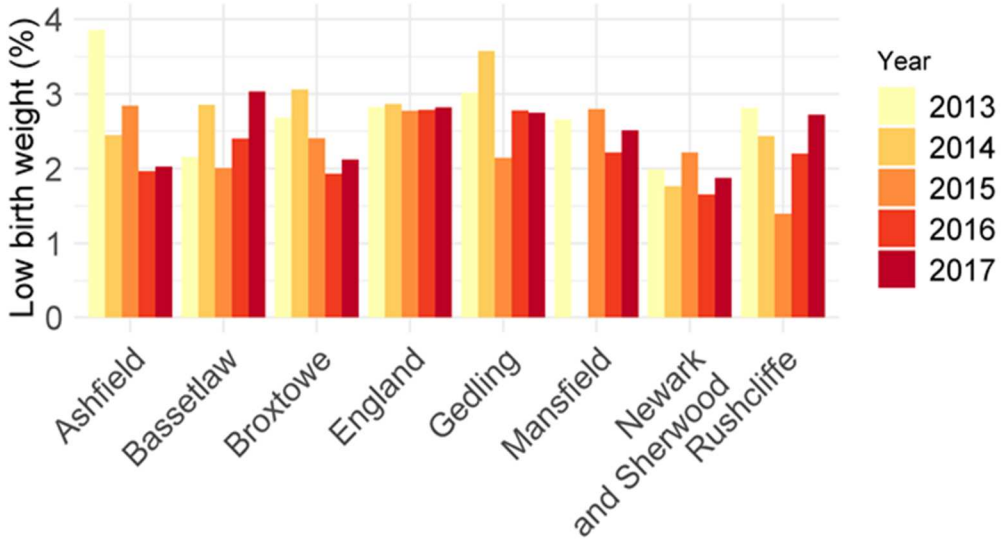
Source: Public Health Outcomes Framework

Figure 3 highlights the wide variation in rates of smoking at the time of delivery at a district level. The highest rates are in Mansfield and Ashfield and the lowest in Rushcliffe, correlating with the levels of deprivation in these districts.

Low birth weight

Low birth weight is associated with poorer long-term health and educational outcomes. Low birth weight is the percentage of live births born weighing below 2500g. In Nottinghamshire in 2017 2.4% of births were a low birth weight; this is lower than the national average of 2.8%. Certain districts of Nottinghamshire have higher rates than the national average though these fluctuate year-on-year, as highlighted in figure 4.

Figure 4: Low birth weight

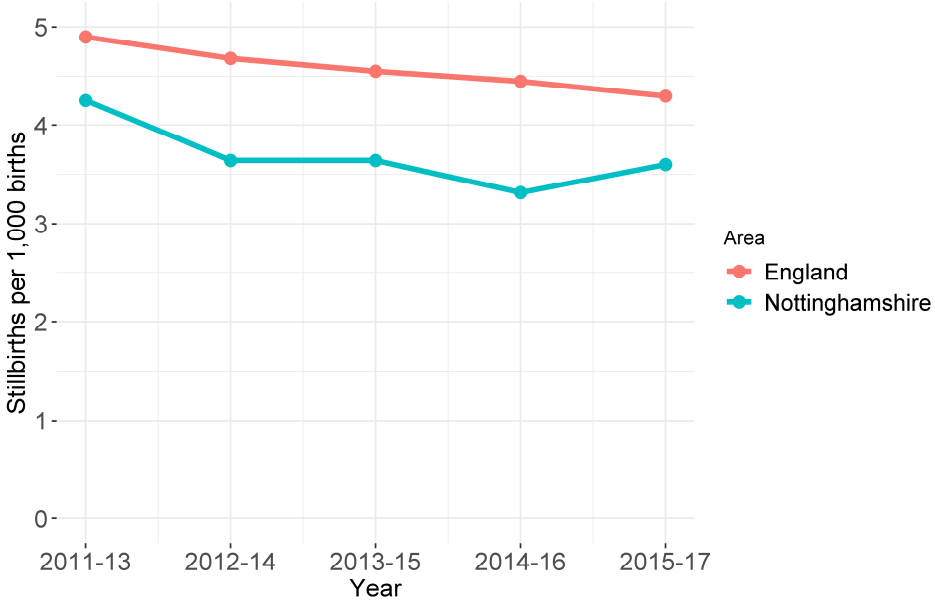


Source: Public Health Outcomes Framework

Still Birth

A stillbirth is a baby delivered with no signs of life after 24 completed weeks of pregnancy. Risk factors for still birth include deprivation, low birth weight, smoking in pregnancy, maternal age (teenage mothers and mothers over 35) and a mother's country of birth. The stillbirth rate is expressed as the number of stillbirths per 1,000 live births.

Figure 5: Three year pooled stillbirth trend



Source: Public Health Outcomes Framework

As figure 5 illustrates, the still birth rate in Nottinghamshire, pooled across 2015-17, was 3.6, lower than, but not significantly different to the England average of 4.3. There is variance by district across this period, with higher numbers of still births in the districts of Mansfield, Ashfield and Bassetlaw, however this may be due in part to the comparatively small numbers affected. In recent years still birth rates in England have fallen, however, they remain the highest in Europe and therefore a key priority to tackle.

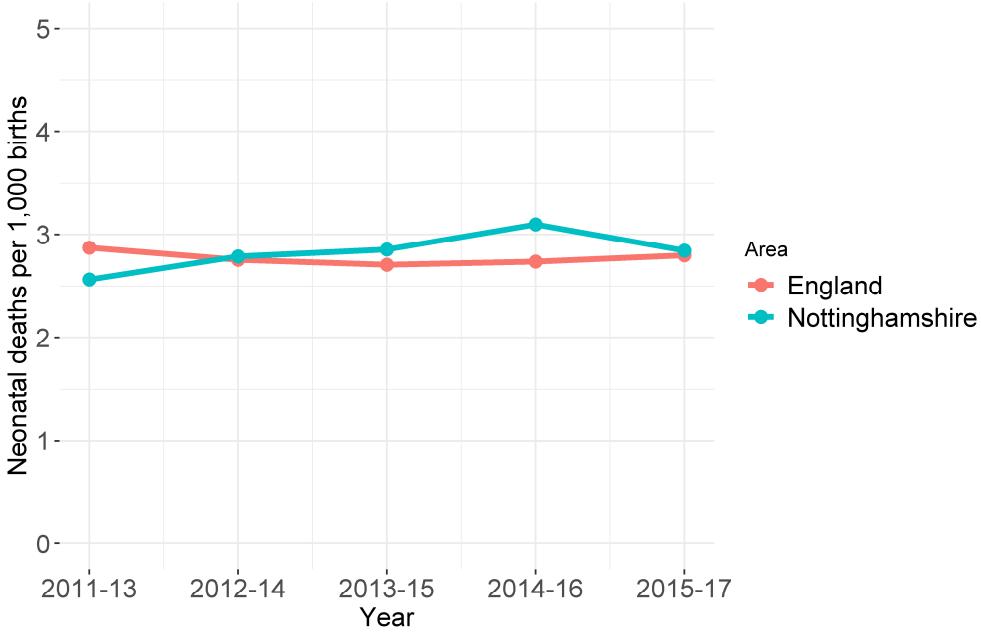
Neonatal and infant mortality

The neonatal mortality rate is the number of deaths of babies aged under 28 days per year, per 1,000 live births and the infant mortality rate is the number of deaths of children under the age of one per year, per 1,000 live births. Rates in England continue to fall with the highest rates among women aged 40 and over and women under the age of 20. Other risk factors include low birthweight, multiple births, smoking in pregnancy, obesity and deprivation, and risk increases in women of black or Asian ethnic origin.

As figure 6 below highlights, the neonatal mortality rate in Nottinghamshire, pooled across 2015-17 is similar to the national average, however the national rate appears to be declining whilst the local rate has increased in recent years.

There is variance by district across this period, with higher numbers of neonatal deaths in the districts of Ashfield, Bassetlaw, Broxtowe and Mansfield in 2015-17, however this is likely to be due in part to the comparatively small numbers affected.

Figure 6: Three year pooled neonatal mortality trend



Source: Public Health Outcomes Framework

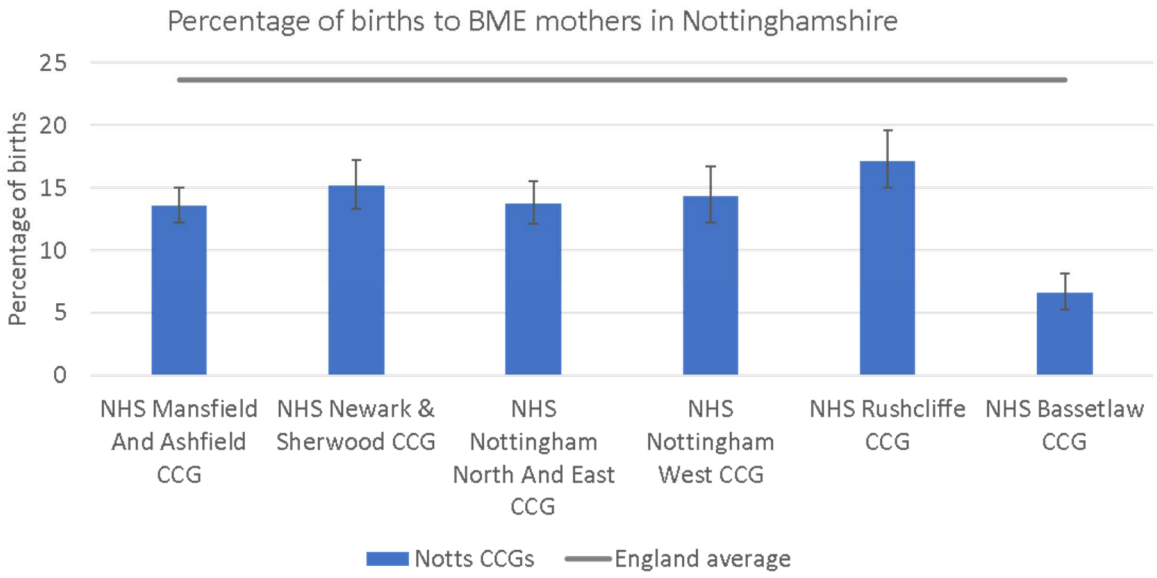
The pooled infant mortality rate for Nottinghamshire for 2015-17; a rate of 4.0 per 1,000 live births, is higher that the England average of 3.9. Rates are highest in Ashfield (4.8), Mansfield (4.6) and Bassetlaw (4.3), though districts of Broxtowe and Gedling (4.0) are also higher than the England average. Early access to antenatal care preferably by 10 weeks of pregnancy has a direct positive affect on infant mortality and low birth weight.

Black and Minority Ethnic groups (BME), and residents born outside of the UK

Infant mortality rates show large socio-economic and ethnic differences at national level. Mothers from some ethnic minority groups are more likely to experience stillbirths and neonatal deaths. South Asian women are 60% more likely, and black women twice as likely to have a stillbirth than white women in England and Wales, and infant mortality is twice as common for babies born to Caribbean and Pakistani women than to white women.[25]

Nottinghamshire has a relatively low BME population, 4% locally compared to 15% nationally. The figure below highlights the proportion of births born to BME mothers in Nottinghamshire.

Figure 7: Percentage of births to BME mothers



Source: Hospital Episode Statistics

In Nottinghamshire a relatively low proportion of residents were born outside the UK, 5% compared with 10% in the East Midlands in 2011 but this varies across the county. A higher proportion of non-UK born residents live in Broxtowe (8%) and Rushcliffe (7%)[26]

Maternal mental health

Up to 20% of women will experience a mental health problem during pregnancy or within the first year after having a baby, and NICE guidance on antenatal and postnatal mental health states that as many as 1-in-7 women will experience a mental health disorder in the perinatal period.

Table 3: Estimated numbers of women with maternal mental health needs (2015)

Condition	Estimated number of women
Postpartum psychosis	20
Chronic SMI in perinatal period	20
Severe depressive illness in perinatal period	250
Mild-moderate depressive illness and anxiety in the perinatal period	835-1250
PTSD in perinatal period	250
Adjustment disorders and distress in perinatal period	1250-2500

Source: Mental health in pregnancy, Public Health Outcomes Framework

Table 3 uses national prevalence data to estimate the number of Nottinghamshire women presenting with mental health problems in the perinatal period: pregnancy to one year after

birth, with identified mental health problems. It is important to note that these figures are only estimates, and do not account for socioeconomic factors. In addition, some women will have more than one of these conditions.

Domestic abuse

Specific data in relation to prevalence of domestic abuse in pregnancy and/or early years is not collated, however domestic abuse accounts for 11% of all crimes recorded by the Police.[27] According to new figures from the Crime Survey for England and Wales for the year ending 31 March 2018, 6.3% of women and 2.7% of men aged between 16 and 59 have experienced partner abuse once or more in the last year (Office for National Statistics, 2018). This equates to 20,464 persons or 14,360 women and 6,104 males experiencing domestic abuse in the previous 12 months in Nottinghamshire. An estimated 16% of children live in a household where there is domestic abuse, which equates to 26,480 children in Nottinghamshire.[28] 75% of children who live in a household where domestic abuse occurs are exposed to incidents.

Substance misuse

Specific data in relation to the prevalence of substance misuse in pregnancy and/or early years is not collated, though data suggests there could be in the region of at least 172,725 individuals in Nottinghamshire who use substances frequently and could benefit from a substance misuse intervention, with 26,068 dependent on substances (21% of the population of Nottinghamshire). Alcohol abuse represents the greatest need, though it is important to note that a significant proportion of the drug using population are also likely to be drinking. These figures are likely to be under-estimates due to the hidden nature of some substance misuse.

Obesity

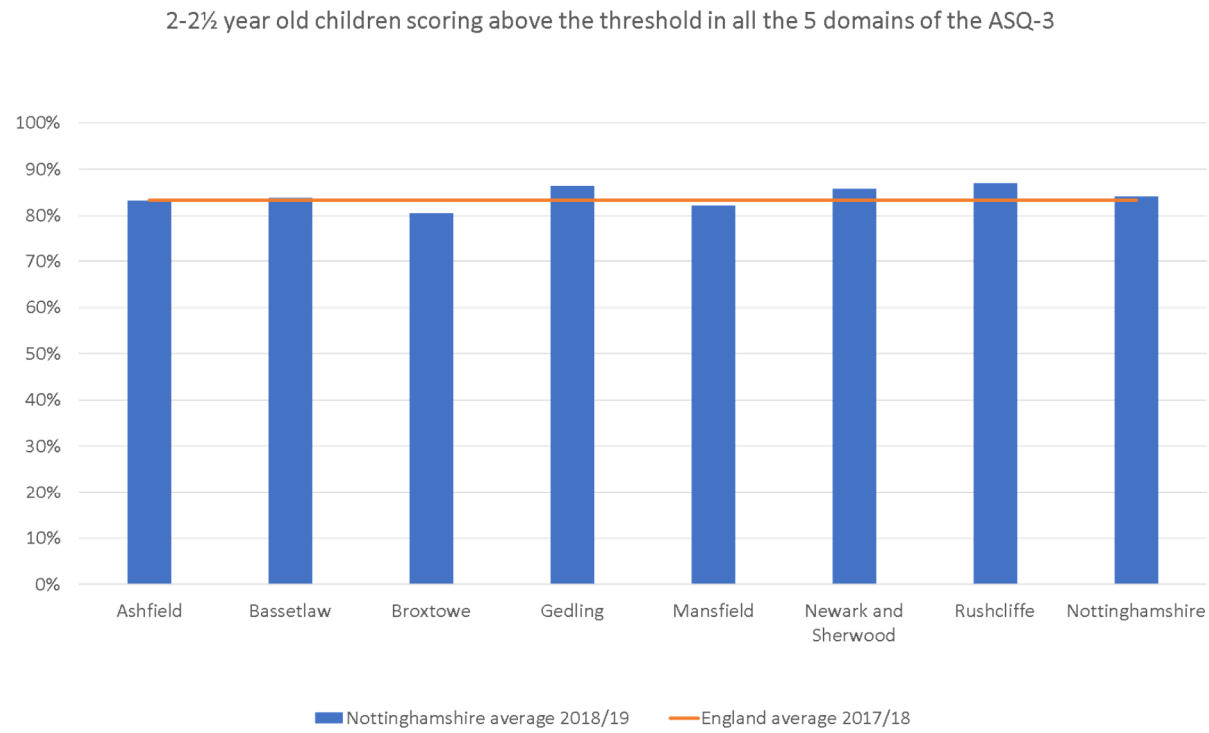
Obesity in pregnancy is associated with an increased risk of a number of serious adverse outcomes to both mother and infant. These include miscarriage, foetal congenital anomaly, thromboembolism, gestational diabetes, pre-eclampsia, postpartum haemorrhage, wound infections, stillbirth and neonatal death. It also increases the likelihood of childhood obesity.

Overall, 67.3% of the Nottinghamshire population are overweight or obese suggesting that there may be high numbers of overweight or obese women in pregnancy.

Child development at 2 years

The evidence-based Ages and Stages Questionnaire is used at age 2 to 2.5 years to determine whether children are meeting the expected levels of development in five key domains: communications, gross motor skills, fine motor skills, problem solving and personal-social skills.

Figure 8: Percentage of children meeting a good level of development at age 2-2.5



Source: Nottinghamshire Healthcare NHS Foundation Trust

Data reported locally by Nottinghamshire Healthcare NHS Foundation Trust, see Figure 8, highlights that 84% of children meet the expected level of development in all five areas in 2018-19. Of the 16% of children not meeting the expected level of development in all five areas, some children will not meet the expected level in more than one area. The primary areas of need are communication, with 10% of children not meeting the expected level of development, followed by gross motor at around 7%, and personal-social at around 5%. National benchmarking in relation to this is not currently available for 2018-19.

Speech, language and communication needs

It is not possible to accurately determine the proportion of children with language delay at age 2 years. It is estimated that 10% of primary school age pupils will have long term speech, language and communication needs, and 7.6% will have a developmental language disorder. In Nottinghamshire this equates to 7,120 primary school age children with a speech, language and communication need, of which 5,411 will have a developmental language disorder *(Source: Bercow 10 Year On[29], using January 2017 data[30])*, though it's important to highlight that the prevalence of developmental language disorder will be significantly higher in areas of increased socio-economic disadvantage, where up to 50% of children can start primary school with delayed language or other speech, language and communication needs[31]. At school entry, approximately two children in every class of 30 pupils will experience language disorder severe enough to hinder academic progress[32].

The numbers of children with early language delay will be substantially higher than the above figures, likely between 10% and 20% at age 2, and while many of these children will

not have a developmental language disorder at age 5, they will have language difficulties which impact on them in the early years and beyond and are likely to require targeted early intervention for language difficulties.

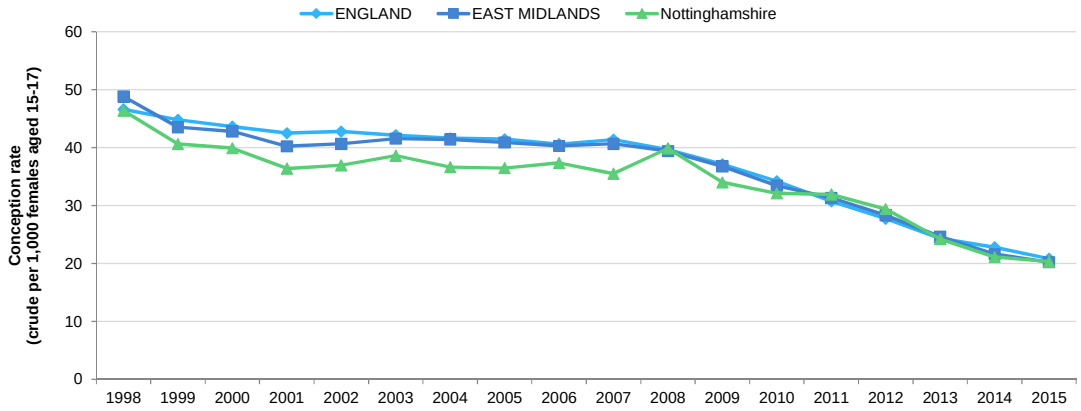
Teenage pregnancy

Teenage pregnancy can be both a cause and a consequence of social exclusion and is more common in areas of deprivation. The poorer outcomes associated with teenage parenthood, including increased risk of post-natal depression, and smoking in pregnancy, also means the effects of deprivation and social exclusion are passed from one generation to the next[33].

Evidence clearly shows that having children at a young age can damage young women's health and emotional well-being. It can severely limit their education and career prospects, resulting in increased levels of poverty and social exclusion. Research shows that children born to teenagers are more likely to experience a range of negative outcomes in later life, including increased risk of obesity and lower educational attainment, and are up to three times more likely to become a teenage parent themselves. Most young parents do not regret having their children but wish they had waited until they were older[33].

Conception data also includes those that resulted in a termination of pregnancy but does not include miscarriages.

Figure 9: Teenage conception rates 1998-2015 for Nottinghamshire and National, Regional comparators



Source: Office for National Statistics, conceptions statistics 2015 (published 2017)

The 2015 under 18 conception rate for Nottinghamshire was 20.3 per 1,000 females aged 15-17 – a decrease of 12.2% from the 2013 rate of 24.2%, and a decrease of 56.3% since the 1998 baseline year. The number of under 18 conceptions in 2015 was 271, 343 fewer than in 1998 where the number was 614.

Currently Nottinghamshire's overall reduction of 54.5% against the 1998 base rate is comparable with the national reduction of 51.1% and the East Midlands reduction of 55.7%.

Adverse Childhood Experiences (ACES)

Events in our childhood can have a profound effect on our adult lives. Studies aimed at understanding the consequences of childhood trauma in the United States developed the concept of Adverse Childhood Experiences (ACEs). Figure 10 below highlights how these experiences influence health and wellbeing across the life-course:

Figure 10: Adverse Childhood Experiences



Around half of all adults living in England have experienced at least one form of adversity in their childhood or adolescence. Of all children and young people 23% will have experienced one adverse childhood experience, 16% experienced two or three, and 9% will have experienced four of more adverse childhood experiences[34].

Vaccinations and immunisations (Pregnancy to 2 years)

One of the best ways to protect a baby against diseases like measles, rubella, tetanus and meningitis is through immunisation. Vaccinations are important not only for protecting the single baby that is vaccinated, but also protecting other babies and children by preventing the spread of disease by increasing herd immunity. First injections are at eight weeks, then 12 weeks, 16 weeks and one year.

Nationally
Coverage declined in nine of the 12 routine vaccinations measured at ages 12 months, 24 months or five years in 2017-18 in England compared to the previous year.

Meningitis B coverage is reported as a national statistic for the first time this year and achieved 92.5% at 12 months. Coverage for the Measles Mumps and Rubella (MMR) vaccine as measured at two years decreased in 2017-18 for the fourth year in a row. Coverage for this vaccine is now at 91.2%, the lowest it has been since 2011-12.[35]

Locally
In Nottinghamshire, vaccine coverage at ages 12 months and 24 months exceeds the England average for all vaccines, though there is variation by CCG, as summarised in Table 4.

Table 4: Vaccine coverage summary, 2017-18

	12 months				24 months			
CCG Name	DTaP/IPV/Hib	Men B	PCV	Rotavirus	DTaP/IPV/Hib	MMR	Hib/Men C Booster	PCV Booster
NHS Bassetlaw CCG	94.9%	93.7%	94.8%	92.6%	96.1%	91.2%	91.7%	91.8%
NHS Mansfield and Ashfield CCG	95.2%	95.5%	95.5%	93.4%	97.3%	94.4%	94.8%	94.9%
NHS Newark and Sherwood CCG	96.4%	96%	96.5%	95.3%	97.6%	93.5%	94.1%	94%
NHS Nottingham North and East CCG	96%	96%	96.3%	95%	96.9%	93.3%	94%	93.8%
NHS Nottingham West CCG	95.3%	96.1%	96.5%	94%	96.8%	95%	96%	95.9%
NHS Rushcliffe CCG	97.8%	97.1%	98.0%	96%	98%	96.4%	96.8%	96.5%
England	93.1%	92.5%	93.3%	N/a	95.1%	91.2%	91.2%	91.0%

Source: NHS Childhood Immunisation GP Practice Level Coverage national value: Public Health England Fingertips, MenB national value: Childhood Vaccination Coverage Statistics, NHS Digital)

In the seasonal flu vaccination programme of 2018-19 (September to February), 53% of pregnant women registered with Nottinghamshire CCG's received a seasonal flu vaccination compared to 47% nationally. Locally, the lowest take up of seasonal flu vaccines was seen in Mansfield and Ashfield and Newark and Sherwood CCG's[36].

Antenatal and newborn screening

Antenatal screening includes screening for infectious diseases in pregnancy, fetal anomalies and sickle cell and thalassemia. Coverage is measured by hospital trust, this means the data in Table 5 will include women from other areas as well as Nottinghamshire:

Table 5: Antenatal screening coverage by hospital trust, 2017-18

Antenatal screen	Definition	Nottingham University Hospitals NHS Trust	Sherwood Forest Hospitals NHS Foundation Trust	Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	England
Antenatal infectious disease screening (HIV coverage)	% pregnant women eligible for HIV screening for whom a confirmed screening result is available	98.9	99.3	99.7	99.6
Fetal anomaly screening (ultrasound coverage)	% pregnant women eligible for fetal anomaly ultrasound screening who are tested, and have a conclusive result, within the designated timescale	Not available	99.3	100.0	98.9
Antenatal sickle cell and thalassaemia screening (coverage)	% pregnant women eligible for antenatal sickle cell and thalassaemia screening for whom a screening result is available	99.7	99.5	100.0	99.6

Source: NHS screening programmes: KPI reports 2017 to 2018

New-born screening includes blood spot screening, hearing screening and physical examination. Key points to note from the 2017-18 data include:

- The proportion of babies registered with a Nottinghamshire CCG, who have a new-born blood spot screen and result, is below the England average of 96.7% in all but Bassetlaw and Newark and Sherwood CCG's.

- 99.1% babies have received new-born hearing screening (by four weeks of age) in Nottinghamshire compared to 98.9% across England.

3) Targets and performance

A range of indicators are measured in relation to pregnancy and a child's journey to age 2 and summarised here, however it may be beneficial to identify additional targets and / or draw these together within a local outcome's framework, shared across partners.

Public Health Outcomes Framework

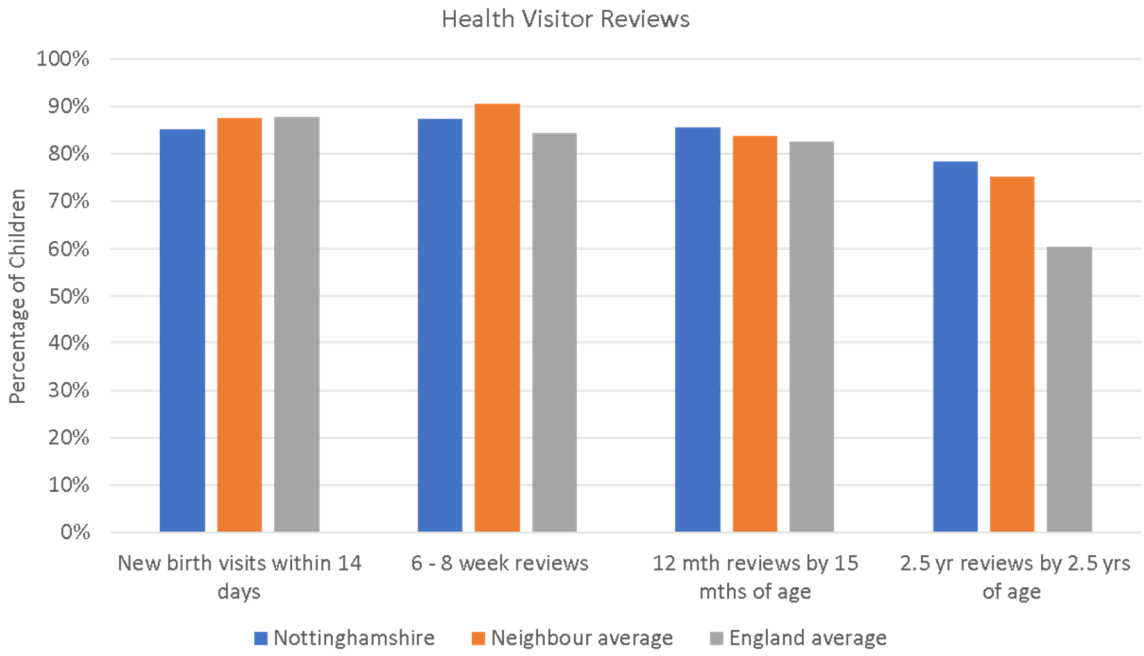
A number of Public Health Outcomes Framework indicators relating to 1001 days have been discussed under section 2. Size of the Issue Locally:

- Breastfeeding initiation and prevalence at 6-8 weeks
- Smoking during pregnancy
- Teenage pregnancy
- Mortality including neonatal, infant and still births
- Low birthweight
- Teenage pregnancy

Health visitor mandated reviews

The proportion of children receiving the Healthy Child Programme's health and development reviews from 0 to 5 years is a national and local target, widely reported. Figure 11 highlights the proportion of reviews delivered in Nottinghamshire in 2017-18, compared with the England average and with the average of Nottinghamshire's statistical neighbours.

Figure 11: Proportion of health visitor reviews completed (2017-18)



Source: Public Health England, Health Visitor Delivery Metrics

The latest available data, covering the period April to December 2018, highlights that the proportion of reviews delivered in Nottinghamshire has increased across all indicators and exceeds the England average, as follows:

Table 6: Proportion of health visitor reviews delivered (Apr 2018 to Dec 2019)

Health visitor review	Nottinghamshire	England
New birth visit (within 14 days)	89%	89%
6-8 week review	86%	85%
12 month review (by 15 months)	89%	82%
2.5 year review	81%	78%

Source: Public Health England, Health Visitor Delivery Metrics

The number of antenatal reviews is also reported nationally, though is not currently benchmarked due to the complexity of defining the denominator. This data highlights that 1,364 women accessed an antenatal review in Nottinghamshire in 2017-18. Data reported locally by Nottinghamshire Healthcare NHS Foundation Trust suggests this has risen to 3,831 women in 2018-19, however this represents just 48% of those invited.

CCG Indictors

NHS England's CCG Improvement and Assessment Framework identifies four indicators related to maternity care:

- Maternal smoking at delivery
- Neonatal mortality and stillbirths
- Women's experience of maternity services
- Choices in maternity services

4) Current activity, service provision and assets

A range of services support women and families in pregnancy and the early years.

Maternity services

Women receive care in pregnancy from midwives and obstetricians from Nottinghamshire's hospitals. Most women receive between 7 and 10 appointments in pregnancy, which usually start when women are 8 to 12 weeks pregnant and continue until the birth of the baby. A comprehensive health and social assessment is made at the booking appointment and reviewed throughout pregnancy. Women will be offered screening tests and ultrasound scans to identify any health problems that could affect the mother or the developing baby. Midwives review maternal mental health, promote infant feeding, bonding and attachment, and support smoking cessation.

Antenatal classes are provided by the Hospital Trusts and cover familiarisation with labour suites/ birthing centres, active birth, pain management, infant feeding and early parenting. The classes do not focus on the emotional preparation for parenthood in any detail. Various preparation for parenthood courses, universal and targeted, have been trialled in recent years by health visitors, midwives and children's centre services but have had low uptake, often with the numbers of attendees reducing as the course progresses.

Healthy Families Programme

Across Nottinghamshire, as part of the Healthy Families Programme service, 20 Healthy Family Teams based in localities deliver the national 4-5-6 health visiting framework:

- 4 levels of service, based on need
- 5 universal health reviews for all children
- 6 high impact areas, where health visitors have the greatest impact on child and family health and wellbeing

The Healthy Families Programme is provided by Nottinghamshire Healthcare NHS Foundation Trust and brings together care provided by Specialist Public Health Practitioners (Health Visitors and School Nurses) and their teams to support all children, young people and families in Nottinghamshire. All families receive:

- Antenatal visit, usually after 28 weeks of pregnancy
- New baby review, usually when baby is 10-14 days
- Review when baby is 6-8 weeks old
- Developmental review at 1 year
- Developmental review at 2 to 2.5 years

In addition, advice and support from the Healthy Family Team can be accessed by the advice line, booking an appointment at a Healthy Family session, and via Parentline, a new confidential text messaging service for parents of 0-5's.

Healthy Family Teams also deliver first level support and advice on health issues such as maternal mental health, breastfeeding, formula feeding, minor ailments, eating, parenting issues, behaviour and continence. Healthy Family teams refer or signpost to other services who will be able to provide ongoing help.

Healthy Family Teams also have an opportunity to Make Every Contact Count, promoting the importance of healthy lifestyles and the value of health as a foundation for future wellbeing, for example healthy eating, physical activity, accident prevention, improving parents' confidence in managing minor illnesses, sun safety, oral health; promotion of smoke-free homes and cars; responsive parenting, behaviour management, including sleep, and the promotion of development, play and a language-rich home learning environment[8].

Development reviews

Healthy Family teams deliver the 1 year and 2 to 2.5 year health and development review to assess a child's progress with the aim of optimising child development and emotional wellbeing, reducing health inequalities and promoting school readiness. The Ages and Stages Questionnaire ASQ-3 ™ is used, which covers the development of gross and fine motor, communication, problem solving and personal-social skills.

The 2 year reviews are integrated with the Early Years Foundation Stage assessment, delivered by a child's early year's settings, aiming to:

- identify the child's progress, strengths and needs in order to promote positive outcomes in health and wellbeing, learning and behaviour and school readiness
- facilitate appropriate early intervention and support for children and their families where developmental delay or additional needs are identified
- generate information which can be used to plan services and contribute to the reduction of inequalities in children's outcomes

In practice, this means that appropriate information about a child's progress is shared between these services, and that where either party identifies that a child requires additional support with any area of learning or development, the Healthy Family Team and early year's childcare provider will work together to put in place appropriate support and monitor progress. There are clear pathways from the 2 year review to appropriate sources of support, such as a children's centre programme. Further information about early year's education can be found in the upcoming Early Years and School Readiness JSNA chapter.

We know from section 3: Targets and Performance that a proportion of children are not receiving a 1 and 2 year review. Nottinghamshire Healthcare NHS Foundation Trust completed an audit of declined reviews between July and September 2018. This highlighted that the majority of declined reviews: 77% of 1 year reviews, and 92% of 2 year reviews, were families in universal caseloads i.e. families without additional needs.

Healthy Families Programme: activity data

A snapshot audit taken in May 2018 by Nottinghamshire Healthcare NHS Foundation Trust identified that the Healthy Families Programme had 46,605 children aged 0 to 5 on their caseload, of which 2,858 were receiving universal plus provision (families requiring specific help and support such as a time limited evidence based intervention) and 1,446 receiving universal partnership plus provision (where ongoing support is provided to families as part of a range of services working together to deal with more complex problems over a longer period of time). The snapshot also highlighted that the service was working with 1,466 children in need, and 1,111 children subject to child protection plans.

Data collated by Nottinghamshire Healthcare NHS Foundation Trust highlighted that between 1st April 2018 and 31st December 2018 7,170 calls were made to the Healthy Family Team advice lines, 33.7% of these were given advice directly over the phone, 7.6% had an appointment booked and 58.7% were passed to another member of the Healthy Family Team for follow up or investigation.

Children's centre services

Children's centres services support pregnant women and families with children under 5, delivering support to the following target groups:

- Low income families with identified needs
- Children of teenage parents /teenage parents
- Families identified as having mild/moderate mental health issues
- Children with English as an additional language
- 2,3 and 4 year olds not accessing their minimum childcare entitlement
- Unemployed/single parents
- Unemployed parents living in rural areas
- Children under 5 with speech, language and communication delay
- BME groups where there is a need.
- Parents of children with special educational needs and disabilities who do not meet thresholds for specialist services
- Children known to social care

Children centre services work to four key outcomes:

- Children achieve a good level of development, are ready for school and are supported to close the attainment gap

- Parents are job ready with increased aspirations for themselves and their children.
- Children and parents have improved emotional health and wellbeing.
- Children and parent's needs are identified early and the risk of harm is prevented.

Children's centre's services work on a 1:1 basis with families with identified need in relation to their child's development, environment, health or wellbeing. They also deliver a range of programmes and groups including:

- Breastfeeding support groups - BABES
- Befriender service for women with emotional health needs in the perinatal period – Footsteps
- Parents health and emotional wellbeing group, for parents with a child under 1 with low mood, struggling to cope or experiencing loneliness / isolation - PHEW
- Support for children at risk of language delay - Little Talkers for babies, Little Talkers for toddlers
- Let's Play, to support parents to play and interact with their children
- Weaning groups
- Baby massage
- Sleep Tight
- Parenting support groups for parents of children aged 1 and over where there are identified needs

Maternal mental health

Maternity services routinely screen for mental health needs using an assessment tool to support the identification of women with, or at risk of, serious mental illness. There is currently variation in the way maternity services screen for mild to moderate mental health needs across hospitals and there are opportunities to strengthen this.

Support for women with perinatal mental health needs includes a specialist mother and baby inpatient unit, a community perinatal psychiatric service, adult mental health services, psychological therapy services as well as primary care, maternity services, Healthy Family Teams and children's centre support.

The perinatal psychiatry service provides assessment, intensive support and treatment for women with serious mental illness and supported 695 women in 2018-19 *(Source: Nottinghamshire Healthcare NHS Foundation Trust)*. The service also assists in the detection and proactive management of women who are at risk of developing a serious perinatal/postnatal mental illness and provides advice and assistance to primary care, maternity and psychiatric services.

Psychological therapy services support women with mild to moderate mental health needs including depression and anxiety, delivering comprehensive assessment and a range of treatment options including cognitive behavioural therapy.

For women with lower level maternal mental health needs, Healthy Family teams deliver a four to six week programme of targeted interventions providing support where the parents have or are at risk of developing mental health difficulties and where these are likely to impact on their infant's emotional development. These cover relationships, active problem solving and attachment. In children's centres around 30 trained Footsteps volunteers provide support for women with lower level emotional health needs, including a befriender service and group support.

Family Nurse Partnership

The Family Nurse Partnership (FNP) is an evidenced based, intensive nurse-led prevention and early intervention programme for vulnerable first time young parents and their children. The FNP provides structured home visiting from early ante-natal until the child is 2 years of age.

FNP aims to:

- Reduce the impact of deprivation;
- Improve the short and long term health and wellbeing outcomes for young parents and the children born to vulnerable, young, first time mothers
- Reduce the short and long term cost of ongoing care, and enhance economic self-sufficiency by improving the life chances of FNP clients and children.

This is achieved by supporting young women and their partners to:

- Have a healthy pregnancy
- Become knowledgeable and responsible parents
- Provide babies with the best possible start in life
- Develop positive outcomes for themselves and their children.

In 2017-18, when first enrolled on the programme, 34.8% of clients reported that they had previously had mental health problems, 35.9% reported that they had been abused by someone close to them and 56.3% were on a very low income or living entirely on benefits.

Early years settings

Where children access early years settings between birth and 2, those settings play a huge role in supporting their development; all schools and OfSted registered early years setting work in line with the Early Years Foundation Stage framework, which sets out standards for the learning, development and care of children from birth to 5. The framework supports an integrated approach to early learning and care and ensures that all children receive quality early education and childcare experiences. The role of settings in supporting child development and information about funded childcare is explored further in the upcoming Early Years and School Readiness JSNA.

Domestic abuse

Maternity services and Healthy Family Teams screen for domestic abuse as part of routine practice, however partners and families may be present at appointments, and it can be challenging for these services to see women alone in order to explore this fully. It has been suggested locally that the requirement to see women alone be built into routine antenatal care. A range of services and support, often provided by the voluntary sector is available to support women and their families. These are explored further in Domestic Abuse JSNA chapter.

Substance and alcohol use

All women are assessed for alcohol and substance use at the maternity booking appointment, and where use is disclosed, women will be referred for further support and treatment from obstetricians, specialist midwives and / or substance misuse services

commissioned by public health. The national Audit C tool designed to identify alcohol misuse has recently started to be completed within the maternity booking appointment.

Healthy weight and nutrition

A weight management in pregnancy pathway supports women identified as overweight or obese, helping keep pregnant women and new mothers within a healthier weight range. Challenges around the referral pathway from maternity services to the community provider of weight management services has affected the number of women supported under this service.

The Healthy Start Programme is a statutory scheme providing a nutritional safety net and encouragement for breastfeeding and healthy eating in pregnant women and children under four in low income and disadvantaged families across the UK. One element of the scheme is the provision of vouchers to buy fresh fruit and vegetables and the other focuses on free vitamin supplements. The key challenge locally is to improve the uptake of the Healthy Start vitamins for pregnant women and children: whilst around 73% of those eligible access the vouchers for fresh fruit and vegetables (Source: NHS Business Authority, 2018-19, based on snapshots taken across 4 week cycles), locally collated data suggests few women and families are collecting vitamins, with a total of just 488 vitamins collected between 1st April 2018 and 31st December 2018 (6 week supply, Source: Nottinghamshire Healthcare NHS Foundation Trust).

Smoking cessation

Routine carbon monoxide monitoring is delivered at key points in pregnancy and women are referred to smoking cessation services and supported to stop smoking. In addition, smoking status is routinely recorded at the time of delivery. At Sherwood Forest Hospitals NHS Foundation Trust an additional motivational interviewing consultation is delivered, focusing on the effects that smoking has on the baby.

Breastfeeding support

Breastfeeding is a core element of the Healthy Child Programme delivered by midwives and health visitors. All maternity and health visiting providers in Nottinghamshire have achieved UNICEF Baby Friendly Accreditation. This enables all health professionals to support mothers and babies effectively and helps all parents to build a close and loving relationship with their baby regardless of their feeding method. Maternity services and Healthy Family Teams work in partnership to support infant feeding and 70 infant feeding trained volunteer peer supporters support mothers via children's centre BABES groups.

In mid-Nottinghamshire a Lime Green breastfeeding team supports women in targeted areas with the lowest breastfeeding rates up to 10 days post-natally, working in partnership with Healthy Family Teams. A Breastfeeding Friendly accreditation scheme operates as a partnership between Nottinghamshire's District and Borough councils and Nottinghamshire NHS Foundation Trust, with 177 venues accredited as of December 2018.

Screening, vaccination and immunisations

The UK National Screening Programme oversees the delivery of high a quality screening programme for all pregnant women in England. All women are offered

the screening programmes for themselves antenatally, and their babies, postnatally:

- NHS Infectious Diseases in Pregnancy Screening (IDPS) Programme: screening for hepatitis B, HIV, syphilis and susceptibility to rubella infection.
- NHS Fetal Anomaly Screening Programme (NHS FASP): screening for pregnant women to check the baby for fetal anomalies, Down's, Edwards' and Patau's syndromes.
- NHS Sickle Cell and Thalassemia Screening Programme: antenatal sickle cell and thalassemia screening
- NHS newborn and infant physical examination (NIPE) screening programme
- NHS newborn blood spot (NBS) screening programme
- NHS newborn hearing screening programme (NHSP)

Midwives give information about the importance of having the seasonal flu and pertussis vaccination throughout pregnancy and women access the vaccine from their GP any time during their pregnancy. Healthy Family teams provide information about the childhood immunisation programme, support families to access these from their GP and routinely review a child's immunisation status. Immunisations are delivered at 8 weeks, 12 weeks, 16 weeks and 1 year in line with the childhood immunisation programme.

Workforce and training

The Healthy Families Programme has a comprehensive competency assessment framework which sets out the inter-related skills, knowledge and behaviours that practitioners need to deliver universal and targeted support across the 0-19 age range as part of the Healthy Families Programme. This includes some promotional interviewing, a type of evidence-based practice that supports practitioners to use a promotional guide to structure and facilitate personalised guided conversations with parents helping parents to make accurate, well-informed decisions about their families' needs at a crucial time of life. Promotional interviewing promotes the early psychosocial development of babies and young children and supports the transition to parenthood.

Nottinghamshire County Council have developed a Grow-wise Child Development Programme in partnership with the University of Nottingham. It provides frontline practitioners with an accessible, well-researched and practice-based training programme covering all aspects of child development from conception through to 19 years of age and is delivered online. All front line practitioners in Nottinghamshire County Council are encouraged to complete relevant modules.

5) Evidence of what works

We know from section 1: Who's at risk and why and section 2: Size of issue locally, that some children and families are more likely to experience a range of poor outcomes, and that the 1001 days from conception to 2 are critical in building child development and shaping life-long health and wellbeing.

The period of conception to age 2 provides a unique opportunity as it's the time when parents are often the most receptive to behaviour change interventions and where they are likely to be most effective[37].

5.1) Healthy Child Programme

The Healthy Child Programme (HCP) 0-5 brings together the evidence on delivering good health, wellbeing and resilience for every child. It sets out the schedule for services covering care from 28 weeks of pregnancy through to age 5 and is delivered as a universal service with additional services for families needing extra support, whether short-term intervention or ongoing help for complex longer-term problems.

The programme includes health promotion, child health surveillance and screening, providing a range of services to families. These include:

- screening
- immunisation during pregnancy and childhood immunisations
- health and development reviews
- advice and support to help children's physical and emotional development

Universal health and development reviews are a key feature of the Healthy Child Programme and take place at 28 weeks of pregnancy, within 14 days of birth, 6 to 8 weeks, 9 to 12 months and 2 to 2.5 years.

The HCP also identifies six high impact areas in the early years:

- transition to parenthood
- maternal mental health
- breastfeeding (see Breastfeeding and Healthy Start JSNA chapter).
- healthy weight and healthy nutrition (see Excess Weight and Diet and Nutrition JSNA chapter).
- management of minor illness and reducing accidents (see Avoidable Injuries JSNA chapter).
- health, well-being, and development of the child aged 2

A rapid review carried out in 2015 updates the HCP evidence.

This section explores what works in relation to a number of key areas identified:

- Maternal mental health, parent-infant interaction and attachment
- Supporting child development from birth to 2
- Support for women with multiple risk factors / vulnerabilities
- Protection and promotion of health in pregnancy and infancy

We also highlight the importance of the workforce.

5.2) Maternal mental health, parent-infant interaction and attachment

Maternal mental health

Screening

Universal screening for mental health problems in pregnancy helps identify women at need of future support and can in itself reduce the symptoms of depression and anxiety in expectant mothers[6]. National Institute for Clinical Excellence (NICE) recommends identifying need using validated screening using tools such as Generalised Anxiety Disorder (GAD), Patient Health Questionnaire (PHQ) and / or Edinburgh Postnatal Depression (EPDS). Mental health should also be considered as part of personalised care plans developed and reviewed by midwives at every contact.

In the postnatal period, universal screening for mental health problems, using validated screening tools, can reduce the prevalence of postnatal depression[6]. NICE again recommends identifying need using screening using tools such as GAD, PHQ and / or EPDS. Public Health England recommends use of the PHQ-2 and GAD-2 at the antenatal and birth new birth review as part of a holistic assessment, and consideration of their use at all subsequent contacts, with follow up by EPDS or similar where concerns are identified[8]. PHE also recommends the assessment of emotional health and wellbeing at the 6-8 week visit, the 1 and 2 year reviews and all contacts with public health nursing services[38].

Prevention
There is some evidence to support interventions aimed at preventing postnatal depression, when delivered to mothers at risk[6]:

- stepped-up and flexible midwifery or health visitor care in the weeks after birth responding to identified needs
- telephone support by trained volunteers
- interpersonal therapy

It has also been highlighted that supportive relationships foster good emotional wellbeing and can reduce the risk of developing mental health issues during pregnancy[3]

Treatment
A range of interventions are known to improve mental health outcomes in adults. In pregnancy and post-natally evidenced based treatments for depression and anxiety include cognitive behavioural therapy (CBT), which reduces symptoms of depression by helping people reconsider problems perceived as overwhelming from a more positive perspective. The evidence underpinning CBT for reducing symptoms of depression is as good, if not better than the evidence for antidepressant medication.

Non-directive counselling using active listening techniques is also an effective treatment; non-directive counselling techniques are characteristic of the 'listening visits' that may be delivered by health visitors[6]. The HCP recommends these listening visits are delivered at home by skilled professionals.

Mothers with serious mental health issues should access specialist mental health treatment[6].

Parent-infant interaction and sensitive and attuned parenting

The health visitor antenatal review should focus on emotional preparation for birth, carer-infant relationship, care of the baby, parenting and attachment, using techniques such as promotional interviewing. Promotional interviews give practitioners a proactive and non-stigmatising way to promote the early development of babies and support the transition to parenthood[39].

Promotional interviews should also be delivered postnatally at 6 to 8 weeks, and after birth parents introduced to the 'social baby'[39]. Clear and consistent messaging about the importance of sensitive, attuned and face to face parental interactions with children from birth onwards is recommended[18].

The original HCP recommends assessing parent-infant interaction in the first few weeks after birth using validated tools, however there are significant challenges to this in terms of resource, workforce capacity and training and this is not widely delivered in any area of the

country[39]. Whilst there is no single solution to enhance the quality of parent-child interaction, interventions should target the following[16]:

- Attachment and parental sensitivity
- Social and emotional skills and behaviour
- Communication and language skills

Video feedback (a technique that involves filming a parent-infant interaction and using the footage to aid and support parents) can improve parenting behaviours by increasing maternal or parental sensitivity and responsiveness[6].

It has been highlighted that new approaches, via health visitors, are required to better support the 20% of families with the lowest incomes, focused on the quality of parent-child interaction[18].

Attachment

Sensitive, attuned parenting and quality parent-infant interaction: parenting behaviours that are predictable, sensitive and response to the child's needs, foster good attachment. Where there are identified problems placing the quality of attachment at risk, or where there's a risk of child maltreatment, psychotherapy can improve outcomes for the child. There are various forms of psychotherapy that could be appropriate[6].

5.3) Supporting child development

Transition to parenthood

The Healthy Child Programme antenatal visit should support parents to form an image of their unborn child, laying the ground for parental bonding. It is also an opportunity to:

- promote parental bonding and parental sensitivity
- assess risk and resilience factors in families
- help parents manage difficult and challenging issues that are affecting their transition to parenthood (such as disability or chronic illness, perinatal depression, toxic stress, previous trauma, family conflict or social isolation)
- recognise the signs of distress in the parents' relationship, and discuss relationship issues comfortably, offering effective support and referring sensitively to specialist services where necessary[37]

Parental understanding, attitudes, and behaviours are key to supporting good health and development in very young children and working effectively in partnership with parents supports them to learn, adapt to the parenting role, and change their behaviours where necessary[40].

Group-based preparation for parenthood courses for couples expecting their first child have been shown to reduce parental stress and increase couple satisfaction at birth[6], particularly where programmes start in pregnancy, and parents can be supported to understand and communicate their feelings about the emotional transition to parenthood and build positive relationships between parents and their baby from pregnancy onwards.

Health and development reviews

Five health and development reviews led by health visitors, should be delivered in line with the Healthy Child Programme, between 28 weeks of pregnancy and the age of 2. At these reviews a holistic assessment should be carried out, in partnership with the family, building on their strengths as well as identifying any difficulties such as the parents' capacity to meet their infant's needs and the impact and influence of wider family, community and environmental circumstances.

In order to have maximum impact, the reviews should be delivered in line with the Healthy Child Programme evidence, including the rapid review to update evidence and Public Health England's high impact area guidance. In particular the 1 and 2 to 2.5 year development reviews should include the use of the Ages and Stages Questionnaire (ASQ-3) as part of a holistic assessment.

At two years of age, a key time for the development of speech and language, social, emotional and cognitive development; health visitors should assess children in their family context, building on their strengths as well as identifying any difficulties, including review of:

- parenting capacity
- child development and the home learning environment
- family circumstances
- social/community circumstances
- health and wellbeing, including the immunisation status of the child

At the age of two, recognising the importance of integrated working and holistic assessment, health visitors and early year's settings should deliver their reviews in an integrated way, bringing together the Early Years Foundation Stage progress check and the Healthy Child Programme health review[4].

Social and emotional development

Health professionals in antenatal and postnatal services should identify factors that may pose a risk to a child's social and emotional wellbeing, including factors that could affect the parents' capacity to provide a loving and nurturing environment[30]. Indicators to help identify children who are likely to be vulnerable and need additional social and emotional wellbeing support have been defined. There is an evidence-based ASQ focused on social and emotional development (ASQ-SE) which could be considered for use[5].

In addition, it is recommended that a series of intensive home visits by an appropriately trained nurse could be delivered to parents assessed to be in need of additional support. Activities should be based on a set curriculum and cover issues such as maternal sensitivity, home learning and parenting skills[40].

Home learning environment

The home learning environment refers not only to the physical characteristics of the home, but also the quality of the implicit and explicit learning support given, including every day conversations, make-believe play and reading activities[12]. A number of factors linked to the home learning environment are known to impact a child's development:

- The educational activities that parents engage in with their children e.g. reading with children, teaching nursery rhymes, the alphabet and numbers, visits to libraries and other educational trips[17]
- The number of books available, being read to by a parent, parents teaching a range of activities, the number of toys available and attendance at pre-school are all important predictors of two-year-old children's vocabulary[5].
- The use of infant directed speech, an exaggerated form of baby talk used by parents[6], supports early language development.
- The quantity and quality of language young children are exposed to in their homes
- There is some evidence that the quantity and quality of parent-child interactions decreases when the television is on[41]. In addition, the World Health Organisation recommends no sedentary screen time for 1 year olds, and no more than one hour of sedentary screen time for 2 year olds[42].

Speech, language and communication

A child's language development starts when the child first begins to distinguish sounds heard within the mother's womb. Language skills are then shaped and nurtured by the child's home learning environment, described above. The following home learning activities have been consistently found to support children's early language development[12]:

- Going to the library
- Painting and drawing
- Playing with/being taught letters
- Playing with/being taught numbers
- Songs/poems/rhymes

Health visitors are best placed to support parents and caregivers by providing information on ways to promote early language acquisition, identifying children with signs of speech and language delay and supporting parents to access appropriate early intervention or specialist support[4]. For children with expressive language delay, speech and language therapy interventions have a positive effect.

Interventions aimed at improving vocabulary through instruction, such as 'dialogic' reading (which involve parents sharing books with their children and using a range of prompts to encourage discussion) are effective. They are particularly effective when delivered by trained professionals, and more so amongst middle and higher income groups than lower.

There is encouraging evidence for targeted support for children from low-income groups and /or those with signs of speech, language and communication needs delivered via:

- Interventions that aim to help parents to read to, and use, enriched language with their children,
- Interventions aimed at supporting teachers to work more effectively[40].

In addition, targeted interventions for those at risk of poor language development, such as low-income groups, could be delivered[4].

5.4) Women and families with multiple vulnerabilities or complex social factors

Needs assessment

The identification of families with additional needs requires the ability to identify the risks and strengths that are present. Early identification of need takes place over a period of time as a child develops and a parent builds trust in the practitioner. A successful strategy for identifying families with additional needs involves:

- Universal assessment points
- Partnership working
- Training and workforce skill

Universal assessment points are an opportunity to promote wellbeing, as well as to identify risk and additional need, these include:

- maternity booking appointment (12 weeks)
- promotional interview (28 weeks)
- new baby review (14 days postnatal)
- promotional interview (eight weeks postnatal)
- review at three months
- one-year health review
- two-and-a-half-year review

The use of standardised / validated assessment tools can supplement clinician's skill in identifying additional need[40].

Partnership working

The multifaceted nature of risks to children in the 1001 days needs a holistic response. Families need access to a complex system of support from primary care, health visiting, midwifery, mental health services, housing services, childcare, education and social services via an integrated, multi-agency approach. Effective communication and co-ordination between services is key, often more so than co-location of services[15]. Service co-ordination or integration is likely to improve families' experiences, enable those needing support to be identified more quickly, and increase the likelihood of families receiving the help they need[18].

Continuity of carer

Continuity of relationships between practitioners and families is important, particularly with families experiencing problems[40]. Women who have a midwife or health visitor they know and trust are more likely to report domestic abuse, mental health issues, or a personal history of adverse childhood experiences. In pregnancy, research suggests that women who see the same midwifery team for each visit are less likely to have miscarriages and premature births, and continuity of care has been shown to be associated with reduced mortality[15]. The reliability of needs assessment is also improved with continuity of health visitor alongside a partnership approach which builds the relationship between health visitor and client[37].

NICE recommends that care for pregnant women with complex social factors includes consideration of multi-agency assessment, ensuring women's needs and fears are

discussed in a non-judgemental way, and makes recommendations in relation to record keeping, information sharing and training[43].

Skilled workforce

Investing in the capacity and skill of the workforce is vital. The ability of staff to build trusting relationships with the parents and families they work with helps them to identify risks, engage parents about how best to care for their child and themselves and support them to change their behaviour, if necessary[44].

Motivational interviewing can help to produce behaviour change, though it requires skilful implementation to be effective. It is highlighted that core skills for health visitors should include: promotional interviews and partnership working; motivational interviewing and use of video-feedback. Practitioners should be equipped to balance knowledge about risk with professional judgement and recognise that assessment of risk evolves over time because a child develops rapidly at this age, families change, and parents disclose information as trust builds[40].

The early year's workforce includes a wide range of professionals such as social workers, health visitors, midwives, other medical practitioners, and the police, as well as early year's education practitioners. Experts highlight the need for a greater awareness of the importance of early experiences on child development, and the need for staff to have the skills and confidence to raise sensitive issues with parents[44].

In terms of mental health, professionals need the right training and skills to be able to identify, manage and refer to appropriate specialist support for perinatal mental health conditions[7].

Domestic abuse

Screening for intimate partner violence (domestic abuse) should be integrated into standard maternity and postnatal care[6]. Interventions to reduce the frequency of intimate partner violence should combine non-judgmental emotional support with advice about safety in relationships, advocacy and increased access to community services. The FNP is known to reduce domestic abuse among first time teenage mothers. Psychosocial support integrated into routine antenatal care can also reduce repeat victimisation, lowering the risk of intimate partner violence where women report violence in pregnancy[6].

NICE recommends that a local protocol is in place between maternity services, the police and third-sector agencies[43].

Teenage pregnancy

The teenage pregnancy JSNA highlights a number of interventions that are known to reduce the prevalence of teenage pregnancy and improve outcomes for teenage parents and their children.

The Family Nurse Partnership (FNP) is an evidenced based, intensive nurse-led prevention and early intervention programme for vulnerable first time young parents and their children. Whilst a government commissioned trial of FNP showed no benefit around four primary outcomes of smoking cessation, birthweight, second pregnancies and accident and

emergency attendances, the selection of these outcomes has been widely questioned. Based on five randomised control trials, the Early Intervention Foundation describes FNP as having evidence of a long-term positive impact on child outcomes[15].

5.5) Protection and promotion of health in pregnancy and infancy

Smoking

Carbon monoxide monitoring involving breath tests by maternity services effectively identifies women smoking in pregnancy[6].

Psychosocial interventions such as counselling, cognitive behavioural therapy and incentive based programmes have all been found to help mothers reduce or quit smoking during pregnancy. Incentive-based programmes have the best evidence of encouraging women to stop smoking in pregnancy, and whilst more expensive than smoking advice or counselling, UK studies suggest that the savings from reductions in low birth weights and other adverse child outcomes offset the upfront costs significantly[6].

Interventions that use techniques to measure household air quality can help heavy smokers reduce the amount of second-hand smoke present in their homes[6].

Smoking in pregnancy is explored further in the Tobacco JSNA chapter.

Substance and alcohol use

The Chief Medical Officers for the UK recommend that the safest approach is not to drink alcohol at all in pregnancy to keep risks to baby to a minimum.

The Alcohol Use Disorders Identification Test - known as the AUDIT tool can be used to assess for harmful levels of drinking in pregnancy. Whilst the importance of identifying and supporting women with drug or alcohol issues, and the impact on child development is clear, there is a lack of good evidence about appropriate treatment for harmful levels of drinking in pregnancy[6].

The effectiveness of treatments for substance and alcohol misuse are explored further in Substance Misuse JSNA chapter.

Healthy weight and nutrition

A healthy diet and being physically active in pregnancy will benefit both a woman and her unborn child.

Women receiving benefit payments and those under 18 should be supported to access the Healthy Start scheme which provides vouchers to purchase fresh fruit and vegetables and vitamins. Women's vitamin tablets contain:

- Folic acid: reduces the chance baby having spina bifida
- Vitamin C: helps maintain healthy tissue in the body
- Vitamin D: helps the body to absorb calcium

Healthy Start children's vitamin drops can be taken from 4 weeks to 4 years of age, and contain:

- Vitamin A: for growth, vision in dim light and healthy skin
- Vitamin C: helps maintain healthy tissue in the body
- Vitamin D: for strong bones and teeth

Health visitors can provide consistent, evidence based messages on nutrition, managing weight gain and physical activity and can use every opportunity to discuss the importance of a healthy weight and lifestyle with both parents[45].

Breastfeeding

The government's advice is that infants should be exclusively breastfed, receiving only breastmilk for the first 6 months of life. An important precursor for breastfeeding is skin-to-skin contact, which also helps to establish a nurturing bond between mother and baby[19].

Individual breastfeeding advice, provided to mothers over the phone and in person in the weeks before and after childbirth has the best evidence of increasing breastfeeding initiation and duration rates[6].

Health visitors are effective in helping mothers to continue breastfeeding and can support those mothers who are unable or do not wish to continue to breastfeed whilst still promoting bonding and secure attachments between mother and infant.

The UNICEF UK Baby Friendly Initiative is a nationally recognised mark of quality care for babies and mothers. The programme helps to ensure that professionals can provide sensitive and effective care and support for mothers, enabling them to make an informed choice about feeding, get breastfeeding off to a good start and overcome any challenges they may face[46].

Low birthweight

Interventions that improve physical outcomes of low-birthweight babies include[6]:

- Infant massage which improves physical outcomes, reduces parental stress and increases parental sensitivity. It's important to note that these benefits haven't been replicated with healthy, normal-weight infants.
- Cue-based training, aimed at infants having incubator care in hospital, to help parents understand their infant's feeding cues and maintain a quiet and alert state.

6) What is on the horizon?

Maternity service transformation: Better Births

In 2016 NHS England's Better Births set out a Five Year Forward View for NHS maternity services in England:

'Our vision for maternity services across England is for them to become safer, more personalised, kinder, professional and more family friendly; where every woman has access to information to enable her to make decisions about her care; and where she and her baby can access support that is centred around their individual needs and circumstances.

And for all staff to be supported to deliver care which is women centred, working in high performing teams, in organisations which are well led and in cultures which promote innovation, continuous learning and break down organisational and professional boundaries.'

The key outcomes set out in the Better Births report are as follows:

Better Births
Personalised care: centred on the woman, her baby and her family, based around their needs and their decisions, where they have genuine choice, informed by unbiased information.
Continuity of care: to ensure safe care based on a relationship of mutual trust and respect in line with the woman's decisions.
Safer care: with professionals working together across boundaries to ensure rapid referral, and access to the right care in the right place; leadership for a safety culture within and across organisations; and investigation, honesty and learning when things go wrong.
Better postnatal and perinatal mental health: to address the historic underfunding and provision in these two vital areas, which can have a significant impact on the life chances and wellbeing of the woman, baby and family.
Multi-professional working: breaking down barriers between midwives, obstetricians and other professionals to deliver safe and personalised care for women and their babies.
Working across boundaries: to provide and commission maternity services to support personalisation, safety and choice, with access to specialist care whenever needed.
A payment system: that fairly and adequately compensates providers for delivering high quality care to all women efficiently, while supporting commissioners to commission for personalisation, safety and choice.

Each area was tasked with establishing a Local Maternity System (LMS) to design and deliver maternity services, to develop a share vision and a local maternity transformation plan setting out how the above will be achieved. In Nottinghamshire there are two Local Maternity Systems: Nottingham and Nottinghamshire LMS (which includes all Nottinghamshire districts with the exception of Bassetlaw) and the South Yorkshire and Bassetlaw LMS (which includes Bassetlaw, where women receive maternity care from Doncaster and Bassetlaw Hospitals NHS Trust).

Of particular relevance to this chapter is the work to strengthen the maternal mental health pathway, reduce the prevalence of smoking in pregnancy and introduce continuity of carer, though a number of actions in the LMS transformation plans will support improved outcomes for mothers and babies.

A range of stakeholders from across Nottinghamshire including specialist mental health services, maternity services, commissioners, primary care, health visiting services, the NHSE Perinatal Strategic Clinical Network and psychological therapy services are working collaboratively to strengthen the pathway care for women with mental health needs in the perinatal period. Their aims include:

- To improve early identification of mental health need, with a particular focus on mild to moderate and emerging mental health needs
- To increase access to specialist perinatal mental health services for women with, or at risk of, moderate to severe mental health difficulties
- To standardise practice across the Nottingham and Nottinghamshire LMS footprint

Links with South Yorkshire and Bassetlaw LMS require strengthening.

Healthy Families Programme
An additional review to support school readiness is in development. This will be targeted at children identified at risk of not being school ready and will be delivered by the age of 3 years.

PHE have formed a cross government partnership with the Department for Education to improve speech, language and communication in the early years for disadvantaged children. Nottinghamshire Healthy Family teams will receive training in early speech, language and communication as part of a national health visitor training programme. This will compliment a new PHE speech, language and communication needs pathway for 0-5's which is expected to be published in 2019, and the delivery of a new early language assessment tool, expected in early 2020.

Family Nurse Partnership
An accelerated design and rapid programme testing project known as ADAPT is being delivered by eleven FNP sites across the country. These sites are implementing and testing changes to the way the FNP programme is delivered aiming to increase flexibility, further improve outcomes and meet emerging need. Nottinghamshire FNP are a part of this programme testing two core areas: personalisation, which explores amending programme eligibility, flexing the content and frequency of support and exploring early graduation; and intimate partner violence, which introduces new ways of working to best support families affected by domestic abuse.

Children's centre services
From June 2020, the delivery of children's centre services will transition to Nottinghamshire County Council from an externally commissioned provider and plans are in place to manage this transition smoothly.

Integrated health and wellbeing service
An all age's integrated wellbeing service is currently being commissioned which will combine support for weight management, smoking cessation, alcohol and public health mental health to best support the needs of the local population from April 2020. Interventions will be delivered in an integrated way and there will be a focus on groups with poorer health and wellbeing.

Evidence base
The evidence base around the 1001 days and associated interventions is growing rapidly. There is also an opportunity to learn from A Better Start, the 10 year national lottery funded project to improve the life chances of vulnerable children aged 0 to 3 in five areas across England between 2015 and 2025.

7) Local Views

A wealth of engagement has taken place with women and their families including feedback from a variety of sources.

Nottingham & Nottinghamshire Maternity Voices Partnership

The Nottingham and Nottinghamshire Local Maternity System Board has established a Maternity Voices Partnership who obtain regular feedback through engagement with women to influence the development of services for pregnancy, labour, birth and the care of the family up to the end of the postnatal period.

A total of ten surveys (online and face to face feedback) have taken place between 2016 and 2019, with 1,253 responses received. The following topics were covered:

- Birth choices
- Direct and early access to maternity services
- Maternal mental health
- Role of the father or partner in maternity care
- Use of apps and e-communication
- Care provided by my community midwife
- Home labour and midwifery led care
- Infant feeding

A summary of feedback received is included in Appendix 1. Feedback from each survey is shared with the Maternity Voices Partnership including Trust representatives to support, help shape, and improve local services for women and their families.

Better Births

Better Births offered an opportunity to review and reconfigure services locally to enable a vision of how maternity services could be developed to ensure all women get safe equitable care across the County and City. A local programme of engagement and coproduction with partners was undertaken.

Feedback was sought from face to face engagement with 160 women and their families, as well as results from an online survey that received 85 responses and engagement with the workforce and other stakeholders. Engagement was sought around the following priority areas:

- Personalised care
- Continuity of care
- Safer care
- Better postnatal and perinatal mental heath
- Multi-professional working

A summary of key themes is included Appendix 2.

Healthy Families Programme and children's centre services

Extensive engagement was undertaken as part of the commissioning of public health nursing services in 2015-16, a programme of engagement with service users, parents and carers, the current workforce, professionals, provider organisations, and in excess of 350 people from all Nottinghamshire districts provided verbal feedback at this stage. This shaped the service model moving forwards. Key priorities for families in relation to the 1001 days included ease of access to health visiting services in local accessible venues, ideally children's centres and importance of infant feeding support in the early days and weeks after birth.

The Healthy Families Programme and Children's centre services regularly obtain information on parents' experiences through their Service User and Carer Experience (SUCE) survey. An involvement and experience report and action plan is shared internally with Nottinghamshire Healthcare NHS Foundation Trust and managed within the service to review and implement changes or improvements based on feedback received and linked to key themes or trends. Families also have the option to feedback to the Care Opinion website or directly to the Patient Advice and Liaison Service (PALS). In addition, case studies are regularly collated and shared with service leads and commissioners.

Summary

From the valuable feedback received and summarised above some clear key themes emerge that are particularly linked to a child's early physical, social and emotional development, these are:

- **More information and support around infant feeding / postnatal care:** women feel this is variable with sometimes conflicting advice given; women feel that more support and information is needed especially post-natally.

- **Having good maternal mental health:** women want to build strong relationships and continuity with midwifes and health professionals to make them feel safe and confident to raise any concerns they might have; it is important for women to have support networks in place.

- **Having a healthy pregnancy:** Women want continuity of care and easy and convenient access to services.

What does this tell us?

8) Unmet need and service gaps

Actions to tackle the needs or service gaps identified in this section are identified under section 3: recommendations.

Overarching points

- High numbers of women of are not receiving their antenatal appointment.
- A review at 3 months is not mandated nationally nor included within the 4-5-6 health visiting model, and therefore is not delivered locally, however this Healthy Child Programme review point has been recognised as a good opportunity to promote wellbeing, identify risks and additional needs.

Maternal mental health, parent-infant interaction and attachment

- The identification of mild to moderate or emerging mental health needs in pregnancy is inconsistent across Nottinghamshire and there are opportunities to strengthen this in line with NICE guidance. Work to address this is underway.
- Though holistic assessment of maternal mental health needs takes place at the antenatal and new birth visits, this assessment may be strengthened with the routine use of validated screening tools.
- It is estimated that there are women with unmet mental health needs in the perinatal period, particularly amongst women with mild to moderate mental illness i.e. those who do not require support from specialist services. Work to address this is underway.
- There is an emerging evidence base around interventions to prevent post-natal depression, when delivered to mothers at risk.
- There may be opportunities to assess parent-infant interaction in the first few weeks after birth, and to support parental sensitivity and responsiveness via techniques such as video-feedback, however there are likely to be significant challenges to overcome in relation to resource, workforce capacity and training.
- Non-directive counselling using active listening techniques, characteristic of listening visits delivered by some health visiting services, is not delivered locally.

Healthy pregnancies and the protection and promotion of health in infancy

- Though the pre-conception period hasn't been explored in this JSNA, the importance of this time should not be underestimated. Pre-conceptual interventions can be challenging to deliver because women and their partners may not be accessing health services regularly, and 45% of pregnancies are either unplanned or associated with feelings of ambivalence[37], however there are opportunities to intervene between pregnancies which should be maximised.

- Smoking rates at the time of delivery are higher than national averages, particularly in Mansfield and Ashfield and are identified as a key priority for the Nottinghamshire LMS.

- Breastfeeding initiation rates measured at birth, and prevalence at 6-8 weeks are poor, particularly in Ashfield, Bassetlaw, Mansfield and Newark and Sherwood.

- A proportion of eligible beneficiaries do not access the Healthy Start scheme, and very few women and families are accessing Healthy Start vitamins.

- A significant proportion of women do not access vaccines in pregnancy for seasonal flu

Child development

- A proportion of families are declining 1 and 2 year development reviews, though it is important to note that Nottinghamshire is not an outlier when compared to other areas and national averages.

- Around 15% of children receiving a 2-2.5 year review are not meeting a good level of development (i.e. scoring above the threshold) in all five areas of development assessed by the ASQ.

- The HCP recommends the use of the Social and Emotional ASQ at the 1 and 2 year development reviews.

Multiple vulnerabilities and complex social needs

- There are opportunities to strengthen partnership working and pathways of care for women with complex social needs or multiple vulnerabilities, beginning in pregnancy.

- It's been highlighted nationally and locally that joined-up care and support for children, parents and families has been inhibited by barriers to sharing and linking information, including fears from professionals about what information they can share with whom and in what way. This is further complicated by separate data systems, or where data systems are shared, a lack of knowledge about what level of information professionals can or can't view[15].

9) Knowledge gaps

- Data relating to women with complex social factors, such as but not limited to domestic abuse or substance or alcohol use, presenting at the maternity booking appointment is not available.

- Early access to antenatal care preferably by 10 weeks of pregnancy is vital as it has a direct positive effect on infant mortality and low birth weight. The proportion of women booking late to maternity services is not known.

- We do not fully understand why some universal parents and carers are not accessing antenatal, 1, or 2-2.5 year reviews.

- There are challenges in capturing the proportion of 2 year reviews that are integrated with early year's settings due to differences in the timings of the reviews.

- There is not currently a mechanism to capture the numbers of pregnant and postnatal women accessing psychological therapy services.

What should we do next?

10) Recommendations for consideration by commissioners

A number of recommendations have emerged to strengthen early identification of need and delivery of appropriate interventions in the 1001 days. These will be owned by the Healthy Child and Early Childhood Integrated Commissioning Group until such time as the Best Start Group, referenced, is established.

It is recommended that the Best Start Group could oversee the implementation of all recommendations, working in close partnership with the Local Maternity and Neonatal System Board.

Recommendations	**Lead organisation (s)**				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
System-wide:					
1. Recognising the importance of the first 1001 days in supporting child development, school readiness and the life-long impact on health, wellbeing and prosperity: • Prioritise the earlier identification of need and provision of evidence-based support for families in the 1001 days. Ensure interventions currently delivered reflect best available evidence. • Establish a multi-agency, strategic Best Start Group and accompanying strategy to ensure every child in Nottinghamshire has the best possible start in life, beginning in pregnancy and across their early years,	/				

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
2. Local Maternity Systems, public health leads, Healthy Family teams, children's centres services should work in close partnership to support health and wellbeing in pregnancy, with a specific focus on: • Smoking in pregnancy: to reduce the proportion of women smoking in pregnancy in line with locally agreed trajectories • Breastfeeding: to increase the proportion of women breastfeeding at 6 to 8 weeks • Continuity of care: to increase opportunities for women to receive continuity of carer across maternity services, and to improve communication and handover of care between maternity services and Healthy Family teams • Information sharing and partnership working, including information technology • Maximising opportunities to improve health and wellbeing between pregnancies • Promoting and supporting early access to maternity care	/	/	/	/	/
3. Review and strengthen pathways of care and partnership working for women with complex social needs or vulnerabilities.	/	/	/		
4. There are inequalities in outcomes across districts, most likely linked to levels of household income, which should be considered when planning and targeting services and interventions.	/			/	
5. Continue to recognise the skill and expertise of the early year's workforce and further invest in evidence-based training to support a wide range of professionals to recognise the importance of the 1001	/		/		

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
days and to work to engage and support families collaboratively, building relationships based on trust.					
Health promotion:					
6. Ensure women are accessing maternity care early, ideally by 10 weeks, but usually by 12 weeks and 6 days.		/	/	/	
7. Radically improve the uptake of Healthy Start vitamins by pregnant women and infants from the age of 4 weeks.	/	/	/		
8. Develop pathways of care between maternity services, Healthy Family teams, children's entre services and the new integrated wellbeing service in relation to weight management, smoking cessation and alcohol use in pregnancy and infancy.	/	/	/	/	
9. Continue efforts to improve breastfeeding prevalence, focused on areas of the county with the lowest rates.	/	/	/		
10. Increase the awareness and uptake of vaccinations in pregnancy and early childhood.	/	/			/
Maternal, mental health, attachment and parent-infant interaction:					
11. Improve uptake of the antenatal review by better understanding the barriers to this.	/		/		
12. Ensure the actions identified to strengthen the pathway of care for women with perinatal mental health needs are implemented, including the implementation of a new assessment tool in maternity services, improved referral pathways to psychological therapy services and a rolling training programme.		/	/	/	
13. Develop clear and consistent universal messages about the importance of sensitive, attuned and face-to-face interactions from birth onwards	/				

Recommendations	Lead organisation (s)				
	Local Authority	Local Maternity and Neonatal System	Provider organisations	Clinical Commissioning Groups	Other partners
14. Identify opportunities to assess parent-infant interaction in the first few weeks and consider how interventions to support this could be delivered. Please note: this recommendation may have significant resource implications, for further exploration.	/		/		
15. Support clinicians working in neo-natal units to identify maternal mental health needs.		/			
Child development:					
16. Support parents to develop good home learning environments from birth, targeted at at-risk groups such as families with low incomes / those living in areas of multiple deprivation. Consider developing clear and consistent universal messages about the importance of home learning, from birth.	/		/		/
17. Replicate the robust pathways from the 2 year review to sources of appropriate support e.g. children's centre programmes, for the antenatal, new birth, 6 to 8 week and 1 year reviews, and identify any gaps in appropriate support.	/		/		
18. Review, and wherever possible, implement the recommendations from PHE's pathway for children aged 0-5 with speech, language and communication needs, once published.	/				

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Appendix One: Nottingham & Nottinghamshire Maternity Voices Partnership
Feedback summary of responses from surveys taken place between 2016 and 2019.

Topic:	**Birth Choices** (122 responses)
• *94% of women were given a choice of where to give birth to their baby* • *76% of women received relevant information and could make an informed decision about where to give birth* • *75% of women could access their choice of birth setting, 25% could not mainly due to other complications* • *96% of women were happy with the place they gave birth* • *13% of women would have liked more support to help them to decided where to give birth e.g. more information about what the hospital offers/options prior to making the decision*	
Topic:	**Direct & Early Access to Maternity Services** (120 responses)
• *Most women surveyed were not aware that they could access midwifery services directly – more communication required via various methods* • *Some women not being seen before 13 weeks but most women aware that its best to get maternity care early (before 13 weeks)* • *Continuity of care – women being seen by more than 1 midwife*	
Topic:	**Maternal Mental Health** (109 responses)
• *More information to be available about emotional health and wellbeing / mental health in pregnancy as 32% of the women surveyed hadn't received anything* • *34% of women did have concerns about emotional health /wellbeing /mental health in and after pregnancy with 38% of those not feeling they could tell their midwife or other health professional* • *Building of good relationships e.g. seeing different midwives*	
Topic:	**Role of the Father/Partner in Maternity Care** (83 responses)
• *96% of birth partners felt included in their partners pregnancy* • *More information on topics included – complicated deliveries, development of baby, help with breastfeeding* • *89% found antenatal classes useful* • *Information on smoke free homes /smoking cessation – 41% not provided information and 22% said not aware of it* • *Additional information requested that would be helpful: an app for fathers, understanding the father's role in pregnancy, booklet for dads, more information when moving on to the ward, step by step guides, father specific antenatal classes, information on what's normal?* • *Majority of responses would like to receive information through leaflet format followed by Apps and groups* • *53% did know how to access mental health support if required with 44% saying no* • *Overall comments on service received were very good*	
Topic:	**Use of Apps and e-communication** (90 responses)
• *Majority of women are happy with the information they received. Around 50% of women surveyed would like to get information from the internet or through Apps* • *More information specific to hospital and after birth e.g. caring for your baby, bathing, breastfeeding, etc* • *Apps detailing specific issues e.g. Polycystic ovary syndrome PCOD*	
Topic:	**Care provided by my Community Midwife** (X22 NUH X22 SFHFT responses)

- *Women were happy with the antenatal care venue*
- *Women said if they couldn't see their named midwife they would prefer to see 1-2 midwives*
- *Women said they did have the opportunity to discuss their birth plan*
- *Majority of women felt that a midwife that cared for them during labour needs to understands their needs and have experience and knowledge was what was felt important for women*

Topic:	**Home Labour and Midwifery lead care** (93 responses)

- *The majority of women (70%) were given a choice of where to give birth to their baby*
- *Some women felt they had to push for a home birth due to staff capacity*
- *More information would have been better for some women to be able to make the decision and also around (low /high risk) pregnancies*
- *Very positive experiences from women who had home birth*

Topic:	**Infant Feeding** (128 responses)

- *More information generally around feeding (including bottle feeding) as this can sometimes be confusing*
- *Breastfeeding was only supported early on; the support was said to be variable with sometimes conflicting advice given*
- *Some women said they were not aware of Breastfeeding Friendly Places in local areas*
- *Some women would like more information around feeding in antenatal classes*
- *Many respondents brought up issues regarding recognition of tongue tie*

Topic:	**Personalised Care** (68 responses)

- *Respondent said that in general the midwives were excellent but that the consultants and doctors were more patronising*
- *Respondents felt that they mainly had to research for their own information online and asking for it from midwives. Midwives were said to be helpful but often they had to be actually asked for information*
- *Women's choices were written down in a variety of places namely; maternity/pregnancy notes, midwifes diary, their red books or birth plans*
- *Despite conversations around birth plans and alternatives there was a mixture of those who wrote choices in their notes and those who didn't. Many felt that things never went according to plan so there was no point. Those who anticipated complications or wanted specific things were most likely to have written in their notes*
- *Comments on the service they received centre on care with a range of excellent and poor care. There were also a number of respondents who received mixed care, often good antenatal care but not so good postnatal care. Another way care varied was by staff member for both midwives and consultants. Some received good feeding support and others no or unsympathetic support. Some respondents felt that they didn't have enough information to make important decisions. Whilst some felt staff didn't always pay attention to their notes and asked them unnecessary difficult questions. Several commented that they felt the services were overstretched and were affected as a result*

Topic:	**Continuity of Carer** (396 responses) - for a detailed infographic of results, please see appendix 2.

- *62% of women said they had not previously met the midwives who cared for them following the birth of their baby*
- *94.5% of women felt it was important to be able to develop a relationship with their Midwife*
- *60% of women said they would like to see 1-2 midwives throughout their whole journey*

Appendix Two - Better Births

Summary of feedback and themes from face to face engagement with 160 women and their families and results from an online survey receiving 85 responses.

Priority question:	**Personalised Care** Face to face
• *Most women were happy with the care they had from their Midwives and maternity staff and satisfied with the birth choices, however women not aware of Home Birth as a choice and more discussion needed regarding Birthing Units* • *Improved access to direct and easy access to maternity services – including more flexibility around antenatal appointments, and access to services at weekends.* • *Some women felt communication was poor and different health professionals gave different information and advice – confusing* • *More birthing pools required* • *More time and discussion with the midwife to discuss personalised care plans was needed* • *Coffee/support sessions for fathers or birth partners to enable group parenting support and information/leaflets on facilities available.* • *Community Hubs were welcomed as need for services closer to home – routine scans, blood tests, assessment units and consultant care*	
Priority question:	**Personalised Care** Online survey
• *93% of women wanted to discuss birth choice information with their Midwife and 50% would use the internet* • *84% women has an opportunity to share their thoughts feelings and priorities with their Midwife or Obstetrician* • *73% of women felt that partners/fathers needed debrief following a difficult birth and information around what was normal in pregnancy, birth and breastfeeding*	
Priority question:	**Continuity of Care** Face to face
• *Women preferred one Midwife particularly with a first baby and if they had complex needs* • *Continuity needs improving in the Antenatal and Postnatal period. Some women are still seeing up to 7 midwives* • *Women wanted to feel confidence and trust in their Midwife and that building relationships with a small number of Midwives achieved this* • *Women didn't feel that their midwife in labour needed to be someone they knew but a good communicator and having confidence in safe quality were most important*	
Priority question:	**Continuity of Care** online survey
• *84% of women had a named community Midwife* • *78% of women said they would want to see a maximum of 1-2 midwives throughout their pregnancy, 15% of women would be happy to see 2-3 midwives and 4% didn't matter* • *96% of women did have a first home visit in the postnatal period, 64% had subsequent visits and of these 56% of women saw their named midwife*	
Priority question:	**Safer Care** Face to face
• *Slow response from emergency calls to ambulance services highlighted*	

• *More maternity staff required* • *Maternity Care Support Workers were highly valued, and they wished they could do more*	
Priority question:	**Safer Care** Online survey
• *72% of women had a midwife when they needed her in their labour and birth* • *71% of women felt they had a midwife in the antenatal period when they needed one* • *61% of women felt if concerns were raised in pregnancy, intrapartum or postnatal period they were taken seriously*	
Priority question:	**Better Postnatal and Perinatal Mental Health** Face to face
• *Postnatal ward experience was poor with many criticisms especially regarding discharge arrangements and pharmacy TTO's (time to take out)* • *Postnatal appointments were cancelled at times which was frustrating for women* • *More postnatal support is needed and more opportunity for mothers to meet other mothers* • *Consider postnatal drop in support in community hub setting*	
Priority question:	**Better Postnatal and Perinatal Mental Health** Online survey
• *94% of women felt having a good relationship with your named midwife would make you feel safe and confident to raise concerns* • *64% of women were satisfied with the support provided in the postnatal period* • *53% of women felt that they had a midwife when they needed her in hospital following the birth*	
Priority question:	**Multi-Professional working** Face to face
• *Improved communications between maternity acute services and community midwifery services* • *Improved communication between GPs, Health Visitors and Midwives* • *Integrated services in community is important* • *One integrated IT system which is linked to health care and social care*	
Priority question:	**Multi-Professional working** Online survey
• *64% of women felt their care was co-ordinated between maternity services and community services* • *49% of women felt their care was co-ordinated between community midwifery care and the care provided in the hospital*	