Nottinghamshire County Council

Director of Public Health's

Annual Report

2017

Investing in the Future:
making a healthy start

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Investing in the Future: Making a Healthy Start

When I meet groups or make presentations to forums across the county, people are often surprised to hear that as little as 10% of the health and wellbeing of our local population is linked to health care access - things like GPs and hospital services.

As I approach the end of my career, I think about my own personal journey. I started working in the NHS at the age of 18. My early years were spent providing care and clinical interventions to patients in order to 'cure' them or help them to enjoy a better quality of life, living with their chronic ill health. I had relatively little understanding, at that stage, of how social and economic factors impacted on health. I remember reading the Penguin edition of the Black Report* in 1982. This report demonstrated that, although overall health had improved since the introduction of the welfare state, there were widespread health inequalities, and that the main cause of these inequalities was economic inequality. By health inequalities, I mean inequalities that are preventable, arising from unjust differences in the health status experienced by certain population groups, shaped by social, environmental and economic conditions. So, on reading the Black Report, I was shocked and surprised at the extent of these. My insight and understanding really started to grow then, and with this, my enthusiasm for Public Health.

The Marmot Report 'Fair Society, Healthy Lives'[1] has further developed our knowledge and understanding of health inequalities, in particular what needs to be done to address those inequalities. For this reason, my last report as Nottinghamshire DPH will focus on reducing health inequalities through two areas: giving every child the best start in life and on economic wellbeing.

The Health and Social Care Act 2012 requires all Directors of Public Health to produce an independent report on the health of their local population. The local authority, in this instance Nottinghamshire County Council, is required to publish it. This report has been written to demonstrate progress so far but also to identify where further opportunities lie to make a real and significant difference to the health and wellbeing of our Nottinghamshire residents.

Barbara Brady
Interim Director of Public Health
for Nottinghamshire
November 2017

* The report showed that the death rate for men in social class V was twice that for men in social class I and that gap between the two was increasing, not reducing as was expected.

Since last year's report, Nottinghamshire County Council has published its strategic plan, "Your Nottinghamshire, Your Future 2017-2021". The plan has four ambitions

- ▶ A great place to bring up your family
- ▶ A great place to fulfil your ambition
- ▶ A great place to enjoy your later life
- ▶ A great place to start and grow your business

Although none of these ambitions makes explicit reference to health, the reality is that there could be significant health gain if these were taken forward in a way that sought to improve health and reduce health inequalities, as all 4 ambitions involve the social and economic determinants of health.

A recent publication by the Local Government Association, Health in all Policies, a manual for local government[2] makes the case for local government to take into account the health implications of the decisions they make. This builds on our understanding that little as 10% of the health and wellbeing of our local population is linked to health care access. So we need to secure as much health gain from issues that are often not seen as 'Health', a good example of this is transport. The potential health gain if all government implemented this would

be significant and so it's something I am keen to see embedded across our County. That's why I am starting with the recommendation below:

Recommendation: All local authorities within Nottinghamshire adopt and implement Health in All Policies

In last year's Annual Report, I started by explaining the difference between life expectancy – the number of years a person can expect to live – and healthy life expectancy – how long a person can expect to live in "good" health – and then showed how some communities within the County have poorer levels of health than others.

Differences in people's health was the key message behind the Marmot report, "Fair Society, Healthy Lives" first published in 2010. This report referred to the 'social determinants of health' - a term used to describe the social, economic and environmental conditions in which people are born, grow, live, work, and age, which shape and drive health outcomes. Because these are not the same for everyone, there is an "un-level playing field" as shown in the picture opposite.

Figure 1: The 'un-level' playing field
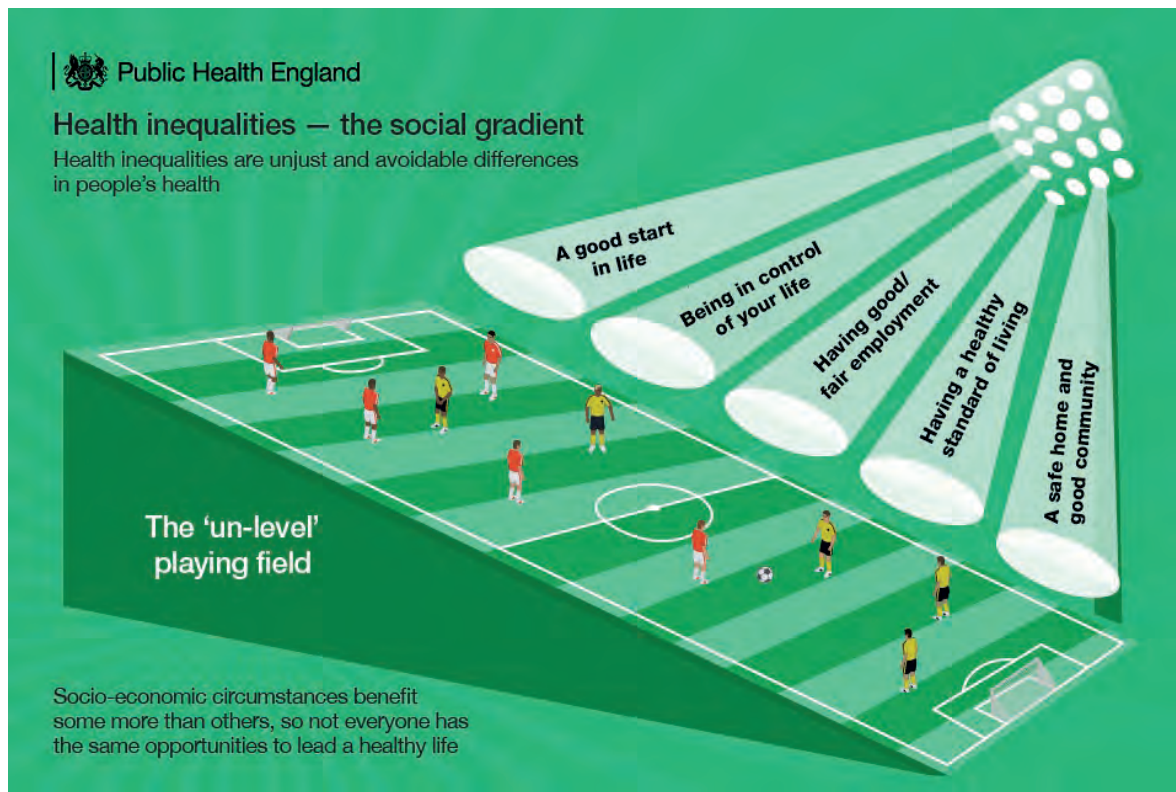
Source: Public Health England, 2017.[3]

Children growing up in areas of greatest socio-economic need often have worse outcomes throughout their lives, from educational attainment through to employment prospects, which in turn affect their physical and mental wellbeing. Everyone should have the opportunity to make choices that support good health, regardless of where they live.

In the next chapter, we will look at how the conditions in which people are born and grow as children can influence their health in later life.

Being able to make investments in the future health of our population relies on there being sufficient public resources to do so. A recent report to Nottinghamshire County Council by East Midlands Councils considered the "un-level playing field" in terms of resources available, citing Government statistics that demonstrated that in 2015/16 (the last year for which figures are available) the East Midlands region had the third lowest level of public expenditure on services, in total and per head of population. It also had the third lowest level of public expenditure on health care and the third lowest level of public expenditure on education.[4]

Although total public expenditure has been falling everywhere, expenditure in the East Midlands has remained consistently below the England average. If the UK public expenditure per head is indexed at 100, the East Midlands has just 91, compared to 104 in the North East and 103 in the North West. Chapter 5 of this report will look in more detail at the issue of equity, including fair distribution of resources.

The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens in the early years of a child's life, starting in the womb, has a profound impact on a child's future, with life-long effects on many aspects of health and wellbeing – from obesity, heart disease and mental health, to educational achievement and economic status.

The first 1001 days, from conception to age 2 are widely recognised as a vital time in the life of a child.[5] Pregnancy is a critical period when a mother's physical and mental health can have a lifelong impact on the child. Maternal stress, diet and alcohol or drug misuse can place a child's development at risk, while a happy, healthy and safe pregnancy will contribute towards the new baby having the best start in life.

Positive early experiences, which support a child's physical, social and cognitive development, strongly influence how ready a child is to learn, to start school and in turn, how well they do at school. This will affect their life chances and their wellbeing in adulthood.[6] Sensitive and attuned parenting at this time has a significant impact on the baby's developing brain and in promoting secure attachment and bonding. All parents want to be the best parent they can be for their child, but for some, the transition to parenthood can be a challenging time, and there are many factors which can adversely affect parents' ability to provide safe, responsive care to their baby. The skills, confidence and ability of new parents to offer that 'best start in life' for their child can be affected by[7]:

► Economic and social issues

► Own poor experience of being parented/adverse childhood experience (This topic is explored further in Chapter 3)

► Cycle of poor aspiration

► Exposure to domestic violence

► Alcohol and substance misuse

► Mental health problems

► Poor relationship between parents

It is therefore important to provide interventions and support to families facing difficulties, in order to help them to provide the best start in life for their child.

The Marmot Report, Fair Society, Healthy Lives, outlines the policy objective of giving every child the best start in life, recommending that we:

▶ Increase investment in early years.

▶ Support families to develop children's skills, by:

    o Giving priority to pre and postnatal interventions, such as intensive home-visiting programmes, that reduce adverse outcomes of pregnancy and infancy

    o Providing paid parental leave in the first year of life with a minimum income for healthy living

    o Providing routine support to families through parenting programmes, children's centres and key workers, delivered to meet social need via outreach to families

    o Developing programmes for the transition to school

▶ Provide good quality evidence-based early years education and childcare, working to increase the take-up by children from disadvantaged families

Some of these recommendations relate to national policies, while other need action at both a national and local level. This chapter highlights work already underway and makes recommendations for further actions.

Interventions to improve outcomes of pregnancy and infancy for local children and families

We have approximately 8,650 births in our county every year. Although the proportion of pregnancies leading to the delivery of babies with low birth weight and stillbirths is lower than the average for England, there are significant differences in rates across the County. There are higher rates in Mansfield (7.9%), Bassetlaw (7.6%) and Ashfield (7.4%), compared to an average of 6.7% for Nottinghamshire (figures from Public Health Outcomes Framework, 2013-15). Low birth weight is associated with a greatly increased risk of death in the first year of life as well as serious illness and lifelong disability, along with greater risk of developing learning and behavioural difficulties, lower educational attainment and lower socio-economic status as adults. The risk of having a baby with low birth weight is more common for mothers living in poverty, those who smoke in pregnancy, have poor mental health, poor nutrition, are younger and do not access services early.

Smoking in pregnancy is of particular concern, 14.5% of our mothers are smokers when their babies are delivered compared with 10.5% nationally (2016-17), with more pregnant women smoking in areas of greater need. The map overleaf identifies the variation in smoking rates at time of delivery across Nottinghamshire. Data show that babies born to mothers that smoke in pregnancy weigh on average, 200g less than babies born to non-smokers (ONS 2016).[8]

Figure 2: Map showing Percentage of Women Smoking at time of delivery, by Nottinghamshire NHS Clinical Commissioning Group (CCG) compared to England 2016/17
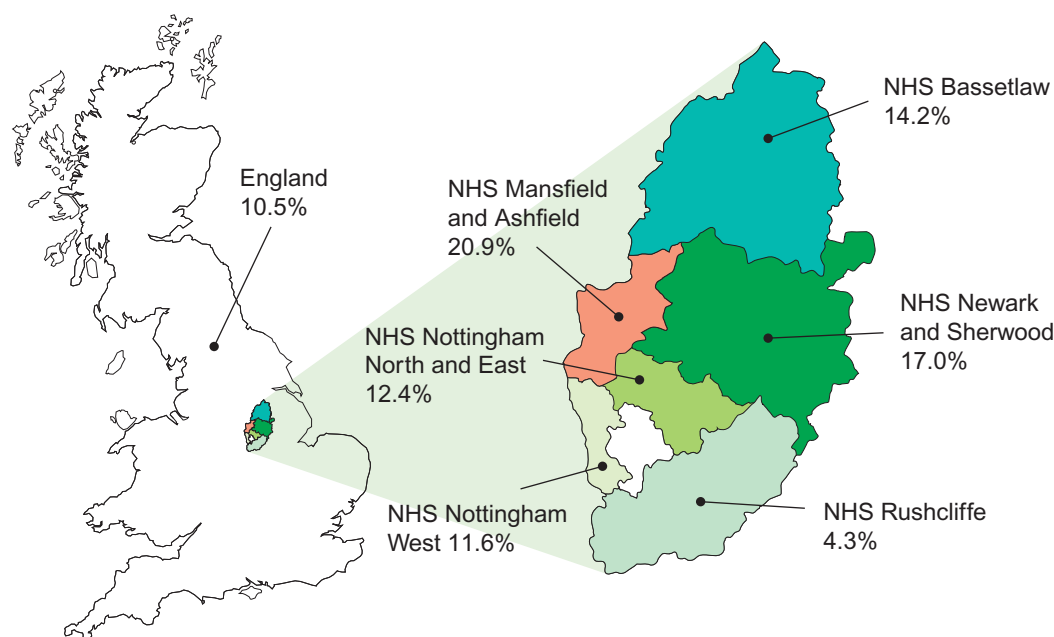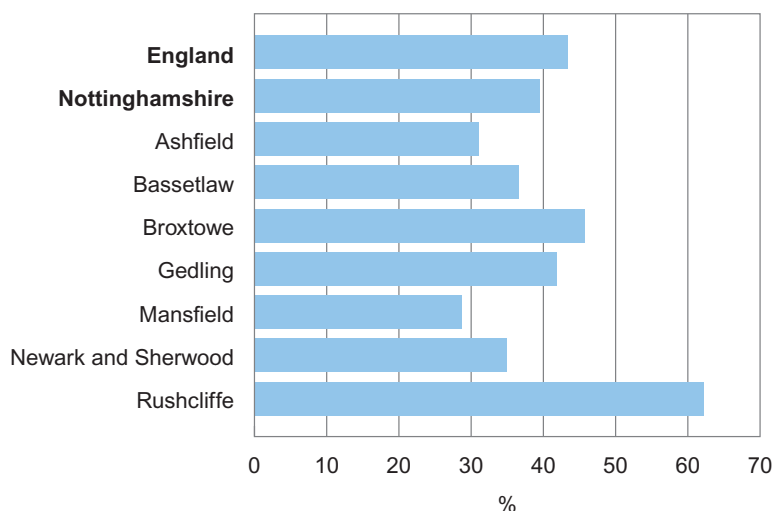

Source: Public Health Outcomes Framework, accessed July 2017

Smoking in pregnancy is a local priority for action highlighted in the *NCC Tobacco Declaration action plan 2017-2018.* In addition to commissioning services to support women to stop smoking in pregnancy, promotion of smoke free homes and clear advice about the danger that other people's tobacco smoke poses to the pregnant woman and the baby are key features of the plan.

Recommendation: Implement the actions related to smoke free homes, pregnancy and children in the Nottinghamshire Tobacco Declaration Action Plan 2017-18

Breastfeeding has significant benefits for both mother and child, promoting a strong emotional bond between them. This in turn leads to improved physical and emotional health for both, and improved later cognitive, linguistic, and social skills of the baby. In the longer term it has a protective factor against obesity and cardiovascular disease later in life. In 2014/15 69% of mothers initiated breastfeeding in Nottinghamshire compared with a national average of 74.3%.[9] In Nottinghamshire as elsewhere, children born to mothers living in areas of greatest need are less likely to be breastfed. The rate of mothers maintaining breastfeeding at 6-8 weeks also differs across our County, as shown in the chart opposite.

Figure 3: Breastfeeding rates at 6-8 weeks by District within Nottinghamshire and compared to Nottinghamshire and England averages, 2014-15

Source: Public Health Outcomes Framework, accessed July 2017

Increasing the numbers of mothers who initiate and sustain breastfeeding is a priority for us. This is being delivered through the implementation of *Breastfeeding, A Framework for Action, Nottinghamshire County and Nottingham City 2015-2020*. We are committed to ensuring that local mothers have the opportunity to breastfeed in convenient locations, reducing barriers and tackling negative perceptions. We have introduced a Countywide initiative, 'Breastfeeding Friendly Places', to promote breastfeeding in accredited venues including cafés, health centres, children's centres and retail outlets. Each District/Borough Council is promoting the initiative and accrediting venues in their own localities.

**Figure 4: Breastfeeding friendly logo, Nottinghamshire**

Recommendation: Continue to implement Breastfeeding: A Framework for Action, Nottinghamshire County and Nottingham City 2015-2020, including increasing the number of breastfeeding friendly accredited venues in all local communities

Young parents, particularly teenage mothers, often experience significant challenges in their lives; their health and that of their babies is likely to be worse than average. They are less likely to finish their education, less likely to find employment and are more likely to be living in poverty. These factors all impact on their ability to provide their child with the best start in life.

The number of teenage pregnancies in Nottinghamshire has reduced significantly in recent years, from 614 conceptions in 1998 to 271 conceptions in 2015, a drop of 56.3%. Figure 1 shows the trend in Nottinghamshire for numbers of teenage conceptions (aged 15-17). Whilst this reduction as a whole is in line with the national trend, local areas of greater socio-economic need continue to have rates that are higher than the national average.

Figure 5: Trends in number of Teenage Conceptions amongst women aged 15-17 in Nottinghamshire 1998-2014
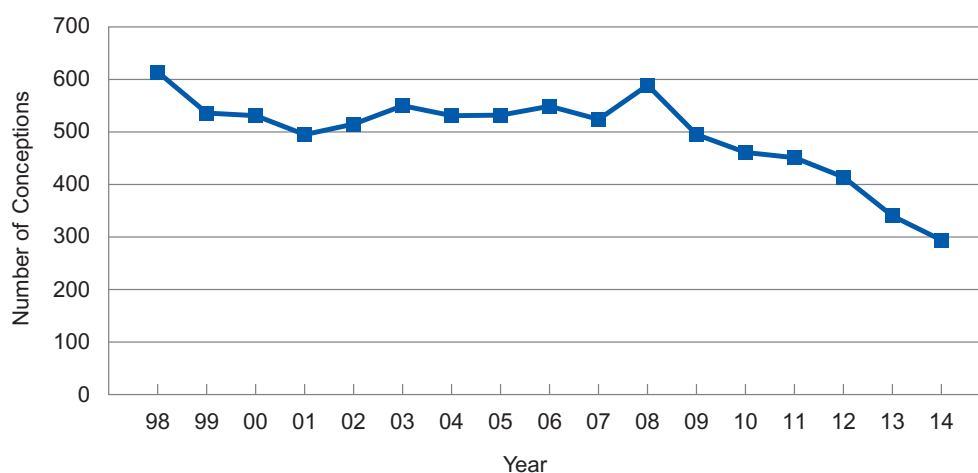
Source: Public Health Outcomes Framework, accessed July 2017

In order to give babies of teenage and other vulnerable young parents the best start in life, the Family Nurse Partnership Programme (FNP) provides an intensive home visiting programme for first time young mothers in the county. Provided by highly trained 'Family Nurses', the programme aims to transform the life chances of children and families most in need, helping to improve social mobility and break the cycle of intergenerational disadvantage. Our FNP works with many organisations to support young women and their babies through some of the most challenging times of their lives.

Recommendation: Conduct an audit to measure the impact of the FNP locally

The Healthy Child Programme (HCP) is the core service delivering evidence-based public health services to our children, young people and families. All families are entitled to receive this holistic programme of care and universal health and development reviews, which start in the antenatal period and can continue until a young person reaches 19 years of age. This national programme supports parents and families to ensure that problems that may impact on their child's immediate or long term health and wellbeing are addressed early before problems escalate. Our HCP is commissioned by Nottinghamshire County Council as part of the 'Healthy Families Programme' delivered by locality-based Healthy Family Teams.

Figure 6: Healthy Child Programme Pregnancy to Age 2

The Healthy Child Programme: Pregnancy to age 2

Prenatal
28 weeks

Antenatal contact

Antenatal care and screening

Health and social care assessment

Birth
to 8 weeks

New birth review

6-8 week review

High impact areas:
- transition to parenthood and the early weeks
- breastfeeding
- maternal mental health

Aged 1

9-12 month review

High impact areas:
- healthy weight, healthy nutrition
- managing illness and unintentional injuries

Aged 2
ready to learn

2 to 2 ½ year review

High impact areas:
- health and wellbeing and development aged 2

Mandated reviews

Source: Public Health England, 2016

Parenting programmes, early years education and childcare

Providing parents with the support they need and ensuring access to high quality childcare and early years education is a significant cont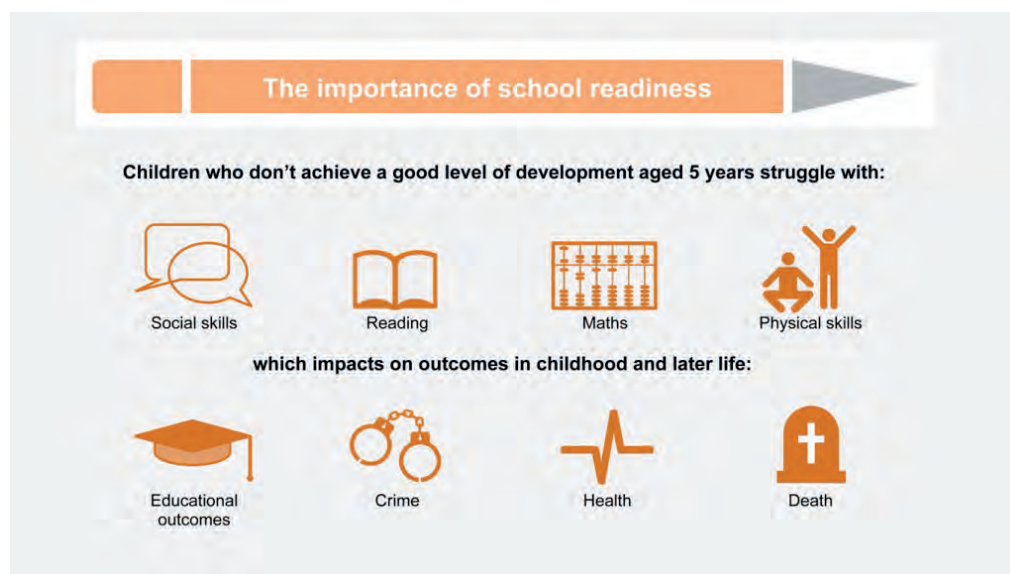ributor to a child's early life experience. Ensuring a co-ordinated, consistent and multi-agency approach to family and parenting support is crucial in making sure that families are safe, happy, secure, and can reach their full potential.[10] Since all families are different and need different levels of support at different times, it is important that we provide a range of options, including targeted options for families with young carers, teenage parents, foster carers and kinship carers to meet their individual needs. Families where parents have learning disabilities and those with chaotic and complex lives may require specialised and ongoing support. At times families may need help with issues such as domestic violence, substance misuse and mental health, which can have devastating effects on families' lives. Chapter 3 in this report looks in more detail at the effects of these kinds of adverse experiences on children.

Our Family and Parenting Strategy (2015-2017) aims to meet the needs of families effectively, by employing a range of methods, from universal information to specialised outreach approaches. Support services are provided in a variety of ways: including by the Family Service – which leads on the delivery of the 'Supporting Families' agenda, by the Healthy Families Programme and through school-based provision, and third sector provision. Families can also look online for information to support them with parenting, access to childcare and early years' education information via the 'Nottinghamshire Help Yourself' website (www.nottshelpyourself.org. uk). Development of the website is overseen by a partnership between health services, the voluntary sector and Nottinghamshire County Council, bringing together information and advice in one place so families can easily find out about services available to them locally.

Early Years education, and school readiness - We want to ensure that all young children and their families are able to reach their potential. This is achieved by ensuring that they access high quality, integrated early childhood services that prepare them for school and narrow the attainment gap between the most disadvantaged children and their peers. Educational attainment is one of the main markers for wellbeing throughout the life-course, so it is important that no child is left behind at the beginning of their school life.[11]

Figure 7: Improving School Readiness

The importance of school readiness

Children who don't achieve a good level of development aged 5 years struggle with:

Social skills — Reading — Maths — Physical skills

which impacts on outcomes in childhood and later life:

Educational outcomes — Crime — Health — Death

Source: Public Health England, 2015

Investing in high quality early care and education also has economic benefits for society as a whole. For every £1 invested in good quality early care and education, taxpayers save up to £13 in future costs. For every £1 spent on early years education, £7 would need to be spent to have the same impact in adolescence.[12]

The percentage of our children 'ready for school' is lower than the England average. **Table 1** shows that children in receipt of free school meals within Nottinghamshire are even less likely to be ready for school than their more affluent peers. In order to address this, we are focussing on ensuring that there are sufficient early education/childcare places to meet the needs of local families. This follows the government announcement to increase the current 15 hours of entitlement to free childcare for 3 to 4 year olds, to 30 hours for children of working parents, whilst protecting free childcare places for eligible two year olds.

Table 1: School Readiness amongst children in Nottinghamshire 2015/16

Indicator	England	Nottinghamshire
% of children achieving a good level of development at the end of reception	69.3	67.0
% of children in receipt of free school meals achieving a good level of development at the end of reception	54.4	47.5

Source: Public Health Outcomes Framework, accessed July 2017

Recommendation: Review the multi-agency Early Years Improvement Plan for Nottinghamshire to ensure that every child, regardless of where they live, has the opportunity to be ready for school

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). Types of trauma usually measured include:

- Physical abuse

- Emotional abuse

- Sexual abuse

- Witnessing domestic violence in the home

- Substance misuse by adults in the home

- Losing a parent through divorce or separation

- Losing a parent through imprisonment

- Losing a parent through bereavement.

Each one of these different types of negative experience during childhood is counted as one "ACE". Studies have shown a reliable association between higher numbers of reported ACEs and poor mental and physical health in adulthood.
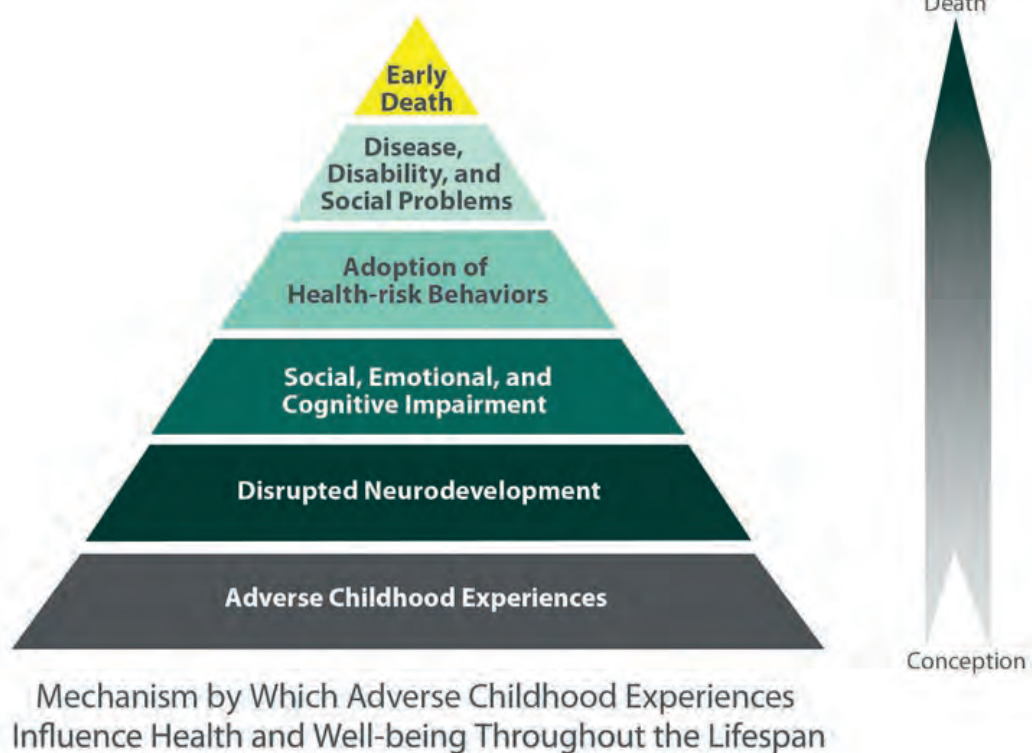
Box 1: Reporting four or more ACEs is strongly associated with a higher risk of:

Adolescent pregnancy

Alcoholism and alcohol abuse

Cancer

Chronic obstructive pulmonary disease (COPD)

Depression

Diabetes

Early initiation of smoking

Early initiation of sexual activity

Financial stress

Illegal drug use

Incarceration

Ischemic heart disease

Liver Disease

Miscarriage

Poor academic achievement

Poor work performance

Sexual and domestic violence

Sexually transmitted disease

Smoking

Suicide Attempts[13] [14] [15]

This relationship is not set in stone. There are many examples of people who had extremely traumatic childhoods but nevertheless lead healthy and happy adult lives. As with the relationship between smoking and cancer, it is a matter of increased risk, not of biological certainty. Not everyone who smokes will get cancer and not everyone who has cancer developed it because they smoked. However, smoking significantly raises the probability of developing certain cancers later in life. In the same way, ACEs predispose people to higher than average levels of mental and physical health problems in adulthood.

The mechanism by which ACEs affect our brains, and therefore our lives, is now becoming better understood. The diagram below shows how adverse childhood experiences can affect health and wellbeing throughout a person's life.

Figure 8: The ACE Pyramid

Death

Early Death

Disease, Disability, and Social Problems

Adoption of Health-risk Behaviors

Social, Emotional, and Cognitive Impairment

Disrupted Neurodevelopment

Adverse Childhood Experiences

Conception

Mechanism by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan

Source: Public Health Wales[16]

Early childhood

A baby is highly sensitive to its surroundings, and requires consistent physical and emotional care from its parents. If those parents are not able to control emotions of frustration and stress (which are commonly associated with caring for a very young baby) then they may increase their child's distress instead of reducing it. Babies who have been exposed to prolonged stress in this way can be unable to soothe themselves, and have difficulty managing their own emotions as teenagers and adults.[17] Inadequate or inconsistent nurturing in early childhood can also affect the ability to form and maintain relationships in later life.[18]

Fight or flight

Frightening experiences, such as physical or sexual abuse, put a child's mind and body into a kind of emergency survival mode. This state is often referred to as "fight or flight", and combines a high level of mental alertness (to quickly identify danger) with physical changes that prioritise blood supply to the muscles and other essential organs. In our evolutionary past, this enabled all of a person's bodily resources to be concentrated upon living through perilous situations. But although fight or flight may be an appropriate response to being confronted by a dangerous animal, it can be very harmful if this instinct is constantly triggered during sensitive stages of development.[19] [20]

In fight or flight mode, longer term priorities are ignored by both the body and mind. Blood supply is diverted away from the gut and towards the muscles, since digestion is less of an immediate priority than escape. The mind focuses only on the immediate threat, and will not be likely to give any thought to the longer-term consequences of actions. When constantly triggered therefore, this state can lead to physical and mental stress, poor absorption of nutrients, inability to plan ahead or concentrate (on schoolwork, for example). Prolonged physical and mental stress can also lead to premature ageing of vital bodily systems such as the heart, liver and digestive system.[21]

Inequalities

Some types of ACEs appear to be evenly distributed across the socio-economic spectrum, but others are unevenly clustered. Parental imprisonment and early death are significantly more likely to occur in low-income families, meaning that children in these families have a higher likelihood of being exposed to ACEs than their peers.[22] The negative effects of those ACEs make it harder for these children to break the cycle of poverty. Women have also been found to be more likely to report multiple ACEs than men.[23] ACEs should therefore be seen as a factor in perpetuating inter-generational social and economic disadvantage. Preventing ACEs, and reducing their harmful after-effects, is an urgent public health priority.

Recommendation: All healthcare, education and policing staff in Nottinghamshire should receive regular training in how to recognise and appropriately respond to signs of abuse and other types of trauma in children & young people. The ACE model should be used as a way of thinking about the impact of childhood trauma on psychological, physical and social health for both professional and public audiences

Prevalence of ACEs in Nottinghamshire

There are currently no studies of the prevalence of ACEs within the population of Nottinghamshire. However, a number of surveys have been done in other parts of the UK, and there is no obvious reason to think that their results would be radically different from the local picture.
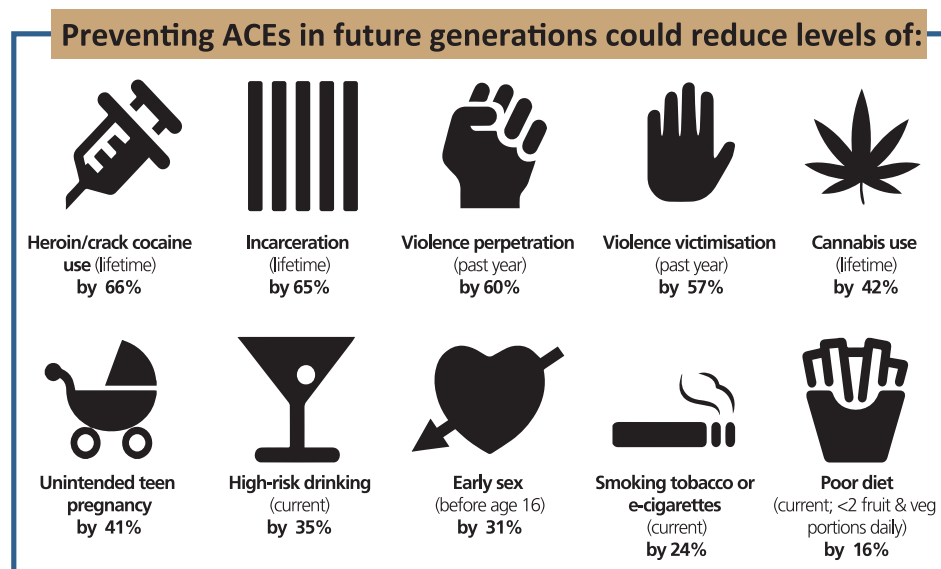
Several recent surveys, undertaken at regional and national levels, have demonstrated that almost half of adult respondents (43.1-47%) have experienced at least one ACE. These surveys also found that 8.3-13.6% of the general population have experienced more than four ACEs. Experience of multiple ACEs was found to be significantly more common in areas of greatest need. Adults in the lowest income group were found to be three times more likely than average to report four or more ACEs.[24][25]

Applying these averages to the local population would suggest that (based upon the most recent population estimates for the county of 646,625 people over the age of 18yrs in mid-2016[26]) approximately 291,000 Nottinghamshire adults are likely to have experienced at least one ACE, and that over 64,000 will have experienced more than four.

Preventing ACEs

The case for preventing ACEs is both moral and economic. Individuals who have experienced multiple ACEs are more likely to commit violence against others[27], as well as being disproportionate users of health and social services.[28]

Figure 9: Preventing ACES

Preventing ACEs in future generations could reduce levels of:

| Heroin/crack cocaine use (lifetime) by 66% | Incarceration (lifetime) by 65% | Violence perpetration (past year) by 60% | Violence victimisation (past year) by 57% | Cannabis use (lifetime) by 42% |
| Unintended teen pregnancy by 41% | High-risk drinking (current) by 35% | Early sex (before age 16) by 31% | Smoking tobacco or e-cigarettes (current) by 24% | Poor diet (current; <2 fruit & veg portions daily) by 16% |

Source: Public Health Wales

Research on ACE prevention is still developing, although studies and professional experience in preventing certain types of ACE (e.g. domestic violence, physical and sexual abuse) is relatively well established. In some cases this learning may be more widely applicable. Related, some Public Health services for adults are focused on some particular issues associated with ACE (e.g. domestic violence, substance misuse). Although these services primarily work with adults, where the adults are also parents, the services may also have positive impacts on children in terms of helping to prevent and / or reduce the impacts of ACE.

Recommendation: All agencies should work together to prevent ACEs in order to reduce health and social inequalities, and to address the root causes of a significant proportion of police call-outs, A&E attendances and benefits dependence in Nottinghamshire

Changing the way that people and professionals view the impacts of childhood trauma, such as anti-social behaviour, is a key part of effectively tackling ACEs in our community. Encouraging communities, schools and police forces to become more "trauma-informed" both increases the likelihood that ACEs will be identified and reported early, and reduces the risk that young people will be punished for behaviour that is often symptomatic of problems at home. Punishment which does not take into account the root causes of behaviour can embed a vicious cycle of negative experiences for a child which is very difficult for them to escape from. However, such cycles can still be broken by positive trauma-informed engagement. From nursery onwards, this approach firstly entails replacing the common "What did you do?" reaction to undesirable conduct

with a more empathic "Why did you do it?" enquiry.[29] [30]

Recommendation: Develop trauma-informed professional practice in schools, policing and healthcare in Nottinghamshire, in order to begin to break the ACE cycle for affected children

Preventing ACEs may be achievable through universal school and family programmes aimed at promoting non-violent conflict resolution, parenting skills and positive mental health.[31] However, partly because outcomes for universal programmes are harder to measure, the evidence base is better for targeted programmes with high-risk families.[32] A local example of such a programme in our area is the Family Nurse Partnership (FNP), which supports young first-time mothers.[33] [34]

"It is brilliant, it is like having two extra Mums that you can go to and talk to and go 'Something has happened; what do I do?'" – Service user evaluation of the FNP service.[35]

More information about the FNP programme was given in the previous chapter.

Building resilience

ACEs are a significant risk factor for a whole range of negative health outcomes. However, there are also protective factors, both on a community and an individual level, which can be promoted to prevent traumatic experiences and to supply individuals who have already experienced them with the necessary tools to live happy and healthy lives. Having at least one positive nurturing relationship with an adult (not necessarily a parent) has been identified as a significant factor in promoting young people's resilience against the toxic effects of ACEs.[36]

Teachers, mentors, foster carers or extended family members are all capable of taking on this role.

There are a variety of programmes, from the local to the international, being implemented in schools and communities designed to support the development of resilience against traumatic experiences.[37] In Nottinghamshire, these programmes fall under the heading of "Emotional Mental Health and Wellbeing", and include targeted interventions in high-risk schools. There are two services running in Nottinghamshire. Each Amazing Breath delivers the resilience programme 'Take Five' in schools across Mansfield/Ashfield, Newark/Sherwood and Bassetlaw, and Young Minds provides an academic resilience programme across Broxtowe, Rushcliffe and Gedling.[38] [39]

Recommendation: Continue to invest in programmes that a) support at-risk parents and families to reduce the likelihood of ACEs, and b) provide positive mentorship and resilience-building for young people in order to mitigate the effects of ACEs that they may have suffered

Employment and wellbeing are connected in many ways. Employment provides a source of income, which influences housing conditions, the food people eat, the activities they take part in, how they travel, the life choices they have and to some degree the hardships people face. Other characteristics of work – activity, social interaction and identity – are beneficial to our physical and mental health.[40] Conversely, unemployment is associated with negative health impacts, such as increased likelihood of depression - 1 in 7 men develop clinical depression within six months of losing their job.[41]

Employment can however also have negative impacts on the health of employees, for example through physical health impacts from manual labour, or mental health implications of stressful work environments. Leading causes of work absence are musculoskeletal harm and mental health problems.[42]

The Marmot report contained three objectives with regard to economic wellbeing:

1) **Improve access to good jobs and reduce long-term unemployment across the social gradient.** Because being employed is protective of health, whereas being unemployed is harmful to health, a key action to improve health is to get people in to work

2) **Make it easier for people who are disadvantaged in the labour market to obtain and keep work.** Those who are disadvantaged in the labour market find it difficult to find roles which are suitable and adaptable to their health and social care needs

3) **Improve quality of jobs across the social gradient.** Jobs need to be sustainable and offer a minimum level of quality to include not only a decent living wage but also opportunities for in-work development, the flexibility to enable people to balance work and family life, and protection from those adverse working conditions that can damage health. The quality of jobs are generally lower in roles with lower salaries and impact those most economically disadvantaged

Reduce long term unemployment

Table 2: Economic activity in Nottinghamshire compared to East Midlands and Great Britain averages, 2016/17

	Nottinghamshire	East Midlands	Great Britain
Economically active (percentage of population age 16-64 employed or actively seeking employment)	79.5%	78.1%	78.0%
• In employment (percentage of population age 16-64)	75.6%	74.7%	74.2%
• Unemployed and seeking work (% of economically active)	4.9%	4.2%	4.7%
Economically inactive (percentage of population age 16-64 unable to work)	20.5%	21.9%	22.1%
• Unable to work due to long term sickness (% of economically inactive)	29.9%	23.8%	22.1%
• Workless households (% of households with at least one family member aged 16-64 and no-one is economically active)	15.7%	14.9%	15.1%

Source: Office for National Statistics, Annual Population Survey, April 2016 – March 2017

According to the D2N2 LEP, unemployment levels measured by Job Seekers Allowance (JSA) have been falling since 2012, but unemployment has fallen more rapidly amongst younger people and more slowly amongst older age groups. Prolonged periods of unemployment can lead to other issues compounding labour market exclusion, such as mental health issues and alcohol problems.[43] Some actions in the health and care system, such as services to help people recover from substance misuse, contribute to addressing some of these factors.

Children from families who experience hardship such as poverty or disability have a reduced chance of acquiring good qualifications at school, having academic support at home, aspiring to be successful, and are less likely to find a good job. Preventing families from becoming workless can prevent this cycle of hardship and help provide adolescents with a healthy work ethic. The Family Nurse Partnership is a local Public Health programme which aims to transform the life chances of children and families most in need, helping to improve social mobility and break the cycle of intergenerational disadvantage. More information about this service can be found in Chapter 2.

Helping people from disadvantaged groups to find work

Table 2 above showed that economic inactivity is proportionately less in Nottinghamshire than in the East Midlands or nationally. However, the ONS figures also show that a much higher proportion of the economically inactive population is unable to work due to long term sickness in Nottinghamshire. Local data from the Public Health outcomes framework also shows the gap in employment rates for people with long term health conditions and with learning disabilities are worse than East Midlands and England averages, as set out in Table 3 below.

Table 3: Gaps in employment rates for Nottinghamshire compared to East Midlands and England averages, 2015/16

	Nottinghamshire	East Midlands	England
Gap in employment rates for those with long term health conditions compared to those without	36.1	31.8	29.6
Gap in employment rate for people with learning disability compared to those without	71.0	70.9	68.1

Source: Public Health Outcomes Framework, accessed September 2017

Nationally, although over the last five years, there has been an increase in the proportion of people with disabilities and long term health conditions who are employed[44] [45], disabled people are still less likely to be in employment than non-disabled people.

These data suggest there is more that can be done locally to support those who are disabled, who have long term conditions and learning disabilities to enter the work place and stay in work.

Evidence shows that getting people back into work and helping them 'be well' in work can help to reduce the economic impact of sickness, absence and long term economic inactivity. Spending on these schemes provides more than £3 in benefits to society for every £1 spent over five years.[46]

In parts of Nottinghamshire, there are some pilot activities currently being developed. A social prescribing model is being used to develop a "Fit for Work" offer – in which individuals are referred to health trainers. The health trainers will then either support individuals back into work, or help prevent absence from work. The D2N2 Local Enterprise Partnership recently commissioned research to scope some health and wellbeing pilot projects, aiming to reduce dependency on health related benefits and support people towards work. Potential activities being scoped include maximising personal budgets for employment outcomes, holistic support programmes that address multiple barriers, job matching opportunities for people with limited work capability or specific barriers / disabilities, and improving access to supported work and work trials.

Recommendation: Evaluate the outcomes of the fit for work pilot and use the learning from this in the development of future related activity

As well as the local activity described above, there are nationally recognised schemes with pathways to work for people with complex needs, such as the Building Better Opportunities programme funded through European Social Fund and the Big Lottery Fund. This programme operates in the D2N2 area through the Opportunity for Change project[47]. It offers support for people who are homeless, misusing substances, having mental health issues, experiencing domestic abuse or are current or ex-offenders, with the aim of helping them resolve their complex needs and become socially and economically included through access to education, training and employment.

Nottinghamshire could develop a similar system-wide model, which takes account of the added complexity of local structures and the economic variations within the County. This would bring benefits both to health and wellbeing from being in work, as described previously, as well as addressing the wider and more complex needs of individuals. Learning from successful programmes nationally recognises the need for holistic approaches addressing housing, substance misuse and mental health, in parallel to skills development and pre-employment engagement.

Recommendation: Work collaboratively with partners to develop a system-wide model to address pathways to work for people with complex needs in Nottinghamshire

Quality of jobs across the social gradient

Workers with fewer skills and qualifications are likely to be the lowest paid and to experience poorer working conditions. Work can exacerbate or cause ill health, such as musculoskeletal disorders, stress, depression or anxiety.[48] Job stress, job insecurity and lack of job control are strongly related to poorer long-term physical and mental health outcomes, increasing the risk of cardiovascular disease[49], hypertension, depression and unhealthy behaviours. Workers in lower-skilled occupations are also those under most potential "threat" from automation. In the medium term, this could have a significant impact on health and wellbeing. Addressing this would require a longer term approach to improving skills levels to help lift people into higher skilled occupations.

In 2015/16 nationally, the most commonly-reported impairments were those that affect mobility, lifting or carrying at 52% and reporting a mental health impairment at 22%. There are approximately 140 million work days lost to sickness absence every year. Workplace injuries, ill health, sickness absence and worklessness cost the British economy £100 billion a year.[50]

Our County has a lower proportion of senior managers and a higher proportion of employees in routine and manual labour occupations, in manufacturing and in construction, than the national and regional averages, as shown in Table 4 overleaf.

Table 4: Employment by occupation for Nottinghamshire compared to East Midlands and Great Britain (Apr 2016-Mar 2017)

	Nottinghamshire	East Midlands	Great Britain
Group 1-3	41.0%	41.1%	45.5%
1. Managers, Directors And Senior Officials	9.6%	10.0%	10.7%
2. Professional Occupations	18.4%	17.4%	20.4%
3. Associate Professional & Technical	12.7%	13.6%	14.2%
Group 4-5	22.6%	21.0%	20.7%
4. Administrative & Secretarial	11.5%	9.7%	10.2%
5. Skilled Trades Occupations	11.0%	11.2%	10.4%
Group 6-7	14.9%	16.5%	16.7%
6. Caring Leisure and other service occupations	8.6%	9.5%	9.1%
7. Sales and customer service occupations	6.1%	7.0%	7.5%
Group 8-9	21.5%	121.4%	17.1%
8. Process plant and machine operatives	8.7%	8.6%	6.3%
9. Elementary occupations	12/7%	12.7%	10.7%

Notes: % is a proportion of all persons age 16+ in employment

Source: Office for National Statistics, annual population survey, 2016

The local labour market segmentation is reflected in the local sickness absence statistics. Nationally, the routine and manual occupations group has the highest level of sickness absence in most categories and the most absence overall. This is a larger group in the Nottinghamshire workforce than average, and Nottinghamshire also has higher levels of sickness absence when compared to the East Midlands region and the national average.

Table 5: Sickness absence for Nottinghamshire compared to East Midlands and England averages, 2013 – 2015

	Nottinghamshire	East Midlands	England
Proportion of employees who were absent at least one day in the previous week	2.9%	2.3%	2.2%
Proportion of working days lost due to sickness absence	1.9%	1.4%	1.3%

Source: Public Health Outcomes Framework, accessed August 2017

Most common causes of long-term sickness absence among routine manual workers are severe medical conditions followed by back pain, musculoskeletal injuries, stress and mental health problems.[51] Among non-manual workers the most common causes of sickness absence are stress, severe medical conditions, mental health problems, musculoskeletal injuries and back pain.

Employee wellness programmes can help to reduce sickness absence and have been found to return between £2 and £10 for every £1 spent.[52] The Nottinghamshire Wellbeing@Work offer supports employers, including County and District Councils, to signpost staff to local wellbeing programmes including fitness, mental wellbeing walks and exercise groups tailored to those with physical impairments. These activities can potentially prevent illnesses or the exacerbation of existing illnesses, which could help prevent long term absence from work. This creates savings for central and local government, mainly through reduced costs associated with homelessness, crime, benefits, and health care.

Businesses as responsible employers can do much to support their own employees. The changing nature of work, where individuals make investments in their own skills development, means that labour may be more mobile in the future. With an increasingly mobile labour market, it will be even more important for employers to attract staff by offering a compelling working environment to support employee health, wellbeing and work-life balance.

By embedding better health in the workplace, employers can address[53]:

Staying Healthy: Ensuring that work places are healthy and encourage healthy behaviours, such as good diet, physical activity, low social alcohol consumption and smoking. Helping to reduce repetitive physical strain and facilitating healthy work interactions reducing stress and supporting good mental health

Preventing poor health: Planning adaptations and work organisation to prevent further exacerbation of existing long term conditions, and facilitating the return of workers absent due to sickness

Reducing poor health: Once an illness has a recurrent effect on the worker, reviewing their long term work style, routine and role to see if there is a better way to support health needs whilst also keeping them within employment and sustaining the benefit from their skills and experience. Dealing with this in a timely way increases the likelihood of successful return to work

Employers' ability to recruit and retain staff: Enabling businesses to benefit from the skills, experience and expertise of existing and prospective staff by offering an attractive and supportive working environment, which values employees' health and wellbeing and increases their opportunities for work-life balance.

Recommendation: All public sector partners should provide Wellbeing@ Work type schemes for their staff

Recommendation: Continue to increase the proportion of local employers who participate in Wellbeing@Work type schemes

Recommendation: Employers should make maximum use of schemes to support the adaptation of workplaces in response to employees' health needs, such as the Access to Work scheme or their own in-house occupational health service

Both in this year's and last year's reports explored factors that influence and shape health and health inequalities along with what needs to be done to address them. However, for some of our citizens, disease, frailty or ill health will develop and they will need to use health and/or care services.

The 'Inverse care law 'was first described in 1971 by Dr Julian Tudor Hart, a GP in South Wales. He said that "the availability of good medical care tends to vary inversely with the need for the population served."[54] In other words, those who most need medical care are least likely to receive it. On the other hand, those with least need of health care tend to use health services more (and more effectively).

In recognition of this, the Health Service Act 2006 (as amended by the Health and Social Care Act 2012), introduced for the first time legal duties to reduce health inequalities, with specific duties on Clinical Commissioning Groups (CCGs) and NHS England. These include the requirement that they have regard to the need to reduce inequalities between patients in **access** to health services and the **outcomes** achieved. The Governing Boards of the CCGs need to be confident that this responsibility is discharged effectively. Similarly the Health Scrutiny Committee will scrutinise the extent to which health inequalities are being addressed.

For some this has introduced some confusion between equity and equality. There is a common misconception that equity and equality mean the same thing and the terms are often used interchangeably, but that's not true. Whilst the two words sound similar, the difference between them is crucial.

Equity involves trying to understand and give people what they need to enjoy full, healthy lives. Equality, in contrast, aims to ensure that everyone gets the same things in order to enjoy full, healthy lives. Like equity, equality aims to promote fairness and justice, but it can only work if everyone starts from the same place and needs the same things.

To explain the Inverse Care Law a little more, I have selected national cancer statistics as an illustration.

Cancer is a disease caused by normal cells changing so that they grow in an uncontrolled way. There are more than 200 different types of cancer. An individual's risk of developing cancer depends on many factors, including age, lifestyle, socio-economic status, occupation and genetic make-up.

The incidence of all cancers in England varies according to geography. Areas of greatest socio-economic need typically have higher incidence of all cancers, whereas the least deprived areas have the lowest incidence. The graph below is of the incidence of cancers. Incidence of all cancers in the areas of greatest socio-economic need is much higher than the England average, whereas incidence of all cancers in areas of least socio-economic need is much lower.

**Figure 10: Incidence of all Cancers, England (2006-2010) by deprivation (fifths) using age standardised rates**
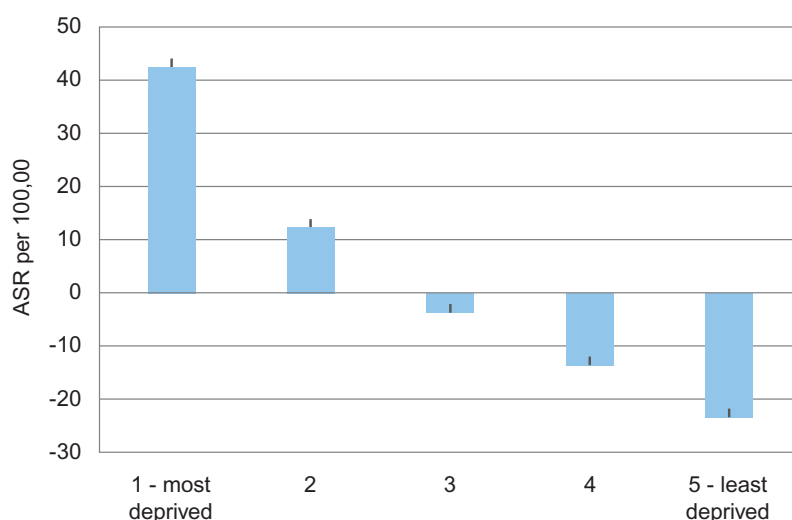
Source: National Cancer Intelligence Network / Public Health England[55]

The second graph opposite shows the percentage of cancers diagnosed at an early stage, compared to the England national average. Generally an early diagnosis of cancer facilitates better cancer outcomes. The earlier the diagnosis the more treatment options are available and the 'late-effects' from the treatments are more limited. The graph shows that people living in the areas of greatest socio-economic need are less likely to have an early diagnosis, whereas people living in areas of least need are more likely to have an early diagnosis.

Figure 11: Percentage of cancer diagnoses at an early stage, local authorities grouped by deprivation (fifths), for cancers diagnosed in 2015
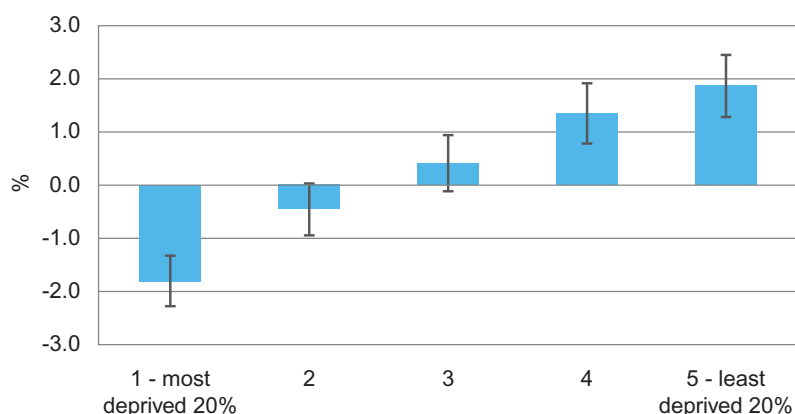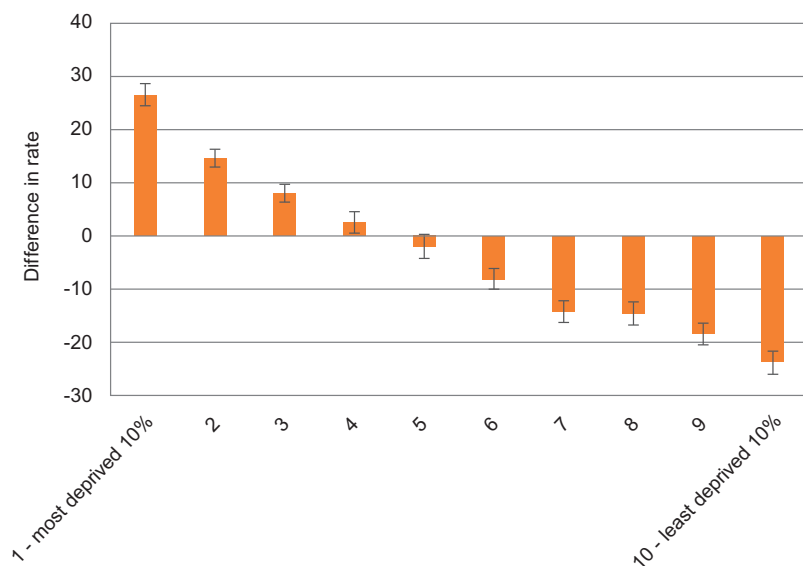

Source: Public Health Outcomes Framework, accessed August 2017

Late diagnosis is associated with increased likelihood of early death from cancers. The third graph (Figure 12 below) shows that early death rates for all cancers in the areas of greatest need are higher than the England average, whereas early death rates in the areas of least need are lower.

Put simply, people living in the areas of greatest need are more likely to have a diagnosis of cancer, they are less likely to be diagnosed early, and are more likely to die early from the cancer.

Figure 12: Early death rate for all cancers by deprivation (tenths), 2013-15

Source: Public Health Outcomes Framework, accessed August 2017

Although the cancer statistics are not available on a local level, there is no reason to suppose that Nottinghamshire would be different to other areas on this issue.

Some of these differences may be attributed to geographical factors such as levels of rurality, and differences in health service provision. The majority of this geographical difference, however, are likely to be attributed to differences among population group themselves.

Recommendation: CCGs should undertake health equity audits to ensure that equity of access and outcomes are addressed in services

In England there is considerable variation in uptake of screening that helps to identify cancers early. Uptake is often worse in communities of lower socio-economic status and among other disadvantaged groups including people with personal disabilities. Black and Minority Ethnic communities often have lower uptake too.[56]

Recommendation: Commissioners of screening programmes should undertake health equity audits and where necessary identify ways to increase uptake

Another aspect of equity, mentioned right at the beginning of this report, is having sufficient funds to be able to make investments in the future health of our population. From 2011/12 until 2015/16, public expenditure on services has fallen in the East Midlands as is the general trend nationally. However, it has remained consistently below the England average (£579 per head lower than the England average in 2015/16). This spend includes expenditure on health, transport, economic affairs, education and social protection.[57]

As I have drawn out in my report, health is impacted by wider issues than just healthcare services – earlier chapters of this report linked social determinants of health associated with employment and education. For this reason, a fair level of public expenditure matters in terms of protecting and improving the health of our County's residents.

Recommendation: Use Public Health evidence to support regional work to present the case to national Government for equity in public investment for Nottinghamshire and the East Midlands

Chapter 4 of this report considered the relationship between health and economic wellbeing. I remember my own history lessons from school days. It was probably my first exposure to the idea of public health. During the Boer war (1899-1902) 40-60% of volunteers to the army, mainly from working class backgrounds were rejected on medical grounds. In some towns nearly all young men were turned away.[58] The impact of this was significant in shaping the role of the state in improving population health as the argument was made that a *malnourished and unhealthy nation could not rule the biggest empire in the world*. Although many years have passed since then, the evidence still demonstrates the strong relationship between the health and wellbeing of our residents and the strength of our local economy. In Chapter 4, we showed the percent of working days lost of sickness absence in Nottinghamshire compared to England and the East Midlands – just imagine the extra productivity if this were addressed, as well as the improved quality of life for individuals.

For those of you who would like further information on the health of the people of Nottinghamshire, I would advise you to look at the following resources:

▶ The Joint Strategic Needs Assessment (JSNA) provides a picture of the current and future health and wellbeing needs of the population. This is available at http://jsna.nottinghamcity.gov. uk/insight/Strategic -Framework/ Nottinghamshire-JSNA.aspx.

▶ The Public Health Outcomes Framework is a set of desired outcomes and the indicators that help us understand how well public health is being improved and protected. Information related to Nottinghamshire is available at http://www.phoutcomes.info/

I hope you have found this year's annual report an interesting read. The table below summarises all of the recommendations made in this report.

Summary of Recommendations:

All Local authorities within Nottinghamshire adopt and implement Health in all Policies.

Implement the actions related to smoke free homes, pregnancy and children in the Nottinghamshire Tobacco Declaration Action Plan 2017-18.

Continue to implement Breastfeeding: A Framework for Action, Nottinghamshire County and Nottingham City 2015-2020, including increasing the number of breastfeeding friendly accredited venues in all local communities.

Conduct an audit to measure the impact of the Family Nurse Partnership locally.

Review the impact of the Healthy Families Programme to ensure it contributes to addressing health inequalities.

Review the multi-agency Early Years Improvement Plan for Nottinghamshire to ensure that every child, regardless of where they live, has the opportunity to be ready for school.

All healthcare, education and policing staff in Nottinghamshire should receive regular training in how to recognise and appropriately respond to signs of abuse and other types of trauma in children & young people. The Adverse Childhood Experience (ACE) model should be used as a way of thinking about the impact of childhood trauma on psychological, physical and social health for both professional and public audiences.

All agencies should work together to prevent adverse childhood experiences (ACEs) in order to reduce health and social inequalities, and to address the root causes of a significant proportion of police call-outs, A&E attendances and benefits dependence in Nottinghamshire.

Develop trauma-informed professional practice in schools, policing and healthcare in Nottinghamshire, in order to begin to break the ACE cycle for affected children.

Continue to invest in programmes that
a) support at-risk parents and families to reduce the likelihood of ACEs, and
b) provide positive mentorship and resilience-building for young people in order to mitigate the effects of ACEs that they may have suffered.

Evaluate the outcomes of the fit for work pilot and use the learning from this in the development of future related activity.

Work collaboratively with partners to develop a system-wide model to address pathways to work for people with complex needs in Nottinghamshire.

All public sector partners should provide Wellbeing@Work type schemes for their staff.

Continue to increase the proportion of local employers who participate in Wellbeing@Work type schemes.

Employers should make maximum use of schemes to support the adaptation of workplaces in response to employees' health needs, such as the Access to Work scheme or their own in-house occupational health service.

Clinical Commissioning Groups should undertake health equity audits to ensure that equity of access and outcomes are addressed in services.

Commissioners of screening programmes should undertake health equity audits and where necessary identify ways to increase uptake.

Use Public Health evidence to support regional work to present the case to national Government for equity in public investment for Nottinghamshire and the East Midlands.

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