Annual Report of the
Director of Public Health
2017-2018

Our Health Protection Challenges
Contents

Foreword ........................................................................................................................................... 3
1. Introduction .................................................................................................................................. 4
2. Vaccination .................................................................................................................................. 5
3. Air Quality ..................................................................................................................................10
4. Antimicrobial Resistance ...........................................................................................................16
5. Sexually Transmitted Infections (STIs) and HIV ......................................................................20
6. Hepatitis C ..................................................................................................................................25
7. Flu and TB ...................................................................................................................................28
8. Gastrointestinal infections ..........................................................................................................33
9. New and Emerging Infectious Diseases .....................................................................................38
10. Adverse Weather and Climate Change ......................................................................................40
11. Conclusion and Recommendations ..........................................................................................46

Appendix 1 - Update on Recommendations included in the 2017 Public Health Annual Report ..................................................................................................................................48

Acknowledgements ..........................................................................................................................50
Foreword

My annual report this year is a review of our top health protection challenges in Liverpool. Health protection is about prevention and control of infectious diseases and environmental threats to the health of the population.

Deaths from infectious diseases have declined over the last 100 years with improved hygiene, vaccination and development of antibiotics.

New infectious disease threats are emerging, including new kinds of infections which can spread globally. Sex without condoms is contributing to a rise in sexually transmitted infections and HIV. Overuse and misuse of antibiotics is driving the development of infections resistant to antibiotics and we are already starting to see the impact in Liverpool. Co-ordinated effort is needed at all levels to address this crisis.

Inequalities is an underlying theme across health protection issues. People living in poorer areas are more likely to be exposed to air pollution. Poor air quality is affecting the health and life chances of our children. There are 230 deaths from air pollution every year in Liverpool and radical change is needed in how we travel to reduce our reliance on diesel and petrol cars.

There are inequalities in the distribution of infectious diseases with some people more likely to be exposed to infection, less likely to be protected and often with poorer access to services. We need to make sure that we identify these inequalities and take action to address them. Hygiene standards and vaccination remain as important as ever in tackling infectious diseases. We need to take full advantage of exciting new opportunities to treat and manage infections like hepatitis C and HIV.

Our climate is changing and we need to prepare for more extreme weather and changing patterns of disease. We need to take a longer term view to the sustainable development of the city.

Working in partnership is key to protecting peoples’ health and the amount of health protection partnership work that is happening across sectors is striking. Carrying on its proud tradition as a global city, Liverpool is contributing to protect the health of people nationally and in other parts of the world through research-work, sharing expertise and innovations in life-sciences.

Dr Sandra Davies
Director of Public Health
1. Introduction

It is fair to say that Liverpool, like many other northern cities, is facing a crisis in the health outcomes of its residents. After years of stagnation, life expectancy is beginning to decrease. Healthy life expectancy is lower now than it was at the start of the decade, and premature mortality rates for the main disease types in the city have either plateaued or are showing signs of increasing. An average of 4,500 deaths occur in Liverpool each year, with cancer (30% of all deaths), cardiovascular disease (20%), and respiratory disease (15%) being the biggest killers. 1,800 people in Liverpool die prematurely, or before their time (defined as a death under the age of 75 years), and 1,000 of these premature deaths could be prevented through broad population health interventions.

Vaccination, antimicrobial drugs and improved hygiene have led to a dramatic decline in illness and deaths from infectious diseases. In the UK, infectious diseases now account for 7% of all deaths, 4% of all potential life years lost and 8% of hospital bed days. The air we breathe has improved dramatically since the 1950s.

Health Protection is about protecting individuals, groups and the population from infectious disease and environmental hazards like poor air quality and severe weather. It is important that we maintain robust health protection systems and arrangements because there are significant risks and threats to the health of the population, especially in the context of an increasingly globalised world. Outbreaks can spread quickly if not detected early and brought under control rapidly.

Many partners have a role in delivering health protection. Public Health England have a multidisciplinary health protection team covering Cheshire and Merseyside. The team works alongside Liverpool City Council and the NHS to protect the public, with support of national experts as needed. Many other organisations have a role to play, including schools, community and voluntary organisations. On a day to day basis, collaborative work is needed across sectors to protect the public.

Strategic leaders from across the health sector in Merseyside come together through the Merseyside Local Health Resilience Partnership (LHRP) to ensure that the local health sector has plans in place to respond to major incidents. Planning for major incidents is coordinated at a Merseyside level between health organisations, emergency services, local authorities, voluntary agencies, independent health and care sector and others through the Merseyside Resilience Forum (MRF). Training, exercising and testing plans are an important part of emergency preparedness. A Pandemic Influenza Workshop was held in October 2017.

The MRF has a community risk register which identifies potential risks that may affect the local community and informs the development of multiagency plans. Pandemic flu is the most significant civil risk in the UK and a multiagency workshop was held locally in October 2017 to strengthen planning across partners. Other important risks to human health identified include extreme weather events, air pollution and other emerging infectious diseases. The LHRP also has formally identified antimicrobial resistance as a risk for local action by health partners.

These risks are discussed further in this report, alongside other key challenges for Liverpool including vaccinations, prevention of gastrointestinal infections, seasonal flu, TB, sexually transmitted infections, HIV and hepatitis C.
2. Vaccination

In late 2017/early 2018, we had a measles outbreak in an unvaccinated deprived community in Liverpool. This was linked with travel to Europe, where many countries in Europe are experiencing large measles outbreaks. The box below describes the rapid response of partners to protect families and prevent further spread.

<table>
<thead>
<tr>
<th>Case study – Rapid vaccination response to measles outbreak</th>
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<tr>
<td>In November 2017, there was an outbreak of measles in a vulnerable community living in an area of high deprivation in Liverpool. The outbreak spread rapidly among unvaccinated children and there were 22 confirmed cases. Fortunately, although some children were hospitalised, there were no fatalities.</td>
</tr>
<tr>
<td>To limit the spread of the outbreak, an immunisation team was mobilised from across organisations to get out into the community, knock on doors, spread the message and make it as easy as possible for families to get their children protected. Challenges included that many did not speak English, families had low literacy levels and the local community was fearful of authority. The success of the response was due to teamwork across organisations – a hallmark of outbreak response in Liverpool. Organisations responded quickly and flexibly. Over a period of 10 days, more than 500 children were protected by vaccination- at home, at their GP practice, in the local children’s centre or in local schools.</td>
</tr>
<tr>
<td>The Children’s Centre organised a community meal for more than 100 members of the local community at which immunisation took place. Community engagement workers, schools and nurseries spread the message about the importance of vaccination and school-nurses set up urgent immunisation sessions in local schools with their support. The Red Cross provided vehicles and drivers to enable an immunisation team go door to door. Easy to read pictorial leaflets were produced in all the relevant local languages and distributed via the local children’s centre, GPs, community centres and religious establishments.</td>
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Outbreaks have a high economic and human cost, as we learnt in 2012/13 when a large measles outbreak spread across Liverpool and surrounding areas with almost 1000 cases, and an estimated cost of £4.4M. Measles outbreaks can be prevented if 95% of the populations have two doses of MMR vaccine. Currently about 9 out of 10 children are fully vaccinated with the two MMR doses they need by their 5th birthday in Liverpool, and we need to improve on this and address variation in uptake of vaccinations across the city. Although uptake is generally high, there are pockets where immunisation uptake is low, linked with deprivation. The map below shows the variation in uptake of the 1st dose of MMR by ward.
Map 1: MMR coverage at two years (Source: Merseycare, 2016/17)
Vaccines have had a huge impact on saving lives. They activate the body’s immune system to protect against infection. They have been so successful that many diseases which used to be common in Liverpool are now rare. Smallpox killed 300 million people in the world in the 20th century and is now eradicated due to vaccination. The UK was declared polio free by the WHO in 2002, and should be eradicated from the world in the next few years.

Immunisation is routinely offered to babies, young children, adolescents, young adults, pregnant women and the elderly (figure 1). There are targeted programmes for people at increased risk of particular infections. With growing understanding of how vaccination works and the role of the immune system, it is very likely vaccines will be used to treat chronic diseases and cancers in the future.

Figure 1: Importance of vaccines (Source: Public Health England)

Uptake of NHS vaccination programmes in Liverpool is very good and compares favourably with the national average. Over 95% of babies are up to date with the immunisations they require on their 1st birthday. Similar to national trend, there has been a small decline in vaccination uptake in young children in Liverpool since 2012.
The reorganisation of health-services is likely to be a contributory factor. Childhood vaccinations are mainly given in general practice. Adolescents are mainly vaccinated in schools. Older people are mainly vaccinated in general practice. In recent years, increasing numbers of pharmacies provide flu vaccination on the NHS.

Inequalities in immunisation were a focus of a Scrutiny Panel Report in Liverpool in 2017. The panel of local councillors set out to understand inequalities through hearing evidence from key professionals. The importance of collaborative work across partners for successful delivery of vaccination programmes was a recurrent theme - to promote, encourage and facilitate improved access to vaccination. There are good examples of local work in Liverpool to tackle inequalities in vaccination uptake. An immunisation team based at Merseycare target children and families who are not up to date with their vaccinations, and support them to access vaccination at their GP practice or at a community venue or in their home. A social inclusion team based at Merseycare support people from different ethnic backgrounds, asylum-seekers and other marginalised groups to register with general practice, which is a crucial step to identify those who require vaccination. There are targeted services for the homeless, travellers and asylum-seeker children in initial accommodation.

Recent positive developments include:

- An MMR catch-up programme has been introduced for adolescents identified as never having had an MMR vaccine. In 2017, the programme targeted young people in years 9 and 11 across Liverpool schools. 224 young people in these cohorts were identified as having no recorded doses of MMR and 138 were vaccinated. MMR catch up has again been offered in years 9 and 11 in 2017-18 and the data is awaited. It is planned to offer in year 9 at the same time as routine vaccinations in the current academic year.

- Public Health England Screening and Immunisation co-ordinators have restarted a programme of GP practice visits to provide support and advice to targeted GP practices where patients have low immunisation uptake. Detailed attention to how patients are invited and flexible vaccination arrangements at convenient times can lead to more patients being protected. The team is also sharing best practice through practice manager and practice nurse fora.

- Pertussis or whooping cough vaccination of pregnant women started in late 2012 as a result of a large national outbreak. 22 young babies died of whooping cough nationally between 2012 and 2016. Vaccination was being offered only by GP practices. Since 2017, maternity services (the Liverpool Women's Hospital and One to One Northwest Ltd.) have also started to offer pertussis vaccine to all pregnant women.

- Flu vaccination is now being offered by drug and alcohol services to their clients.

- The Child Health information System is being improved. This is a database of clinical records for all individual children in Liverpool and it is vital to support vaccination and other public health programmes. The quality of information is dependent on timely sharing of information about children on the school-roll and children known to the NHS.
Liverpool Universities promote awareness about meningitis and the importance of students getting vaccinated to protect themselves. Liverpool University has achieved the Meningitis Aware Recognition Mark from Meningitis Now.

We need to continue to strengthen vaccination arrangements for those at risk of not being fully immunised and continue to work in a collaborative coordinated way to protect people. Further work is needed to make sure that the immunisation status of every child who starts school is checked and that families are facilitated to catch up on missing vaccinations. Immunisation uptake needs to be improved in people who move to Liverpool from abroad, marginalised and deprived communities and families, including those who do not have English as first language, children in long-stay care in hospital and children who are not in mainstream education.

Flu and pertussis vaccination needs to be embedded into routine antenatal care with further development of the critical role of midwives in advising and vaccinating pregnant women.

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**Impact of rotavirus vaccination in Merseyside**

Rotavirus used to be the most common cause of severe acute gastroenteritis in pre-school children. In 2013, the UK introduced rotavirus vaccination for infants. A team of researchers from the University of Liverpool’s Institute of Infection and Global Health, in collaboration with Public Health England (PHE), have assessed the impact of infant rotavirus vaccination in Merseyside. The team found that the number of pre-school children hospitalised due to rotavirus reduced by 80% since vaccine introduction. There was also a 25% reduction in elderly people hospitalised for severe acute gastroenteritis which may be explained by high levels of vaccination in infants making it difficult for the infection to spread to others. There is more rotavirus illness amongst socioeconomically deprived communities and, importantly, the impact of vaccine was greatest among these communities, despite lower vaccine uptake. For infants in the most deprived communities, there were double the number of hospitalisations averted for acute gastroenteritis than in the least deprived communities. This supports the importance of prioritising rotavirus vaccination in the most deprived populations to contribute to reducing health inequalities.

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**Further Information**

NHS Choices

https://www.nhs.uk/conditions/vaccinations/
https://www.nhs.uk/conditions/measles/
3. Air Quality

Outdoor air

In March 2017, Mayor Anderson raised the essential need to protect the health of local citizens by improving the quality of the city’s air. This followed a growing national and international concern regarding the health impact of air pollution and in particular the pollution from diesel vehicles. The Mayor has called for the development by 2025 of a city where walking, cycling, electric vehicles and clean fuels will dominate, and from which polluting diesel traffic will be discouraged. A task group has been established to improve air quality across the city, working with other partners including Liverpool City Region Combined Authority.

Air pollution is a mixture of invisible particles and gases that can cause serious health problems. It is made up of vehicle exhausts, smoke or soot, bits of metal from engines, bits worn from brakes and tyres and dust and waste from the road. The main pollutants of concern are particulate matter (PM10 and PM 2.5) and nitrous oxides (NO2). When we breathe it in, the smallest particles travel deep into our lungs and can pass into our blood and be transported around the body. Road traffic is the main cause of air pollution in Liverpool. Diesel vehicles are the main source of nitrogen dioxide.

Air pollution is linked to heart disease and worsens breathing problems. It has also been linked to the development of strokes and it increases the risk of lung cancer. It contributes to around 230 deaths per year in Liverpool. It has the greatest impact on children, the elderly and people with existing heart and lung conditions. There is a lot of illness due to heart and lung conditions in Liverpool and levels of illness and early deaths from these illnesses are much higher in the most deprived wards of the city. Air pollution is also linked with deprivation, likely due to people in deprived areas living closer to busy roads. Air pollution can increase the risk of people needing to be admitted to hospital with heart and lung conditions and contributes to people dying young before their time. There is no safe limit of air pollution and any reduction in air pollution will improve population health.

Map 2 illustrates modelled estimates across Liverpool showing that all of our communities are exposed to PM10. As is the case for PM10, all of our communities are also exposed to NO2, with the highest levels of exposure concentrated in and around the city centre extending eastwards as far as Old Swan, as well as in parts of Kirkdale (Map 3).
Map 2: Modelled levels of PM10 (Sources: DEFRA, cdrc.ac.uk)
Annual Nitrogen Dioxide, Mean µg/m³ by LSOA
March 2018, Source cdrc.ac.uk

Map 3: Modelled levels of Nitrogen Dioxide (Sources: DEFRA, cdrc.ac.uk)
Air pollution is particularly harmful for children, as their lungs are still developing. For their size, they breathe more air per minute than an adult and buggies and prams put them at the level of car exhausts. Air pollution can stunt lung development and can affect children for life.

Professor Calum Semple (pictured) from Alder Hey is concerned about the damage air pollution causes to babies and children. “Air pollution increases coughing and wheezing and leads to more children needing hospital admission. Effects on children may not be seen until they are adults and children living in highly polluted areas are four times more likely to have lungs which do not work as well as they should when they are adults.”

We need a whole system approach to reducing air pollution, as we need to become less reliant on our cars, and walk and cycle more, and use public transport. This will require investment in infrastructure. We need to raise awareness of the long-term impacts of air pollution on children. There are a lot of partners and stakeholders in Liverpool who are already interested in air pollution and we need to continue to build on these networks and work collectively to protect children from harm. Schools, nurseries and local communities have critical roles to play, and we need to engage with them about the quality of local air and explore local solutions. The council are planning to improve air quality monitoring systems which will be invaluable in better understanding the distribution of poor air quality.

LCC launched a public health campaign “Let’s Clear the Air Liverpool” in October 2018 to raise awareness of the health impacts of air pollution and encourage everyone to take action to protect themselves and reduce their contribution to air pollution. [www.letscleartheairliverpool.co.uk](http://www.letscleartheairliverpool.co.uk)

Key messages include:

- Children living in highly polluted areas are four times more likely to have stunted lung development which can affect their health for life.
- People can breathe in twice as much pollution inside their car than outside.
- Diesel exhausts contain up to 30 times more air pollution than petrol.
- Air pollution can worsen asthma and breathing problems. Long periods of exposure can cause heart disease, strokes and hardening of the arteries and increases the risk of lung cancer.
- Walk for short journeys when you can. It is good for your physical and mental health. Walk on the inside of the pavement away from traffic to reduce the amount of pollution you breathe in.
- Leave your car at home when you can and take public transport.
- Park away from nurseries and schools to reduce air pollution around the school gate.
- Turn off your car engine when it is stationary or parked.
• If you are changing your car, choose a cleaner engine, e.g. petrol rather than diesel.

Figure 2: Example of Let’s Clear the Air posters

Indoor air

Indoor air pollution is less well understood than outdoor, but it is being recognised as an important contributor to health. The Royal College of Paediatrics and Child Health is due to produce a report on the effects of indoor air quality on child health in 2019 and the National Institute for Health and Care Excellence is due to release guidelines for indoor air quality the same year.

Around 90% of our time is spent indoors and so good indoor air quality is important for health. Indoor air pollution can be related to heating – including wood burning stoves, cooking, poor ventilation, damp or chemicals and products. Some people are particularly vulnerable to poor air quality, particularly children and those with lung conditions. Indoor air pollution can increase the risk of pneumonia, COPD, lung cancer, heart disease and stroke. Indoor air pollution can exist at home, work or any indoor place.

Cleaning products, aerosols, air fresheners and other household items can contain chemicals called volatile organic compounds (VOCs), which are associated with a variety of health effects. The risks can be mitigated by reducing their use where possible, improving ventilation and following all advice on the product label. Ventilation is particularly important for removing particulate matter and gases related to cooking and heating.
Further information

Let’s Clear the Air Liverpool www.letscleartheairliverpool.co.uk
4. Antimicrobial Resistance

Antimicrobial resistance (AMR) is a global crisis. It requires action at local, national and global levels. AMR cannot be eradicated and the aim is to maintain the usefulness of current antibiotics as long as possible, whilst new antibiotics are being developed. Antibiotics are the main type of antimicrobials - used for treating bacterial infections. They are also used to help prevent infection in people at high risk of infection, e.g. due to treatment or cancer or because they are undergoing surgery. Widespread use of antibiotics has driven the development of resistance.

The perspective of a medical microbiologist on AMR

Dr Jonathan Folb, Consultant in Medical Microbiology, RLBUHT

I was recently involved in looking after a young patient on the Intensive Care Unit at the Royal Liverpool University Hospital. They were suffering from a respiratory infection as a complication of treatment for leukaemia, caused by a bacterium which was resistant to all but one antibiotic. This drug, Colistin, is a toxic antibiotic which stopped being used in the 1980s when safer alternatives became available, but which we now increasingly need to call upon again when other treatments fail. Despite our best attempts to treat this patient, the infection worsened and they died. I can now think of at least four patients under the age of 40 who have died under my care over the past year because of similar highly antibiotic-resistant infections.

The Carbapenems are a class of antibiotics which have always been regarded as our last line of defence against resistant bacteria. Before 2014, we had not really seen Carbapenem resistance in Liverpool. When I taught our junior doctors about it as recently as three or four years ago, I was met with blank looks. By the end of July 2018, we had seen 555 patients, carrying a diverse array of carbapenem-resistant organisms, admitted to our hospital. Every doctor in the hospital has encountered these patients now, even those who started working two months ago. These bacteria were not actually causing infection in most cases (they had become part of the normal large bowel “flora”), and they still account for a tiny minority of the infections we treat. However they may go on to cause urinary and intra-abdominal infections in otherwise healthy people, and a wider range of infections in vulnerable hospitalised patients. And their resistance to Carbapenems is invariably linked with resistance to many other kinds of antibiotics. There is no way of eradicating them from the bowel once they’re present, and people endure prolonged periods of isolation in hospital to prevent transmission to other patients.

Antibiotic resistance is driven by antibiotic prescribing - all antibiotic prescribing, whether appropriate or inappropriate. A report published by the English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR - https://improvement.nhs.uk/resources/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur/) identified Merseyside as having the highest rate of antibiotic prescribing in England, hospital and community settings, for reasons which are not well understood. At the Royal we saw our prescribing of Carbapenems increase by 35.5% between 2012 and 2015. This mirrors our use of other valuable “broad-spectrum” antibiotics, as increasing resistance to other antibiotics forces us to rely on them more heavily. Since 2015 however, a reduction of 28.7% in Carbapenem prescribing has been achieved (rxinfo.co.uk).
Addressing the threat posed by antibiotic resistance is a formidable, urgent and global challenge. There are many aspects to it, including infection control measures - aimed at preventing transmission in hospital, stewardship of our current antibiotics – using them as sparingly and rationally as possible, in all healthcare settings, so as to preserve their usefulness for as long as possible, and the development both of new antibiotics and of non-antibiotic approaches to preventing or treating infection. It requires innovation and the development of partnerships and collaborative ways of working across organisations. Human health cannot be regarded in isolation – the use of antibiotics in agriculture and veterinary medicine has important implications and must also receive urgent attention.

We are fortunate in Liverpool to have many people – clinicians and academics - with expertise in, and commitment to, tackling antibiotic resistance. Liverpool is rightly regarded as a centre of excellence in the field of clinical infectious diseases. As well as providing guidelines for prescribers and clinical advice to clinicians managing patients with complex infections, Clinical Microbiologists provide an extensive education programme to medical students, junior doctors, general practitioners and non-medical prescribers, to try to ensure that they prescribe antibiotics in a responsible and well-informed way. Liverpool University has also identified Infection as a key research focus. A recent review of clinical infection research across academic and healthcare settings identified severe bacterial infection (in particular sepsis, respiratory and neurological infections), infection in special at-risk groups, and antibiotic resistance (including understanding local epidemiology and the development of new treatments), as immediate priorities.

When I think about the young patient on ITU, I feel alarmed about the implications of antibiotic resistance for our health, and for the practice of medicine. We owe it to that patient to educate the public and healthcare professionals about antibiotics, to invest in and improve our clinical services, and to work collaboratively across academic, healthcare and industry settings to develop new approaches.

**Educating children**

We need to educate children about infections, the importance of hand washing and the treatment of common infections. In 2018, Public Health Liverpool commissioned the Schools’ Improvement Team to train teachers to use e-Bug, a free educational resource, supported by Public Health England, for classroom and home use that makes learning about micro-organisms, the spread, prevention and treatment of infection fun and accessible.
Participating schools attend a hands on training session where delegates receive a resource pack which includes lesson plans, assembly ideas, worksheets, etc. All the activities and plans have been designed to complement the National Curriculum. In addition delegates receive a hand hygiene training pack containing UV ‘germ lotion’ and a light box with UV light to indicate the presence of the lotion (germs) on hands. This can be used by the children to learn good hand washing techniques and also to demonstrate the spread of ‘germs’ from hard surfaces to hands and hand to hand.

The schools have three months to implement e-Bug in school before being invited back to a celebration event where the children showcase their work. Some of the participating schools also tweeted their participation in the programme, thereby conveying the key messages to a wider audience.

Evaluation demonstrated that the children enjoyed the training and increased their knowledge.

"I learnt about the three types of microbes, virus, bacteria, fungi, the importance of washing our hands and how easily germs are spread. I really enjoyed making the three microbe types using Plasticine"

"Three fascinating facts that I remember are that most coughs and colds get better without antibiotics, microbes spread and that microbes are both good and bad"
Teachers reported that the children are now more aware of microbes and the importance of hygiene and have shared the information with their peers and families.

"Year 3 became the germ police! They then created posters from their knowledge and gave the message to all other year groups."

"Great resources which make children question and think about how germs spread in an exciting way"

At the first celebration event, schools showcased models of microbes that the children had designed, we heard all about the work of Edward Jenner, learned how far a sneeze could travel and discovered how far around a classroom germs can spread. Some 40 schools across the city have participated in the initiative so far.

Further information

https://antibioticguardian.com/keep-antibiotics-working/


www.ebug.eu
5. Sexually Transmitted Infections (STIs) and HIV

In 2016, 5,462 Liverpool residents were diagnosed with an STI, up 11% from 2012. This is fairly equally split between men and women, and the rate is higher than the national average. The overall rate of diagnosed STIs is 50% higher in Liverpool than the English average. STIs generally are higher in more deprived areas. There is growing concern about the emergence of antimicrobial resistant STIs, which is likely to make it difficult to treat some STIs in the future.

Almost 60% of STIs in Liverpool are diagnosed in young people – 8% higher than the English average. 1 in 5 were among gay, bisexual and other men who have sex with men (MSM).

The rates of gonorrhoea and syphilis have increased significantly in recent years, especially in men. These STIs are markers of high risk sexual behaviour. There has been particular concern about the potential emergence of multidrug resistant gonorrhoea, as in early 2018, a multidrug resistant strain was isolated elsewhere in the UK - a first of its kind in the world.

Chlamydia is the most common STI. It is particularly common in sexually active teenagers and young adults. There is a national chlamydia screening programme which targets young people aged 15 to 24 for testing. Young people in Liverpool can get tested at a wide range of venues including sexual health clinics, GP surgeries, pharmacies and colleges, and high rates of chlamydia are detected, above the national target for the programme. The high rate reflects both the effectiveness of the Liverpool screening programme (Merseycare), as well as reflecting the high levels of chlamydia in the population.

Genital warts are the second most common STI diagnosed in Liverpool and rates are very high in Liverpool – 80% higher than the national average. There has been a modest decrease in recent years due to a protective effect of the HPV vaccine.

Almost 7% of women and 11% of men presenting with a new STI at a sexual health clinic during the 5 year period from 2011 to 2016 were re-infected with a new STI within 12 months. Re-infection with STIs, a marker of persistent risky sexual activity, is also highest amongst young people.

Sustained investment is needed in prevention and control of STIs. If you are infected with an STI, you often do not have any symptoms but infection can cause serious long-term health problems, such as infertility and ectopic pregnancy. So it is important that people at risk of STIs are tested frequently so that STIs can be detected early and people can access treatment promptly to reduce the risk of complications and spread of infection to others. It is also important that sexual health services can notify partners and offer testing.

Education is at the heart of prevention. All Liverpool sexual health services promote condom use and safer sexual behaviour to prevent STIs. Liverpool City Council also commissions a condom distribution scheme for young people, called ‘RUReady?’ The scheme provides access to free condoms in non-health settings, with organisations that work with vulnerable groups of young people. There are now 38 sites currently operating and providing access across the city, with 565 new young people registering to the scheme during 2017-18 alone. Key messages to encourage safer sex and use of condoms are delivered through local and national campaigns including around...
Freshers’ Week and to coincide with periods of increased risk-taking – including the Christmas Festive Season and Summer Holidays.

High quality relationship and sex education is fundamental to encourage young people to delay early sex and to use contraception effectively when they do become sexually active. The Local Authority already commissions sexual health services to work with targeted groups in schools and at school-assemblies and support individual young people as needed. Liverpool school nurses also offer preventive advice and information to the young people they work with and support them to access sexual health or pregnancy services when required. The government intends to make relationship and sex education compulsory in schools from 2020 which is an important opportunity to make education more systematic and reach out to more young people, so that they know how to keep safe and take fewer risks.

There are multiple providers of sexual health services commissioned by LCC to provide different levels of service to different groups, and, in recent years, providers of sexual health services in Liverpool have been working increasingly closer together to improve the quality of the service they can collectively offer to residents. Key providers include the Genitourinary Medicine service at the Royal Liverpool Hospital; Abacus (Merseycare) have four sexual health clinics in the community, and, Brook provide a young person’s service. Testing and treatment is also available through GP practices.

There are special services for high risk groups. Armistead (Merseycare) provides one-to-one education and support sessions, harm reduction advice, and targeted outreach education to the local lesbian, gay, bisexual and transgender (LGBT) community. Testing and safe sex advice and support is also provided to male and female sex workers in Liverpool. The practice of “chemsex” amongst men who have sex with men is an emerging concern. This is the injection of drugs before or during sexual activity. In response to this threat, Liverpool City Council has commissioned an outreach service called COAST to work with men who use drugs or ‘chems’ during sex, to provide them with information and advice and support them around mental health and wellbeing.

Services are working together with commissioners to develop an integrated model of delivery so that local people can access the advice, testing and treatment they need at whatever service they attend. It is important to avoid individuals needing to be referred from one service to another to get the testing, treatment and advice they need.

**HPV (Human papilloma virus) vaccination**

HPV is transmitted through sexual contact. It causes genital warts and is associated with almost all cervical cancers. In 2008, a national HPV vaccination programme was introduced for teenage girls to help protect them against cervical cancer. Girls aged 12 to 13 are offered HPV vaccination in school. The programme has been very successful with around 9 in 10 girls getting vaccinated, although uptake varies by school. There has been a massive reduction of 86% in HPV infection in 16-21 year old women in England and a Scottish study has shown that the vaccine has reduced precancerous cervical disease in women by up to 71%.
The programme will be extended to boys aged 12 and 13 from next year to protect them from oral, throat and anal cancer, as well as help to further reduce the overall number of cervical cancers in women. The vaccine has been offered to men who have sex with men attending genitourinary clinics since April 2018.

**Human immunodeficiency virus (HIV)**

HIV viral infection attacks and weakens the immune system. It often has no symptoms but if left untreated, infection can severely damage the immune system and AIDs (acquired immune deficiency syndrome) can develop. This is when life-threatening infections and illnesses happen, including tuberculosis, pneumonia and some cancers. The most common way of getting HIV infection in the UK is through sex without a condom. It can also be transmitted by sharing needles or syringes and can be transmitted from mother to baby during pregnancy, birth or breastfeeding.

Although there is no current cure for HIV infection, there are very effective drug treatments, and if diagnosed early and put on effective treatment, most people with HIV won't develop AIDs-related illnesses and will live long and healthy lives. There is good access to high quality treatment in Liverpool.

650 people in Liverpool are known to be living with HIV infection, with twice as many men than women diagnosed. It is estimated that half the people living with HIV were probably infected through heterosexual sex and 40% contracted the disease through men who have sex with men (MSM). The rate of adults living with HIV in Liverpool is high at 2 in every 1000 adults. It is similar to other large cities in the UK and lower than Manchester. 56 residents were diagnosed with HIV infection in 2016. There was a significant increase in MSM diagnosed with HIV between 2005 and 2015.

Our main challenge in tackling HIV in Liverpool is to increase HIV testing so that people are diagnosed earlier and can access the treatment they need. Early diagnosis makes a difference. It’s estimated that up to 115 people in Liverpool are infected but unaware, and over half the adults diagnosed with HIV in Liverpool are diagnosed late.

Most HIV testing in Liverpool is done at sexual health clinics. You can be tested at community sexual health clinics as well as the genitourinary medicine (GUM) clinic at Royal Liverpool Hospital – now called Axess, and no appointment is needed. 68% of people offered HIV testing at Liverpool sexual health clinics accept the test compared with national average of 77%. Details of sexual health services are available at: www.sexualhealthliverpool.co.uk. Testing is also available at GP practices and Brownlow student health services. Liverpool also funds free postal HIV tests for gay and bisexual men and African people, as these communities are identified as being most at risk of HIV. www.Test.HIV. All pregnant women are encouraged to have a HIV test at the antenatal clinic and almost all take up the offer.

With our high HIV prevalence in Liverpool, it is important that HIV testing becomes normalised. Although testing is available at a wide range of services, many people at high risk of HIV have never been tested. More needs to be done to raise awareness of HIV amongst communities and individuals at increased risk and address stigma. More work also needs to be done with healthcare providers to normalise HIV testing and improve access, including more outreach testing.
Tessa Willow, Chief Executive Officer at Sahir House in Liverpool, highlights the importance of tackling stigma and supporting people with HIV.

“Our service users come from all parts of society but especially from the many marginalised groups, which include people who identify as LGBT, those from BAME communities, people with disabilities and poor mental health, those dealing with addiction issues and people seeking asylum. People with HIV may also have other health and social issues in their lives that they need support with and sometimes being HIV positive may be a barrier to accessing help. We feel able to cut through these issues using our contacts and years of experience.

HIV prevention, treatment, testing and support strategies have progressed with encouraging pace, but HIV remains as stigmatised as the initial days of the AIDS epidemic. To combat this deep level of stigma and challenge the existing prejudice, the Sahir House Training Service provides high quality training. It builds confidence to deal with issues in the workplace, talk about testing, promote best practice to reduce discrimination and provide information to educate the wider public. In 2017 – 2018 Sahir House trained over 200 health and social care professionals specifically from the Liverpool area.”

**Treatment as prevention**

When someone with HIV takes effective treatment it reduces the level of HIV virus in the blood so low that it can’t be detected by a test, and treatment is highly successful at preventing onward transmission to others. If you don’t know that you have HIV, you can spread it to others. 80% of MSM who become infected with HIV are infected by people who are unaware of their own diagnosis. A major new NHS funded-trial to provide HIV prevention drugs to people at high risk of HIV infection has been implemented and offers great potential to reduce transmission.
Are we PrEPped for HIV?

Dr Mark Lawton, Clinical Lead and Consultant in Sexual Health & HIV, Axess Sexual Health, Royal Liverpool Hospital

Pre-Exposure Prophylaxis (PrEP) is a game-changer in the prevention of HIV. It involves people who are HIV negative, taking a medication to prevent them getting infected.

Recent studies looking at PrEP in MSM showed a reduction in HIV acquisition of 86%. The drug was not available on the NHS so many people started to buy PrEP online, importing small quantities for personal use at a cost of about £20-30 per month. The awareness of PrEP amongst MSM along with regular testing, particularly in London, is believed to have contributed to a significant fall in new diagnoses of HIV in MSM in 2016.

In 2017, NHS England announced the start of a 3 year trial to provide HIV prevention drugs to people at high risk of HIV infection to assess the full additional potential of PrEP in large-scale prevention of HIV. The IMPACT PrEP study aims to get 10,000 high-risk individuals, mostly MSM, on PrEP. Liverpool was one of the first centres to open. The first Liverpool patient was recruited in November 2017. There has been a lot of interest and the 155 allocated spaces on the trial are expected to be completely filled soon. Not only does being on PrEP offer almost 100% protection from HIV, it engages high risk patients in sexual health services where we can regularly test and treat any other infections and provide health promotion advice.

Further information

www.sexualhealthliverpool.co.uk

NHS Choices


Terrence Higgins Trust

https://www.tht.org.uk/?gclid=EAIaIQobChMLgoGek8Cw3gIV2OeaCh1rZQiwEAAAYA SAAEgIEnPD_BwE
6. Hepatitis C

Hepatitis C virus is an important cause of severe liver disease in Liverpool with complications like cirrhosis, liver failure or liver cancer. You can be chronically infected with the virus but not have any symptoms for 15 to 30 years.

The majority of infections (approx. 90%) are in people who inject drugs or who have infected drugs in the past. It is very common in injecting drug users in North West England. 2 in every 3 clients in contact with specialist addiction services have been infected with hepatitis C in the North West in contrast with an England average of 1 in 2. Usually people are infected at a relatively young age.

In Liverpool, an estimated 2,600 people have a chronic infection with hepatitis C virus. Many have never been tested. There are also an estimated 700 people in Liverpool who have been diagnosed with hepatitis C in the past but who have not been treated for their infection. One reason for this is that treatment options were more limited in the past than they are today. There is also an issue that as a group, those who inject or have infected drugs are marginalised in society and have poorer access to healthcare.

The hospital admission rate in Liverpool for hepatitis C virus related end-stage liver disease and liver cancer are the highest in the country at 7.8 per 100,000 – much higher than the England average of 2.4 per 100,000. 110 people were admitted to hospital for end-stage liver disease/liver cancer due to hepatitis C in the 3 year period 2012/13 to 2014/15. Premature mortality rates from these conditions are also significantly higher in Liverpool than in England.

The good news is that the number of Liverpool patients being treated for hepatitis C almost doubled between 2016/17 and 2017/18 from 196 to 369. New more effective treatments have become available, even for people with more advanced liver disease, and 90% of those with hepatitis C can now be cured. The treatment is also much easier to take than it used to be. You can now take the treatment by mouth. Patients experience fewer side-effects than they used to, with older treatments, and patients need to take the treatment for 8 to 12 weeks which is much shorter than it used to be.

As well as having better medication available, there has been a big shift in how treatment services are organised so that more people can benefit from treatment. There has been a national reorganisation of services in 2015 and in Liverpool, there has been a shift of treatment from the hospital to community clinics to make it easier to access the treatment.

A team of five hepatitis C specialist nurses linked to the Royal Liverpool University Hospital provide hepatitis C treatment in six sites in the community linked with drugs services, GP practices and a hostel and also at the two prisons located in Liverpool - HMP Liverpool and HMP Altcourse. Partners work very closely together to support people who may have poor mental health, as well as substance misuse issues and difficult social circumstances into and through treatment.
Jayne Wilkie, hepatitis C specialist nurse reports enthusiastically about the success of the community clinics and new treatments:

“There are lots of reasons why people would not come to hospital for treatment. It is much simpler for people to come to the community clinics. Many of our patients are prescribed methadone for treatment of heroin addiction. In the community, patients attend for their methadone at the same clinic where we offer hepatitis C treatment. Some of the patients we see were diagnosed years ago but never accessed treatment. Other patients are newly diagnosed with hepatitis C but were probably infected several years ago. Now, they don’t need extra appointments for their hepatitis C treatment. Patients are treated for 8 to 12 weeks. Most patients only need one tablet a day and the majority complete their treatment. The success about the new treatment is getting around by word of mouth and people are now coming in and asking to be treated.”

Kieron Allen, a hepatitis C peer to peer support worker employed by the Hepatitis C Trust explains the importance of peer education and practical support for people,

“I injected drugs for 30 years and found out I had hepatitis C when I stopped. I noticed a huge difference when I was treated for hepatitis C. I don’t feel knackered all the time and my mental health is great. Since then I have been volunteering with the Hepatitis C Trust and I am now employed with them. I have supported 109 peers across Merseyside into treatment since I started working in May this year who probably wouldn’t otherwise be in treatment. I talk to hard to reach people, the homeless, people who regularly don’t turn up for their appointments. I have just supported one person in Liverpool who had failed to attend 7 or 8 appointments. I will pick people up at home and bring them to clinic appointments or hospital appointments if they are struggling to get there. So many people fail to attend hospital appointments. People have health, mobility, financial issues. It may be too far for them. They may have no money. They may not have £5 to get the bus or taxi, or not see it as important because they have no symptoms.

I tell them about the new treatments and that you can get treatment even if you are still using drugs, and it can all be over in 8 weeks. There are lots of myths about hepatitis C and horrible stigma, and we need to break down the barriers and stigma. People listen more to people the same as themselves – so there is a level playing field.

I have trained six people so far as peer supporters to help spread the word. I am actively seeking more peers to train up and hope to be able to increase my team up to around 25 in Merseyside so that we can continue to work towards eradicating hepatitis C.”

We need to build on this good progress across partners to support more people into and through treatment. A major national exercise is underway to help identify people who have been diagnosed with hepatitis C in the past and who may not have been treated, so that they can be assessed for the newer more effective treatments.

Testing people at risk needs to become systematic in drugs services, prisons and primary care, and, people who are infected need to be assessed and supported to access treatment. We also need to do more to reduce the number of people who begin
injecting drugs in the first place, and maintain and strengthen work to encourage people to stop injecting and make sure that people who continue to inject have easy access to clean injecting equipment and opioid substitution treatment.

**Further Information**

NHS Choices [https://www.nhs.uk/conditions/hepatitis-c/](https://www.nhs.uk/conditions/hepatitis-c/)

Hepatitis C Trust

[http://www.hepctrust.org.uk/?gclid=EAIaIQobChMIiv7slb6w3gIvBouyCh0PGgKzEAAYASAAEgLHrvD_BwE](http://www.hepctrust.org.uk/?gclid=EAIaIQobChMIiv7slb6w3gIvBouyCh0PGgKzEAAYASAAEgLHrvD_BwE)
7. Flu and TB

Seasonal Flu

Flu and pneumonia are the most common infectious diseases to cause death in Liverpool. The flu virus causes significant illness every winter. It is a clever virus which changes all the time to evade the body’s immune system. This means that the impact of flu is very unpredictable in how it spreads and the degree of illness it causes. Flu can lead to serious complications, hospitalisation and death with elderly people and people with health conditions like asthma or heart disease at greatest risk, and high flu levels in the community can cause significant pressure on health-services at the time of year when they are already very busy.

Last winter (2017/18), two strains of flu were circulating – influenza B and influenza A (H3). The impact of this was especially felt by older people in Liverpool. There were 12 flu outbreaks in care homes and high numbers of adults admitted to hospital and intensive care or high dependency units due to flu. At a national level, peak admission rates of flu to hospital and ICU were higher than seen in the previous 6 winters.

Influenza outbreaks in institutional settings pose a particular problem due to the speed at which infections can spread between individuals. The majority of outbreaks occur in care homes where vulnerable individuals are at higher risk of contracting influenza and developing complications. The community infection control team, led by ‘modern matron’ Gavin Williams, support care home staff to prepare for flu season. They visit all registered facilities providing advice and guidance on how to manage an outbreak, but more importantly how to prevent one. Teaching sessions have been held with staff which have included the importance of flu immunisation for staff and residents, good respiratory and hand hygiene and preparatory work in case an outbreak does occur.

Flu vaccine is the best protection we have against an unpredictable virus. Influenza vaccine uptake in 2017 to 2018 in England was higher than the 2016 to 2017 season across all of the target groups in particular in the 65+ year olds (72.6%) and in healthcare workers (68.7%). In 2017 to 2018, the universal childhood influenza vaccine programme with live attenuated influenza vaccine (LAIV) was again offered to all healthy 2 and 3 year olds across the UK, plus to all children of school age Reception, Year 1, 2, 3 and 4 in England and Wales, where 4 year olds were vaccinated in schools for the first time. Uptake achieved in these groups were higher than the previous season. For the pilot programme in England for the remaining children of primary school age (4 to 11 years), an overall uptake of 62.4% was achieved in the 2017 to 2018 season.

Free flu vaccination is offered to people at risk of severe flu every year. Most flu vaccination is done in general practice. In recent years, pharmacies have been commissioned by NHS England also to provide free flu vaccination to eligible people to make it easier for people to access a vaccine.

In Liverpool, around 75% of people aged 65 and over get the flu vaccine each year. The vaccine is also offered to people of any age who have underlying health conditions and about 50% of this group are vaccinated. Flu vaccination is also offered to all pregnant women by midwives and primary care services as they are at risk of serious
illness from flu. The vaccine reduces the risk of prematurity and low birth weight and protects the infant for up to 6 months following delivery. Around 45% of pregnant women in Liverpool get the flu vaccine. Flu vaccination is an essential component of antenatal care and we need to do more to help pregnant women understand the risks of flu and the benefits of vaccination.

There is significant variation in uptake of vaccination between GP practices, e.g. the % of elderly people vaccinated by practice ranges from 61% to 83%. It is likely that differences in vaccination arrangements across practices are an important factor in the variation in uptake and work is ongoing to encourage sharing of best practice to encourage more people to take up the offer of vaccination.

Under the universal childhood influenza vaccine programme, a flu vaccine nasal spray was offered to all healthy 2 and 3 year olds in Liverpool at their GP practice.

All children in reception classes, years 1, 2, 3 and 4 are offered the vaccine in school. The programme for children has been expanding year on year since it was introduced in 2013 and in the winter of 18/19, children in year 5 are also targeted. It offers great potential to reduce the spread of flu in the community as children get more flu than people of other ages and act as “super-spreaders” of the flu. The programme needs to be built up as only around 3 in 10 pre-school children in Liverpool are being protected by flu vaccination at the moment. Just over 50% of children were vaccinated in the primary school programme in Liverpool – around 10% lower than the national average. Further work to improve flu vaccine uptake in Liverpool children and address variation across schools is important to protect children and reduce the impact of flu on the community and pressure on health services.

Flu vaccination is also recommended for frontline health and social care staff, to protect staff but also to protect vulnerable patients and clients who may not be able to mount a satisfactory response themselves to flu vaccination due to weak immune systems. The programme for frontline NHS staff is well established with more than 75% of staff vaccinated at all but one of our Trusts. Although flu vaccination has been recommended for frontline social care staff for many years, the programme is not as well-developed, and has not had the same level of national investment and attention.
In November 2017, a national decision was made to expand the offer of free vaccine on the NHS to social care workers. LCC also invested in an outreach vaccination offer to care homes to promote staff uptake. There is a similar approach this winter and it is expected that the current low uptake amongst social care staff will improve in coming years, as the programme becomes more embedded.

The World Health Organisation monitors influenza viruses throughout the world. Each year it makes recommendations about the strains to be included in vaccines for the forthcoming winter so that the vaccine is as good a match as possible with circulating strains of flu. An exciting development for the winter of 18/19 is that a new adjuvanted vaccine has been developed for older adults. This enhanced vaccine will strengthen the protection the vaccine gives older people. Younger adults are being offered a quadrivalent flu vaccine, which protects against four different strains of flu. The flu nasal spray for children also protects against four strains of flu.

There are two flu vaccine manufacturers in Liverpool – both based at Speke. Seqirus and Astrazeneca.

Case study – Flu vaccine manufacturing at Seqiris in Speke

April Sena, PhD, Head of Technical Development, Seqirus

“It’s easy to forget how serious Influenza, the flu, can be. Each year, influenza is estimated to cause 3 to 5 million cases of severe illness and up to 650,000 deaths around the world.

At Seqirus we’re committed to working with public health partners on the front line of influenza protection, providing the broadest range of vaccine options as early as possible each season. Our Liverpool site is the largest vaccine manufacturing facility in the UK, and one of the largest in Europe.

Our site plays an important role in the Seqirus global manufacturing network, as a centre of excellence for the production of the world’s only licensed adjuvanted influenza vaccine for people aged 65 years and above. Our immune systems naturally weaken with age, and the adjuvant helps to boost the immune response against influenza.
Last season we produced millions of doses of this enhanced influenza vaccine to protect the health of older adults all over the world, including our first batches for the UK market. It’s my role to provide scientific leadership to the development of our influenza vaccines, which due to changes in the virus circulating in humans, we must constantly update to ensure the vaccine is safe and efficacious for our customers and their patients.

In addition to our role in the supply of seasonal influenza vaccine, Seqirus is a global leader in pandemic preparedness and response. We are contracted by the UK Government to be in a constant state of readiness for the production of pandemic influenza vaccine during a pandemic emergency where speed of response is critical.

There are around 650 employees at our Liverpool site, making a significant contribution to the £1 billion Seqirus contributes to the UK economy each year. In 2017 we announced plans to invest in a new ‘fill-and-finish’ facility to enable us to fill and package the bulk influenza vaccine we manufacture on site into vials and syringes, an activity that is currently outsourced to a contract manufacturer. Our new facility will be operational in 2019 and will help meet growing demand for our adjuvanted influenza vaccine, strengthen reliability of supply and enable us to produce finished doses of pandemic vaccine more rapidly, to better protect the British population and other communities around the world.

I am very proud of the work we do here at Seqirus to combat the burden of death and disease caused by influenza in the most vulnerable members of the UK and around the world. We benefit greatly from our location in Liverpool, which continues to grow as a centre for biotech and life sciences and we are really pleased to be part of such a thriving community”.

**Tuberculosis (TB)**

People often think that TB is a Victorian disease that is no longer a problem in England. However, it is still one of the leading causes of death worldwide and international collaboration is needed to build and develop the public health infrastructures in developing countries to end TB.

There has been a dramatic reduction in TB in England over the last 100 years due to improved social conditions. Improvements in diagnosis and treatment have supported the decline. There are still significant numbers of cases - over 5,000 in England in 2017 and TB rates in England are higher than many countries in Western Europe. TB is concentrated in the most deprived populations and in cities and almost 2000 of cases were in London. 7 in 10 people with TB were born abroad.

TB can affect many parts of the body. In just over half of cases, it affects the lungs. This is called pulmonary TB and can be infectious. People in prison, the homeless and those affected by problem drug and alcohol use are more likely to have infectious TB.

As in many other infections, the development of strains of TB which are resistant to multiple antibiotics is an emerging threat. Resistant strains take longer and cost more to treat.
Similar to the national trends, numbers and rates of TB are slowly declining in Liverpool. There were 114 people diagnosed with TB in Liverpool in the 3 year period between 2015 and 2017. This equates to a local rate of new cases of 7.8/100,000 which is low. It compares with London where the rate is almost 3 times higher at 21.7/100,000.

TB is curable with antibiotics, and the sooner it is diagnosed and treated the better. It is important to keep awareness of possibility of TB amongst healthcare professionals as cases reduce, as many health care professionals may never see a case of TB. This can mean that diagnosis of TB is delayed. In England, nearly a third of people with TB experience a delay of more than 4 months between the onset of their symptoms and the start of their treatment.

A team of TB nurses work across North Mersey to identify, screen and support people with TB to complete their treatment. Supporting people to complete their TB treatment is important to prevent them relapsing or dying, and to reduce spread of TB to others and the development of drug-resistance. TB treatment takes a minimum of 6 months and individuals need secure housing and a stable environment to be able to complete.

Ultimately, we want to eliminate TB as a public health problem in the UK and worldwide and this means that effort and resources need to be maintained to tackle TB, including in Liverpool.
8. Gastrointestinal infections

Gastrointestinal infections affect 1 in 5 people in the UK each year. Infection can be spread through contaminated food and water, and, from person to person. Whilst the majority of infections are self-limiting, some infections can cause serious illness, especially among the very young, the very old and people who are already ill. There is considerable under-reporting of gastrointestinal infection as people affected may not consult their GP, and it occurs all year round, as can be seen below (chart 1).

Norovirus infection is the most common gastrointestinal infection. It is mainly spread from person-to-person, and can be spread in the air when infected people vomit. There is only a low infectious dose needed and people infected do not acquire any immunity so can be re-infected. It commonly causes outbreaks in care homes which can put pressure on the health and care system as homes that are affected need to close to admission to limit the spread of the infection. During 2016-17, there were 43 outbreaks of gastrointestinal disease in care homes in Liverpool.

Research carried out by PHE in Liverpool and Sefton care homes demonstrated that care homes that identified and reported diarrhoea and vomiting outbreaks promptly had outbreaks of a shorter duration, thus demonstrating the importance of ensuring care home staff are well-trained in recognition and response to outbreaks.

The Liverpool City Council commissioned Community Infection Prevention and Control (IPC) team advises and trains care home staff to respond to outbreaks of diarrhoea and vomiting. The team also teaches students attending Liverpool Adult Learning Service NVQ courses in health and social care about infection control.

Outbreaks can also occur in schools, impacting on school attendance as well as being unpleasant for those affected.
Case-study: outbreak of diarrhoea and vomiting in a primary school
Gavin Williams, Modern Matron and team leader IPC team, Merseycare

In April 2018, we were notified of a suspected outbreak of a gastrointestinal virus in a primary school as there were a number of children off school due to diarrhoea and vomiting. During the course of the outbreak, 10% of the children in the school contracted the virus and had diarrhoea and vomiting. In line with best practice, affected children were excluded from school for 48 hours following their last episode of diarrhoea or vomiting. This 48 hour period is needed to stop spread the virus spreading as children can still be considered infectious during this time. The IPC team supported the school to manage the outbreak. Cleaning was increased to include a two stage cleaning system involving general detergent and hypochlorite (bleach) to reduce the risk of spread through the environment.

The outbreak lasted over two weeks, which was longer than expected. The reason for this was that parents were bringing their children back to school sooner than the required 48hrs exclusion period due to childcare issues as they felt under pressure to return to work. The school therefore had to keep strict records of when each child had called in sick or been sent home from school to maintain the exclusion requirement. The actual cause of the outbreak was never confirmed as no stool samples were obtained but the clinical presentation and spread indicated that it was either Norovirus or Rotavirus.

Food Hygiene

Good food hygiene is essential to ensure that the food we eat is safe. This applies to food we prepare at home as well as to food we buy outside the home. Environmental Health Officers, are responsible for the inspection and enforcement of food safety legislation in over 4200 food businesses across the City and investigate cases of infectious disease.

Food Hygiene Rating Scheme

The Food Hygiene Rating Scheme is a national initiative to ensure that customers are provided with information about hygiene standards in food businesses to allow them to make informed choices about where to eat. The initiative launched across the City on the 24th January 2013.

Following an inspection of a food business, the inspecting Environmental Health Officers assigns a score for hygiene standards, structural conditions and confidence in the business’ management. Scores range from zero (indicating that urgent improvement is required) to five (indicating very good hygiene standards). Business are provided with and are encouraged to display a sticker showing the hygiene rating of their premises. Customers can check the hygiene rating of a business online at http://ratings.food.gov.uk/.

The graph below illustrates an increase in the number of food businesses achieving a 5 rating from 1365 in 2013 to 1798 in 2017.
In the year 2017 to 2018, the team inspected 1055 food businesses, which resulted in:

- 42 food businesses agreeing to voluntarily close as an alternative to being forced to close down because, in the opinion of the inspecting officer, the condition of the premises posed an imminent risk to health;
- 3 Hygiene Emergency Prohibition Notices being served to formally closed down by officers because the conditions posed an imminent risk to health;
- 1 case of unsafe food being seized;
- 13 food businesses being successful prosecuted for food hygiene offences;
- 641 written warnings being issued to food businesses, and
- 2 hygiene improvement notices being served for serious contraventions of food safety law.

Interim enforcement figures published by the Food Standards Agency for 2017-2018 show that, despite having one of the highest ratios of food businesses to enforcement officers, Liverpool City Council carried out the second highest number of prosecutions in the country, agreed the second highest number of voluntary closures in the country and issued the sixteenth highest number of emergency prohibition notices in the country.
One of these successful prosecutions included the prosecution of the Britannia Hotels Ltd, the operator of the Adelphi Hotel. The company was fined £232,000 at Liverpool Magistrates' Court on 22nd June 2017 for failing to having adequate procedures to control pests arising from three inspections of the hotel’s kitchens over a twelve month period from September 2015 to September 2016. The company was also ordered to pay £32,000 in costs to Liverpool City Council.

The team also investigated 517 complaints about food safety and hygiene standards in 2017 to 2018. An example of one of these complaints is the investigation of a pasty purchased from the Pound Bakery at St Johns Shopping Centre. The Commercial Team received a complaint that alleged that a customer found mouse droppings on a pasty purchased from the shop. Environmental Health Officers carried out an inspection and found that there was a serious mouse infestation in the shop. The contraventions were so serious that a decision was made to prosecute the food business. Sayers the Bakers Ltd were fined £66,000 for a number of food hygiene breaches, including producing food contaminated by mouse droppings. Costs were awarded to Liverpool City Council of £7,062.61.

Photo showing several mouse droppings adhered to the underside of a pasty produced by Pound Bakery.
Food safety hazards can occur across the hospitality sector. Last summer, Environmental Health Officers carried out a food hygiene inspection at Piccolino’s Restaurant in the city centre. The inspection followed complaints received by members of the public who had been dining at the restaurant and witnessed a mouse running across the floor of the dining area. Photograph below shows mouse dropping and food debris at the restaurant at the time of inspection.

The company was prosecuted in Magistrate’s Court in October 2018 and the company pled guilty to three food hygiene offences as the premises were found to be unclean; there were indications that pests were active in the premises near to where foodstuffs were stored, handled and prepared and adequate procedures were not in place to control pests. The court imposed a fine (which is paid to the court) of £25,000 and LCC were awarded full investigation costs of £4,579.

**Further information**

NHS Choices – Diarrhoea and Vomiting

[https://www.nhs.uk/conditions/diarrhoea-and-vomiting/](https://www.nhs.uk/conditions/diarrhoea-and-vomiting/)

Chartered Institute of Environmental Health

[www.cieh.org](http://www.cieh.org)

Food Standards Agency

[www.food.gov.uk](http://www.food.gov.uk)


[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5898054/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5898054/)
9. New and Emerging Infectious Diseases

Infectious agents adapt and evolve and we need to be prepared to respond quickly to emerging threats. New infectious diseases emerge in different parts of the world and can spread rapidly. There are lots of factors driving their emergence, including climate change, urbanisation and change in land usage and food production, as well as global movement of people and goods. Recent examples of infectious diseases which have emerged in different parts of the world and spread rapidly include Ebola, Middle East Respiratory Syndrome (MERS), Zika virus and Severe Acute Respiratory Syndrome (SARS).

In response to the Ebola outbreak in West Africa in 2014/15, a small network of 4 infectious disease units has been set up in the UK to isolate and provide expert treatment to patients with rare emerging infectious diseases – so-called High Consequence Infectious Diseases. These diseases are usually linked with travel to a part of the world where outbreaks occur.

The Royal Liverpool Hospital is part of this specialist network, and a key player, with a paediatric service provided by Alder Hey Children’s NHS Foundation Trust. It can receive cases from anywhere in England. The Unit is an important training centre for infectious diseases and is active in clinical research working closely with local and international partners.

Dr Mike Beadsworth, Consultant Infectious Diseases, explains:

THE TROPICAL AND INFECTIOUS DISEASE UNIT (TIDU)

The Unit has evolved from the former fever hospital established as Fazakerley Hospital in 1901, and moved as a "district managed regional unit" (DMRU) into modern wards in what had become University Hospital Aintree in 1991. The unit moved again to the Royal Liverpool University Hospital at the end of 2001 in order to work/research more closely with several departments that were already located at or around the Royal, including the Liverpool School of Tropical Medicine (LSTM).

During the Ebola epidemic of 2014/2015 the Unit was asked to provide ‘surge’ and assessment facilities, which it successfully did. It was commissioned as a High Consequence Infectious Disease Unit (HCID) for viral haemorrhagic fevers. In early 2018, it was also commissioned to manage air-borne High Consequence Infectious Diseases, i.e. SARS and MERS.

This type of isolation requires complex infrastructure, including controlled ventilation isolation rooms (negative pressure) for patients to contain airborne infections. Nursing and medical staff are highly trained and experienced in dealing with a wide range of infectious diseases, and use enhanced personal protective equipment (PPE).

The Unit successfully managed a case of MERS in August/September of this year, which was associated with travel to the Middle East. MERS was first identified in 2012 and the UK has only seen 5 cases. The Unit has just finished treating a patient with monkeypox linked with travel to Nigeria, which experienced a large outbreak of monkeypox in 2017. There have only been 3 cases of monkeypox diagnosed in the UK.
Enhanced personal protective equipment (PPE), before entering the negative pressure suite at the Tropical and Infectious Disease Unit.
10. Adverse Weather and Climate Change

Cold weather, heatwaves, flooding and drought all have potential to harm the health of the population.

The climate is changing in the UK due to emissions of greenhouse gases warming the planet. The average temperature globally increased by 0.85°C between 1880 and 2012. Even with strong international action to curb greenhouse gas emissions, global temperatures still have a fifty percent chance of rising by more than 2°C by the end of the century.

As the climate warms up, new threats to population health are emerging. There is likely to be an increase in extreme weather events including flooding, droughts and heatwaves. New infectious diseases may emerge in the UK, for example, carried by mosquitoes.

In the future, although very cold winters are likely to become less frequent, it is likely that cold weather will continue to be a bigger risk to health in the UK and Liverpool than hot weather. It is difficult to predict with certainty what will happen as the numbers of elderly people are increasing. Elderly people are more vulnerable to harm to their health from extremes in weather, both during the summer and the winter, so that even if winters are milder, the numbers of deaths may not reduce.

Winter deaths

A higher number of deaths is seen most winters compared with the rest of the year - usually in the elderly. At a national level, the spikes in deaths in the winter have been declining since the 1950s but the downward trend has plateaued in recent years. We have seen a similar plateau in Liverpool. On average, around 830 residents die each winter in Liverpool. Of these, around 250 of these are more than you would expect based on deaths in the non-winter period.

The cause of spikes in winter deaths is complex and can be due to a range of factors. Outbreaks of infectious diseases like flu, and, cold temperatures can increase the risk of death over the winter. The risk of death increases once outdoor temperatures fall to around 4 to 8 degrees C. This is due to the cold worsening existing conditions like respiratory disease, heart disease and strokes. People with dementia are also particularly vulnerable to the effects of cold, with one factor being their ability to self-care.

Flu strain A (H3N2) was in widespread circulation over the winter 16/17. It particularly affects older people and is likely to have contributed to deaths over the winter. There has been debate about the association with austerity driven cuts in health and social care spending, and the Department of Health and Social Care has asked Public Health England to carry out a review into the stalling of improvements in life expectancy since 2011 at a national level to understand what is happening.

Collaborative work across sectors is important to protect people over the winter, including the public sector, private organisations and community and voluntary groups. A Liverpool Winter stakeholder’s event is held every autumn to coordinate emergency plans to identify people at risk and protect them during significant periods of cold
weather based on best practice set out in the national cold weather plan. Checks are made to make sure the health and social care system is prepared. An alert system is implemented which alerts partners when cold weather is predicted so that they can take action to protect the vulnerable.

The greatest impact on reducing peoples’ vulnerability to the cold is through addressing housing standards and poverty. More than 30,000 households in Liverpool or 14% of all households in the city are defined as fuel poor, i.e. unable to afford to keep their home adequately heated. A higher % of households suffer in some wards, with 1 in 4 households living in cold homes in Greenbank, Picton and Kensington and Fairfield. The Liverpool City Council Healthy Homes programme introduced a focus on Fuel Debt, Fuel Poverty and Cold Homes as a major part of their delivery in 2017. For this first year the service was able to undertake 866 property surveys and engage with over 4000 people experiencing fuel poor homes. This included the installation of over 100 new boilers and 40 central heating systems along with a wide range of other fuel efficiency measures. The service continued to receive referrals from a wide range of partners in the city, to assist vulnerable families in reducing the impact of cold on physical and mental health. To that end, a range of other interventions enabled savings for 1,166 households by switching tariffs through Collective Switch referrals. This amounted to a total of £248,768 with an average of £213 per household. In addition £213,249 was gained for 122 households through maximising their benefit entitlements (an average of £1748 per claimant).

Interventions to support people to claim the benefits to which they are entitled also make an important difference to their ability to stay healthy over the winter.

**Heatwaves**

UK summers are getting hotter and heatwaves are expected to become the norm by 2040 due to climate change. Temperatures reached 38.5C in England in 2003 in England and there were over 2,000 heat-related deaths across the UK in just 10 days. The same summer, northern France experienced high daytime and night-time temperatures for 3 weeks and there were 15,000 deaths more than expected for the summer- mainly older people. Heat increases the risk of illness and death from respiratory disease, heart disease and strokes. Homes and hospital wards will need to be adapted to protect people from heat-related harm. Even at current temperature levels, 20% of homes and 90% of hospital wards in the UK have been assessed as being at risk of overheating.

Heat increases demand on the NHS. Nationally, a record number of people (2,176,000) attended Accident & Emergency (A&E) in July 2018. This was the highest number since data-collection began in 2010. Heat-related illnesses included dehydration, heart failure and kidney problems were seen. A&E departments in Liverpool were also very busy during the hot weather in July 2018, especially with respiratory and gastrointestinal illnesses.

In a similar approach to the plans for cold weather, the national heatwave plan is implemented in Liverpool every summer to protect people from the effects of heat.
Advice is cascaded to health and social care professionals to prepare for hot weather and to alert them to take action if a heatwave is predicted and messages shared with the public about how to keep safe and look out for vulnerable members of the community.

Although a heatwave was forecast in Liverpool in June 2018, heatwave temperatures were not reached. In preparation, health and social providers had been advised to take action including checking room temperatures, ensuring patients had sufficient cold water and ice and reviewing and prioritising high risk people. There were a number of mass gathering events in the city during the alert period and emergency planning officers worked with organisers to confirm that shade was provided and there was a plentiful supply of drinking water.

UV Radiation

UV radiation helps the body produce vitamin D but in excess it causes skin cancer. Skin cancer rates have doubled in Liverpool since the turn of millennium. 86% of skin cancer cases are preventable. The focus of Liverpool’s skin cancer strategy in 2018 has been to raise awareness in children and outdoor workers about the dangers of sun exposure.

The charity Skcin have developed an accreditation scheme for primary schools called Sun Safe Schools accreditation scheme, and a number of Liverpool schools have engaged with this.

Outdoor workers are twice as likely as indoor workers to be diagnosed with non-melanoma skin cancer. Public Health is working with local employers and North West Cancer Research (NWCR), to produce a communications toolkit for employers of outdoor workers to support them to address the risk.

Liverpool supported NWCR’s suncreamselfie campaign in 2018 to raise awareness of skin cancer and encourage people to use sun protection.
Flooding

Climate change is likely to increase the risk of flooding in Liverpool. Flooding can cause considerable disruption, misery and mental health problems, as well as economic loss. The main flood risk in Liverpool is due to surface water flooding after intense rain. It is the risk of water flowing over the ground before it enters the underground drainage network or watercourse or cannot enter it because the network is full. All surface water in Liverpool drains via ditches and watercourses to the Rivers Alt and Mersey, and high water levels in wet conditions can prevent effective drainage, especially when levels are high in the river Alt. Land drainage has become less effective as fields were developed.

The roles of responsibilities of the different local partners in responding to floods are set out in a Multi-Agency Flood Response plan under the auspices of the Merseyside Resilience Forum. The last big flood event in Liverpool occurred in July 2010 when a total of 257 residential properties and businesses in Liverpool suffered from internal flooding.

Liverpool City Council has the lead role in managing local flood risk, working with the Environment Agency, United Utilities (Water and sewers) and Highway Authority (Liverpool City Council). The latest flood risk assessment in 2017 identified almost 14,500 properties in Liverpool as being at risk of surface water flooding with a 1% chance identifying 14,430 properties as being at risk for a 1 in 100 year storm event. The Council has developed a Local Flood Risk Management Strategy and action-plan. The scope of work includes prevention of inappropriate development in areas susceptible to flooding, maintenance of drainage infrastructure, work to reduce local flood risk and work with local communities to help them prepare for the possibility of floods.
Climate Change Mitigation and a Low Carbon Future

Christine Darbyshire, Senior Development Manager (Environment), LCC

In 2012 the Mayor approved a first Sustainable Energy Action Plan (SEAP) for the City and City Region. The City set an ambition to transform itself into a low carbon economy in which future economic growth is decoupled from the consumption of fossil fuels and from the growth of carbon emissions. The City Council set a target for a carbon emissions reduction of 20% by 2020 across the city as a whole and is on track to meet and to exceed the target.

A total of 558,000 tonnes of carbon has been saved at a rate of 70,000 tonnes per year, giving the city an 18% reduction to date. This has happened whilst the city has undergone active economic growth.

There has been an even greater reduction of 34% in CO2 emissions across all of the City Council’s own buildings, street lighting and transport. The City Council continues to purchase 100% of its electricity from green sources.

The City Council is currently developing a local district network to supply locally generated heat and energy to the major Paddington Village Development and is examining the feasibility of using the River Mersey and the Docks to extract and supply water-sourced heat.

Commercial /Industrial emissions are the greatest source of CO2 emissions – responsible for 43% of all. They have fallen by 14% since 2005. The next biggest source is residential emissions – responsible for 35% of all. They have fallen by 24%. Transport is responsible for 22% of all CO2 emissions and have fallen by 13% since 2005.

In March 2017 the City Council Cabinet agreed to increase the CO2 reduction target for the city to a 40% decrease by 2030 for which the city is ahead of target.
The role of Nature Based Solutions in Health through URBAN GreenUP

Dr Juliet Staples Senior Project Manager URBAN GreenUP

Liverpool has recently been awarded nearly £3.5million of URBAN GreenUP European funding to create and test the impact of ‘Nature Based Solutions’ in 3 green corridors across the city during a 5 year programme of work (2017-2022).

Nature based solutions are inspired by or copied from nature and can sustainably tackle a range of socio-environmental challenges such as climate change, water pollution and human health. Where they are adapted to local conditions, they can deliver multiple co-benefits for health, the economy, society and the environment. Nature based solutions introduce tree planting, vertical green walls, green roofs and a range of sustainable urban drainage solutions to the existing environment. These natural approaches often provide more cost-effective solutions to local problems than traditional engineered systems and can help to make cities more resilient.

During the project Liverpool City Council, together with the University of Liverpool and Mersey Forest, will retrofit and then monitor and measure the environmental, social and economic impacts and benefits of the nature-based solutions; assessing how they affect the environment, quality of life, local people’s health and business performance. This work will be mirrored by the 2 other front runner cities in this project; Valladolid in Spain and Izmir in Turkey, and later replicated by 5 global follower cities.

With an emphasis on innovation, the more established Nature Based Solutions of tree planting, vertical green walls and green roofs will be complemented in Liverpool by floating islands, rain gardens, pollinator planting, tree sustainable urban drainage systems and moving gardens. These nature based solutions will collectively help to improve local air quality, encourage pedestrian accessibility, enhance biodiversity and alleviate surface water issues. The various solutions will be installed during late 2019/early 2020 at locations where evidence and mapping shows they are likely to have maximum impact.

The chosen locations for the new green and blue infrastructure will be in the Baltic Corridor, across the City Centre Business Improvement District and in Otterspool; areas that are generally characterised by poor air quality, localised surface water flooding or a lack of quality green space.

Baseline and post intervention monitoring will help to clarify and quantify the benefits, both environmentally and socio-economically. At the end of the project the findings will be reviewed to see which nature-based solutions work best, so that the most cost-effective and most widely beneficial options can be considered for future projects and development schemes.

Further information

https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/
http://www.urbangreenup.eu/
11. Conclusion and Recommendations

Despite the progress that has been made in preventing, treating and even eradicating some infectious diseases, nature’s ability to continually adapt is bringing new threats, like infections resistant to current treatments and new or re-emerging infectious diseases which can spread rapidly.

We need to continue to invest in systems and arrangements to protect the population from infectious diseases and environmental threats, and make use of innovative technologies and approaches to protect the population.

Local health protection challenges are linked to global problems such as the warming of the climate with the potential for extreme weather events. We need to move from reliance on fossil fuels to renewable energy sources.

Fuel poverty and cold homes continue to harm local people. Whilst the quality of the air we breathe is better than it ever has been, we now have robust evidence of the harm to health caused by air pollution. We need to become less reliant on private cars for travel and make walking, cycling and public transport the norm. We are learning more about the threat to health posed by indoor air pollution, and we need to improve ventilation of homes.

We need to take a long-term view to the development of the city to protect the environment and the health of the current and future population and adapt and increase our resilience to emerging threats. On an individual and organisational level, we all need to be asking ourselves what we are doing every day to improve our contribution to sustainable development.

There is a direct association between deprivation and health protection issues and threats. In general, those exposed and at risk of harm from these hazards are those living in deprivation and the elderly, very young and people vulnerable due to existing poor health. We need to ensure a strong focus on addressing inequalities and inequities in health protection.

Liverpool has a long and proud history tackling communicable disease and non-infectious environmental hazards, since the days of Dr Duncan and Sanitary Inspector Thomas Fresh. Today, Liverpool is a centre of excellence for health protection and life-sciences and there is strong collaboration between academia, industry and healthcare bodies. We need to harness the energy of these collaborations to tackle our health protection challenges.
Recommendations

- Improve housing standards and support people to claim benefit entitlements to address fuel poverty and reduce vulnerability to the cold.

- Reduce emissions which are harmful to human health and/or to the environment (carbon, particulates and nitrogen oxides).

- Build a coalition of stakeholders to promote a whole system approach to reducing air pollution, including investment in large-scale walking and cycling infrastructure, active travel planning across sectors, and development of an affordable public transport offer.

- Ensure a particular focus on protecting children from the long-term harms of air pollution and harness the support of local schools and communities to explore local solutions.

- Work collectively to address antimicrobial resistance, in particular, to ensure current antibiotics are used as sparingly and rationally as possible.

- Strengthen the integration of sexual health services to improve the quality of service provided so that local people can access the advice, testing and treatment they need at whatever service they attend.

- Invest in prevention of sexually transmitted infections and HIV including healthy relationships and sex education for young people, and targeted interventions for those at highest risk. Work to normalise HIV testing.

- Develop/strengthen a systematic approach to testing people at risk of hepatitis C in drugs services, prisons and primary care and actively support people who are infected to access treatment.

- Invest in interventions to reduce the number of people who begin injecting drugs. Maintain and strengthen work to encourage people to stop injecting and make sure that people who continue to inject have easy access to clean injecting equipment and opioid substitution treatment.

- Address inequalities and variation in uptake of vaccinations across GP practices, schools and communities and embed flu and pertussis vaccination into routine antenatal care. Invest in strengthening the flu vaccination programme for Liverpool children to protect children and reduce the impact of flu on the community and pressure on health services.

- Maintain effort and resources to tackle TB to support the elimination of TB as a public health problem.

- Maintain a food hygiene inspection regime that is commensurate with the level of risk posed by food businesses.
Appendix 1 - Update on Recommendations included in the 2017 Public Health Annual Report

In the 2017 Public Health Annual Report, which focused on the impact of austerity on health and wellbeing, a number of recommendations for action were made. In this section I have provided an update on what we have done in relation to these recommendations since that report was published.

**Recommendation 1: To continue to monitor the impacts of austerity and welfare reform on the health and wellbeing of the population**

**Recommendation 2: To monitor the recent increase in the city’s mortality rates and the consequent reduction in life expectancy.**

Public Health continue to monitor the worrying trend highlighted in last year’s annual report of decreasing life expectancy (LE) in Liverpool. This downward trend has continued for the latest reporting period (2015 to 2017), with male LE falling from 76.4 to 76.1 years and female LE from 80.3 to 80.2 years. The picture nationally is that LE remains unchanged for the third consecutive year for males and the fourth consecutive year for women.

Additional analysis has highlighted the scale of the challenge facing the city in narrowing the life expectancy gap with England. If all premature lung cancer deaths, chronic obstructive pulmonary disease deaths, and deaths from external causes such as accidents, falls, suicide, and substance misuse were avoided then the life expectancy of Liverpool residents would still be significantly below the national average. These early deaths (500 in total) are all considered preventable.

Infant deaths have a considerable impact on an area’s life expectancy. Liverpool’s infant mortality rate has risen from 4.2 deaths per 1,000 live births to 5.7 per 1,000 since the turn of the decade, representing a 36% increase. After almost a decade of year-on-year reduction in infant mortality, this dramatic reversal is of considerable concern. Public Health have analysed all infant deaths reviewed by the Child Death Overview Panel stretching back to 2008 and have found that there has been two and half-fold increase in the number of deaths considered preventable.

Modifiable risk factors associated with deaths that were statistically significant included maternal smoking, physical and mental health of the mother, family history of domestic abuse, and infrequent or no antenatal care. As part of the first 1001 Critical Days workstream we are working with partners from across the whole system to address these issues.

The Life expectancy gap across Liverpool’s wards now stands at 14 years for males (Anfield = 71.9, Church = 86.1 years) and 11 years for females (Kirkdale = 77.1, Childwall = 88.3 years). This is widening for males but static for females.
Recommendation 3: To investigate further the recent evidence of high rates of hospital admissions for malnutrition in women of child bearing age and children.

The public health intelligence team is undertaking some further work to understand more about the background of these hospital admissions for malnutrition.

A multiagency Infant Nutrition & Health group has been set up to improve health and wellbeing outcomes for families with children in the first 1001 critical days from conception to age 2. The group is working to improve infant and maternal nutrition including promoting breastfeeding and healthy approaches to the introduction of solid foods. Part of this work is to improve the impact and consistency of information and advice to support parental decision making.

Dental oral health is poor in Liverpool particularly amongst children and vulnerable adults. Liverpool’s Oral Health Promotion programme continues to deliver evidence based interventions to improve oral health and reduce inequalities for children and vulnerable adults, as well as working to improve patient information and access to dental services. A new campaign Kind To Teeth has been jointly commissioned by North West Directors of Public Health, Give Up Loving Pop and is aimed at improving oral health in the early years (aged 0-5 years) with a particular emphasis on promoting milk and water.

Liverpool Children’s Centres continue to deliver a range of interventions and programmes aimed at supporting families to enjoy good nutrition and maximise the role that healthy eating has to play throughout the life course.

Recommendation 4: To promote the presence of health in the development of policies across all aspects of service provision in the city.

Recommendation 5: To continue to influence and promote prevention at the heart of all decision-making and policy development with health and social care providers.

Recommendation 6: To continue to promote a whole systems approach to tackling the health and wellbeing issues highlighted in this report.

At the beginning of 2018, Liverpool City Council started the journey on the Health in All Policies agenda, led by Public Health, as part of the Mayoral Inclusive Growth Plan. There is also continued close working with the NHS on this agenda.

One strand of this approach currently in progress is the development and implementation of a ‘Health in all Places’ strategy, with the aim of ensuring that health and wellbeing and the health infrastructure are considered in planning and decision making about health in the public realm.

A Health in All Policies Joint Strategic Needs Assessment will be published this financial year and will support the development of a plan of action across the system. It will use as guidance new public health planning frameworks which have been issued nationally by Public Health England.
Recommendation 7: For stakeholder engagement to play an increasing role in underpinning service design and re-development to ensure that services are responsive to people’s needs, preferences and expectations.

Engaging partners in the development of services and strategies remains a key focus for our work and to date we have worked with partners on the following agendas, critical in halting the rise in infant mortality and the decrease in life expectancy;

- Giving every child the best start in life; focusing on the first 1001 days
- A City for All Ages Strategy (child friendly, living well, ageing well and healthy ageing)
- Planning and health (including planning regulations, active transport, green spaces, city design and a adopting a healthy city framework)
- Air Quality and the development of active travel programmes
- Input into the housing strategy to maximise health and wellbeing
- Starting the discussion around the development of a Strategy for public mental well being
- Input into a comprehensive employment and skills strategy, with a clear link between health and economic productivity
- Using “Making Every Contact Count” as a driver for discussions around health at every opportunity.

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