

Director of Public Health for Plymouth

Annual Report 2011/12



'Making Plymouth a Safer Place to Live'



Foreword



It is my pleasure to present to you my Annual Report for 2011/12 as Director of Public Health for Plymouth. The aim of this report is to set out some of the key issues facing us here in Plymouth and to promote debate about what we can do to live healthier

lives and protect ourselves against the hazards around us.

As Director of Public Health I am responsible under statute for promoting and protecting the health of the population of everyone living and working in the city of Plymouth. My post is a joint appointment between the NHS (Plymouth Primary Care Trust) and Local Government (Plymouth City Council) and I am accountable to the Chief Executives of both organisations for improving and protecting health and reducing inequalities.

The health problems that we face in the city are protracted and in some cases may take a generation to change. Heart and other circulatory diseases are still the biggest killers and cause more illness and disability than any other disease; the real tragedy is that many of them are preventable. We are making pleasing progress on heart disease and many cancers but the gap between rich and poor remains.

My previous Annual Reports have either focused on the whole population or specific groups and themes. This year I have chosen to focus on health protection, a significant part of the Public Health team's work that usually goes on behind the scenes, largely externally unrecognised for the direct contribution it makes to saving lives. Protecting the health of the population relies on contributions from a wide range of partners and includes topics as varied as immunisations right through to responding to a global pandemic or widespread flooding. It encompasses environmental and

biological hazards and the impact of new and emerging threats will touch all of us at some point in our lives. It also covers what many will consider old threats to health like measles which are re-emerging as very real threats to our young people who were not fully vaccinated and protected in the wake of the MMR 'scare' in 1998, something which has now been completely discredited.

Health protection requires both careful planning and a considered response. It is only by remaining vigilant and working together that we can make Plymouth a safer place to live.

I hope that you find this year's Annual Report informative, challenging and interesting to read. If you would like to find out more about the health of Plymouth or the work of its Public Health team you can contact the team at the Public Dispensary on 01752 315770 or info@plymouthpublichealth.nhs.net

I would like to thank the Public Health team and our partners in health who have been instrumental in the production of this report, particularly Kevin Elliston, Sarah Lawson, Robert Nelder, Brian O'Neill and Karen Tucker.

Professor Debra Lapthorne



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1. Introduction



1.1 Health protection

Public Health is concerned with the health of whole populations and can be defined as *'the science and art of preventing disease, prolonging life and promoting, protecting and improving health through the organised efforts of society.'* Public Health is about promoting well-being, not just dealing with illness, and looks at the impact on health of social, economic, political and environmental factors as well as individual behaviour.

The key areas of Public Health activity can be described as health improvement, health protection and improving healthcare services:

- Health improvement includes: addressing inequalities and the causes of inequalities, education, housing, employment, family/community, lifestyles, surveillance and monitoring of specific diseases and risk factors.
- Health protection includes: infectious diseases, chemicals and poisons, radiation, emergency planning and response, environmental health hazards.
- Improving services includes: clinical effectiveness, efficiency, economic service planning, audit and evaluation, clinical governance and equity.

Every year we focus on different areas of public health for the purposes of the Director of Public Health's Annual Report and for 2011/12 the Annual Report focuses on the key area of health protection issues for the health of the population of Plymouth.

Health protection is concerned with:

- Action for the general environment (e.g. clean air, water and food),
- Prevention of the transmission of communicable diseases

- Protection against environmental hazards through the monitoring and management of outbreaks and incidents that threaten the population's health and wellbeing,
- Hazard identification,
- Risk assessment and
- Promotion and implementation of appropriate interventions.

Health protection at a population level involves:

- Protecting against environmental and biological hazards
- Communicable diseases affected by human behaviour
- Ensuring protection through access to food that does not give rise to ill health or put people at a greater risk of ill health in the consumer and care services

Health protection cannot be undertaken by one single agency but Public Health can independently ensure that protection of health and prevention of disease remains a priority.

Infectious diseases are a major global threat to health, to prosperity, to social stability and to security. Infectious diseases account for 41% of the global disease burden with infections such as HIV/AIDS, tuberculosis and malaria accounting for millions of deaths in the world's population each year.

The problems and risk of infectious diseases is never static. Micro-organisms like viruses and bacteria co-exist with people and share a common environment. A number of important factors create change in this delicate balance and some increase the risk to human health from infectious diseases. They include global travel and trade, changes in environmental and land use, the growth of technology,

adaptation of micro-organisms producing strains that are more virulent and resistant to treatment, and increases in the numbers of people with weakened immune systems (e.g. cancer and transplant patients and growing numbers of people with long term conditions like rheumatoid arthritis or lupus whose treatment can impair their immune system). Infectious diseases (the main biological threat) are only one of the threats to health from the external environment. There are also threats to health that arise regularly from the physical environment, for example chemical and radiation incidents. These complex factors are illustrated in Figure 1.

population that they serve and to provide leadership for health improvement and health protection. Advocacy is a process which aims to influence and challenge public policy and resource allocation decisions within political, economic and social systems or institutions and to promote and support changes that will improve the health of the community. This independent advocacy role, which must be exercised without fear or favour, is a central tenet of Public Health practice and the basis of the statutory role of the Director of Public Health.

Advocacy also involves identifying potential threats to the health of the community and alerting others to the seriousness of those threats. It aims to present the general public with the correct information regarding a particular health condition or risk, to assist people in accessing appropriate treatment or services, to promote research to help minimise the impact of the health risk and to alert the public to situations which may increase chances of spreading the health risk.

Public Health advocacy goes beyond guidance and education to promoting action and solutions to problems based on a clear understanding of the evidence base for this action. Epidemiological evidence is the foundation of Public Health advocacy; the evidence and research must be translated into policy, practice and changes in supportive public opinion, to promote change for improved population health.

Public Health advocacy must aim to change upstream factors such as laws, policies, prices, standards and environments that influence personal health choices by influencing those who have power to change these things and to fund interventions that can improve, or protect, the health of whole populations.

Public Health advocacy requires:

- Strong relationships and partnerships
- Creativity and innovation
- Long term commitment
- Persistence and passion
- Timely evidence



Figure 1 - The determinants of health and well-being in our neighbourhoods (Barton and Grant 2006)

Since the early 1970s at least 30 previously unknown infectious diseases have become prominent, for which there is no fully effective treatment. Infectious diseases recognise no international boundaries, so that a newly emergent disease in another part of the world must be assessed as a potential threat to this country.

1.2 Public Health advocacy, managing and assessing risk

One of the key roles for the Director of Public Health and the wider Public Health team is that of advocacy on behalf of the local

- A shared understanding of needs versus 'wants'

A Public Health advocate must:

- Create meaningful debate
- Influence policy
- Develop partnerships
- Lobby politicians
- Create community awareness
- Provide leadership
- Develop policies to meet future needs
- Identify impulses and opportunities for change
- Work with and through other people
- Establish and maintain credibility

1.3 Risk assessment and communication

Many of the decisions we make that impact upon our health are based on a view of likely risk that may or may not be based in reality. Risk is all about the 'chance' of something happening that will have an impact on us. We all take risks every day, whether crossing the road, driving a car or playing sport. The risk can be thought of as a balance between the possible consequences and likelihood of it happening. A risk may have a high impact but a very low probability of happening. For example, if you are planning walk to your local shops you wouldn't usually worry about being hit by a car. It could potentially be quite serious if it did happen but quite unlikely. The lifetime risk of dying in a transport accident is remarkably high - with most of the risk coming from road traffic accidents. While the risk of dying in a road accident in any year in the UK approaches 1 in 20,000, the lifetime risk is 1 in 240 yet most of travel every day in a car without thinking about the risk or modifying our behaviour to reduce that risk. Aeroplanes are much safer in terms of annual and lifetime odds than car travel, when calculated in terms of deaths and total populations yet many of us feel much more anxious getting on a plane than we do getting into a car.

Communicating about risks to public health is of vital importance in many different contexts

i.e., in government, the NHS, local authorities and the private and voluntary sectors. Communication needs to be considered at stages of risk analysis and should therefore concern all those dealing with actual or potential public health risks.

Risk assessment aims to provide information to all parties concerned so that the best possible decisions are made about any action that needs to be taken to mitigate or reduce the risk.

1.4 Health impact assessment

Health impact assessment (HIA) is a systematic process that uses scientific data, professional judgements and stakeholder input to identify and assess potential or actual public health impacts of major policy proposals; HIAs suggest actions that could be taken to minimise adverse health impacts and to maximise beneficial impacts. HIA is therefore a tool for protecting and promoting health. HIAs are particularly useful when undertaken prospectively, i.e. before a policy or proposal is in place and as such the assessments must consider risks or impacts that may or may not materialise, but need to be considered. Mental Wellbeing Impact Assessment is a similar process that assesses the impacts of policies or proposals on the mental wellbeing of a population.

HIA is a participative process, involving local stakeholders and the public and focuses on groups experiencing health inequalities and social injustice, HIA therefore makes the links with social determinants of health. The HIA process is used in Public Health to assess the health impacts upon a population of a major development proposal before it is implemented and identifies the distribution of health impacts within that population. This year the Public Health Team have led a Health Impact Assessment on the proposal for an Energy from Waste plant within Devonport Dockyard. This HIA report was used to inform the response of NHS Plymouth to the proposal.

The Public Health Team will continue its role in HIA as a responsible public health partner and advocate for the protection of the health of the local population and will continue to conduct and contribute to HIAs that assess policies, programmes, and major planning applications.

1.5 Public Health as a statutory consultee

As a statutory consultee, the NHS is formally involved in the processes of planning and environmental regulation and these processes offer opportunities to influence planning decisions and the management of the environment to minimise or prevent adverse health effects. It is an important responsibility, with major implications for the public, consultee, regulators and industry alike. As a result NHS input must be appropriate and add value to the processes. Public Health Teams in PCTs are uniquely placed to offer expertise, information and interpretation not available to the regulators and to make responses on behalf of the local NHS to place proposals in a local health context. The primary reason why PCTs are consulted is that their broad public health responsibilities and access to, and use of, routine health and demographic data make them uniquely placed to comment independently on the aspects of any application which are relevant to human health. The Public Health role is to ensure that a high level of health protection is achieved for their local population.

In general Public Health responses will include;

- A view on the potential health impact of the proposal based on the information provided in the application
- The identification of existing local health issues that may be associated with the proposal or its location, e.g. are there any local health problems that could be related to, or exacerbated by, the proposal, including existing local health inequalities
- The identification of any future health issues that could be associated with the proposal or its location
- Providing reassurance to the local community including reassurance that a proposal will not present a significant risk to human health.
- Public Health Teams lead and inform the NHS response to planning and Integrated Pollution Prevention and Control applications Public Health and must provide:
- An understanding of the broad determinants of health

- An understanding of environmental chemistry and pollution
- An understanding of toxicology, including methods of assessing risk
- An understanding and application of Epidemiology
- An understanding of and access to local health and demographic data.
- Knowledge of sensitive groups in the population and of existing health inequalities
- An ability to communicate risk, to put risk into context and to distinguish between hazard and risk.
- Public Health professional judgement

Public Health Teams cannot however meet the NHS obligations in isolation, a successful response requires the development of good relationships with planners and regulators and with other agencies that can provide expert advice, for example the Health Protection Agency and Local Authority Environmental Health Practitioners. Responses must be consistent, reasoned and based on evidence; they must identify and respond to any Public Health issues. The response to an Integrated Pollution Prevention and Control application will be placed on the public registers and could be used as a basis for refusing applications, or for requesting further information from the applicants.

1.6 Plymouth – a hazard rich urban environment

Plymouth is a city with a population of approximately 256,000 people; it is a compact city of approximately 80 km², built between the mouths of the rivers Plym to the East and Tamar to the West, where they join in the impressive natural harbour of Plymouth Sound. Plymouth is the second largest city in the South West and is home to a major port, the largest naval dockyard in Western Europe, a large university, military and industrial interests and a historic waterfront with an active sailing community. The city centre has over 500 shops serving as the main shopping location and central business district for a wide catchment area and hosts a variety of events. The city is also a major tourist destination.

The Port of Plymouth has a tidal basin with 13 hectares of water. With a 200-metre long berth and an anchorage ground for vessels of up to 300 metres in length, the port is large enough to accommodate most ocean-going cruise liners. Plymouth is an increasingly popular port of call for cruise liners and provides the shortest ferry route to western France and the Iberian Peninsula. The port supports a wide range of operations, and is equipped with purpose-built facilities for freight and passengers.

Within the city are several sites that are covered and legislated by the Control of Major Accident Hazards Regulations (COMAH); Radiation (Emergency Preparedness and Public Information) Regulations (REPPiR) and Major Accident Control Regulations (MACR). These are industrial sites that potentially pose specific risks to the local community that live alongside them. These risks are managed through the Community Risk Register, which is a risk assessment process and is a legal requirement of the Civil Contingencies Act 2004. The Public Health Team works closely with colleagues in the Local Authority and emergency services in the preparation of plans to deal with any emergencies arising at these sites; the plans aim to provide the highest level of health protection for the local population who live alongside these potentially hazardous undertakings.

The registered hazardous sites within the city are:

1.6.1 Valero Ltd

The Valero Limited site is situated within the mixed industrial, commercial and residential district of Cattedown, to the east of Plymouth city centre. The site is a top tier COMAH site which stores and distributes Super Unleaded Petrol, Premium Unleaded Petrol, Diesel, Gas Oil and Kerosene. The quantities of these products stored classify the site as 'top tier'.

1.6.2 Greenergy

The Greenergy site is situated within close proximity to the Valero site within the district of Cattedown. The site is again a top tier COMAH site that receives petroleum products by ship, which are then stored in tanks on-site before being loaded onto road tankers for distribution to customers. Petroleum products

stored and distributed from the terminals are Super Unleaded Petrol, Premium Unleaded Petrol, Diesel, Gas Oil and Kerosene.

Within the Cattedown District of the city there are two other COMAH sites which in their own right do not hold sufficient hazardous materials to be classified as top tier hazards but because of their proximity to Valero and Greenergy these lower tier sites require additional assessment and planning to be taken.

Lower tier COMAH sites in Plymouth:

1.6.3 Origin Fertilisers (UK) Ltd

The Plymouth Site is one of five UK Plants importing, blending and distributing fertilisers containing Ammonium Nitrate.

1.6.4 Wales & West Utilities

The site stores North Sea/Natural Gas in one Low Pressure Holder (103 tonnes). The site also has a High Pressure Pipeline entering a Pressure Reduction Station which regulates the gas so it can be exported to the consumers in the Medium and Low Pressure networks.

Because of the potential 'domino' effect, should a major incident or accident happen, all four sites work with partner agencies under the Cattedown Emergency Planning Forum to plan for and mitigate the associated risks.

1.6.5 Devonport Naval Base

The City is host to Her Majesty's Naval Base Devonport Dock; it is the largest naval base in Western Europe and is the sole nuclear repair and re-fuelling facility for the Royal Navy. The co-located Royal Dockyard is owned and operated by the marine division of Babcock International Group. The Devonport site is located near the border of Devon and Cornwall; it encompasses approximately 740 acres with 3.5 miles of water frontage and is situated on the Hamoaze, a reach of water stretching from Saltash to the Narrows, on the East bank of the River Tamar. The River Tamar is used extensively by a range of commercial and leisure craft.

The Royal Navy operates a flotilla of nuclear powered submarines, which form a vital element of the defence of the UK. The Devonport site is the operating and maintenance centre for the Commodore Devonport Flotilla; the site

also carries out major refitting and refuelling of Nuclear Powered submarines. Usage of the whole site for operations involving ionising radiation is controlled through The Radiation (Emergency Preparedness and Public Information) Regulations 2001, (REPPiR).

1.6.6 Defence Munitions (DM) Plymouth

The Defence Munitions site is situated on the east bank of the River Tamar approximately four miles North of Plymouth City Centre. The site comprises underground storage tunnels, a marshalling area, an explosives handling area and various specialist and administration buildings. A jetty situated on the Tamar Estuary is used to load barges with ammunition for supplying the warships in HM Naval Base. The site is licensed to hold explosives of various types and its main activities include munitions transport, storage and handling, explosives processing and metal cleaning, treatment and protection.

All of these sites combine to make Plymouth hazard rich urban environment which needs careful and expert planning by a wide range of partners to reduce and manage both the potential risk and to reduce the impact and respond to any harm.

1.7 Population change, forecasts and impact on public health

As part of Plymouth's 2011 Joint Strategic Needs Assessment (JSNA) a population study is being carried out, this is an important and comprehensive study that will inform the long term planning of facilities in the city. The JSNA

will build on the work already undertaken in Plymouth looking at past trends and future projections and will examine the likely level of population arising from the economic growth objectives for the city. This work will identify the composition of the population and highlight the implications this will have for the commissioning and delivery of services in the city.

Plymouth City Council's aspiration is that the city should grow to a level that provides sufficient critical mass to support the level of services needed by the city. A sustainable growth agenda is based on the principle of promoting a 'virtuous spiral' (i.e. the more people there are, the more activity there will be and the more support there can be for facilities and services, and the more that is on offer, the more likely people will be attracted to the area, and so on.) There are three components of sustainable growth agenda; firstly to identify the existing baseline information, secondly to test the employment led populations which arise from projected employment growth scenarios, and thirdly beginning the process of understanding what impact the future population characteristics might have on public services.

The fundamental and most interesting part of the sustainable growth study is the third component, i.e. to understand what the implications are of the population growth and how the likely population characteristics will affect public services. The key question to be answered is: 'how does the evidence help with planning, commissioning and delivering a variety of health and social care services?'



2. Communicable disease risks



2.1 A historical view of health protection and the role of public health in Plymouth

Public Health has its developmental roots in the identification and control of environmental health threats, essentially health protection. Poor sanitation, contamination of the food or water supply leading to outbreaks of infectious disease, or air pollution episodes causing increased respiratory morbidity and mortality were triggers for major advances in health protection. Local Authorities traditionally took a lead role in this work. Plymouth has long been a major sea port and witnessed the importation of human infection and potential environmental hazard

Looking back over the last century in Plymouth we have identified a snapshot of health protection issues;

In 1906 The Medical Officer for Health, the Director of Public Health of the time produced an annual report of the floating population of Plymouth. This reflected the ports activity and threats to health due to disease and sanitation. Apprehensions were raised regarding the prevalence of Smallpox in various parts of the country and the fact that Plymouth was a terminal port for ships arriving from Smallpox infected countries.

In 1906, 11 people were removed from vessels with Plague, Beri Beri, Diphtheria, scarlet fever, and measles. There were 47,000 passengers and 35,000 crew who alighted at the port of Plymouth. Four people had been buried at sea along with reports of ill health in arrivals to Plymouth including a number of cases chickenpox, measles, whooping cough, syphilis, pneumonia, diarrhoea, dysentery, plague, venereal disease and glandular enlargements. There had been in total 589 people sick, 164 being of an infectious nature and 53 deaths. Notices had been issued for cleansing, painting and whitewashing. Attention was drawn to the sanitary improvement of beds/bunks, lockers and water supplies.

1913 saw the extension of this role to the inspection of foods

The report of the medical officer of Plymouth oversaw the sanitary inspection of houses, which for the 'working classes' remained a pressing need, rise from 20,000 in 1913 to 55,197 in 1923. In 1913 there were 206 deaths in children under one year of age (49.5 per 1,000 births) and 129 still births. The population of Plymouth at that time was 210,030. Sanitary inspectors not only looked at houses, but included factories (293) and licensed workshops (658) incorporating clothing, bakery, laundry and furniture building. Corporation bath and wash houses, much used by the public at a time where personal sanitation provision was poor, were inspected. 14,500 people used such facilities in Plymouth. There were 542 cases of TB, of whom 246 people died reflecting the poor provision of treatment locally and 723 people were treated for Venereal Diseases.

In Stonehouse in 1898, it was gladly reported that there had been few cases of Smallpox. There had been 45 deaths with causes of an infectious nature which included smallpox, measles, diphtheria, scarlet fever, whooping cough, fever, and diarrhoea. About 1 in 700 people died from measles.

In Devonport in 1908, a reduction of notification of infectious diseases was noted. However, it was still common to see smallpox, measles, diphtheria, scarlet fever and whooping cough. Pneumonia, influenza and TB feature highly.

It was noted in this report that a number of articles were submitted for decontamination and orders issued to improve water supplies. Articles were often disinfected at the borough hospital and included feather beds, blankets, trousers, dresses, towels, curtains, boots and shoes, hats and caps, stockings, gloves and handkerchiefs. Along with 62 bake houses in the area there were 'offensive trades' which included blood boiling, tripe boiling and gut scraping.

By 1923 Plymouth was seeing above 7,500 annual sanitary improvements and was leading the way with open-air schools, presumably for Tuberculosis.

After the Great War, in 1923, there were concerns regarding the management of refuse to improve the health of the public. The recommendations give little understanding as to environmental considerations for health or the psychological implications of having such facilities on the doorstep.

Many of the traditional health protection risks are still relevant for Public Health today; the early recognition of emerging infection, the treatment, containment and prevention of infectious diseases are compounded by new challenges due to changes in the way in which we live.

Key partners in protecting the health of Plymouth residents in the 21st century are the Environment Agency, the Local Authority Public Protection team and the Health Protection Agency.





3. Continued threats and new and emerging communicable diseases

3.1 Vaccine preventable diseases

After clean water, vaccination is the most effective public health intervention in the world for saving lives and promoting good health.

The Public Health lead role in vaccine preventable disease control is ensuring that there is universal provision, equality in access and good compliance to established routine and targeted immunisation programmes. Public Health Plymouth leads the city-wide immunisation group which monitors uptake for the immunisation programmes and emergence of vaccine preventable disease; it works in partnership with primary care and colleagues in neighbouring organisations to enable a population approach to health protection through improved immunisation uptake.

In the UK there are a number of vaccination programmes for children and adults. The children’s programme offers vaccination from the age of eight weeks for a variety of diseases such as whooping cough, measles mumps and rubella and is illustrated in Table 1 below. Many adults in Plymouth will not have seen the devastating effects of what used to be common childhood infectious diseases so it is vital that health professionals continue to help all parents understand the risks of these diseases and the benefits of immunisation.

Table 1 - Burden of vaccine preventable disease in Plymouth 2008-2010

(Note: values between 0 and 5 or those allowing values between 0 and 5 to be determined by subtraction are shown as*.)

	2008	2009	2010
Measles	12	17	6
Meningitis other	17	17	*
Meningococcal disease	13	21	11
Whooping cough	12	8	*
Tuberculosis	14	13	11
Hepatitis A	*	*	*
Hepatitis B	*	9	*
Mumps	40	235	34
Rubella	8	8	*

For adults, vaccination programmes include the pneumonia (pneumococcal) and influenza programmes and targeted risk assessed programmes for specific risks such as Hepatitis B and C, and Tuberculosis.

In Plymouth there are low levels of whooping cough, Hepatitis A and Hepatitis B and Rubella (Table 1). This is a direct result of effective immunisation programmes, isolation and treatment of cases and the identification and treatment of contacts through primary and secondary care. Generally we see low levels of Hepatitis A in this country as it is often associated with poor hygiene and sanitation. Those whose working practice poses a risk of hepatitis A, such as sewage workers who will come into contact with raw and untreated sewage, are offered immunisation.

As a result of meningococcal group C immunisation in the Plymouth childhood programme, we see very few cases of meningococcal group C disease which can cause meningitis and or septicaemia (blood poisoning). In 2010 Plymouth had 11 cases of meningococcal infection, 50% of cases were under one year of age and the majority of confirmed cases were group B disease for which there is no vaccine yet.

3.1.1 Can infectious diseases be eradicated?

When vaccine coverage is high enough to induce high levels of population immunity, infections may even be eliminated from the country, e.g. Diphtheria. If high vaccination coverage were not maintained, it would be possible for the disease to return. Vaccination against Smallpox enabled the infection to be declared eradicated from the world in 1980 although samples of Smallpox are still kept in two laboratories in the world in the United States and the former Soviet Union for research purposes. The World Health Organization (WHO) is currently working towards the global eradication of poliomyelitis.

Polio Update – Global situation as of 5 August 2011.

Polio infection remains endemic in four countries: Afghanistan, India, Nigeria and Pakistan. Currently 286 cases of polio have been reported worldwide for 2011; 96 cases in endemic countries and 190 cases in non-endemic countries. Gabon, India and Niger have not reported a case in the past six months

Table 3 - Children immunised by their second birthday (%)

Vaccine cover by 2nd birthday	2008/9	2009/10	2010/11	SW 2010/11	England 2010/11
DTaP/IPV/Hib %	96.5	97.6	97.6	96.7	96.0
MenC %	95.5	97.3	97.4	95.9	94.8
PCV Booster %	86.5	93.3	91.8	90.1	89.3
Hib/MenC %	91.1	93.0	93.7	92.0	91.6
MMR %	86.8	92.4	91.8	89.6	89.1

Table 4 - Children immunised by their fifth birthday (%)

Vaccine cover by 5th birthday		2008/9	2009/10	2010/11	SW 2010/11	England 2010/11
DT/Pol	Primary course	97.7	97.9	97.7	96.7	94.7
Hib	Primary course	96.3	98.0	97.1	96.3	94.2
MMR	1st dose	94.9	95.8	94.6	92.9	91.9
	2nd dose	87.2	91.3	87.3	85.3	84.2
DTaP/IPV	Booster	89.5	94.2	90.3	89.1	85.9

3.1.2 The local picture

Over the last three years through effective collaboration with health and other partners we have exceeded the World Health Organization targets for many of the immunisation programmes with completion of the primary course (diphtheria, tetanus, polio, whooping cough and Haemophilus influenzae type B/Hib) increasing from 93.1% to 95.4%, Meningococcal C immunisation from 93.2% to 95.1%. There has also been a great improvement in the proportion of children receiving their first dose of Measles Mumps and Rubella vaccine. Although we are now seeing 94.6% of children immunised with MMR by the age of five years, uptake of the MMR vaccine in the early part of this century has not always been good due to adverse publicity suggesting a now discredited and unfounded connection between MMR immunisation and autism.

The Cover of Vaccination Evaluated Rapidly (COVER) programme monitors immunisation coverage data for children in the United Kingdom who reach their first, second or fifth birthday during each evaluation quarter. This information is fed back to Plymouth, creating the opportunity for Public Health Plymouth to improve coverage and to detect changes in vaccine coverage.

Table 2 - Children immunised by their first birthday (%)

Vaccine cover by 1st birthday	2008/9	2009/10	2010/11	SW 2010/11	England 2010/11
DTaP/IPV/Hib %	93.1	96.0	95.4	94.6	94.2
MenC %	93.2	95.5	95.1	94.2	93.4
Pneumococcal %	93.6	95.7	95.2	94.5	93.6

3.1.3 Human Papilloma Virus (HPV)

A recent addition to the childhood programme is the human papilloma virus vaccine or HPV. HPV viruses are classified as either 'high-risk' or 'low-risk' types depending on their association with the development of cancer.

Genital HPVs are transmitted by sexual contact with an infected individual, primarily through sexual intercourse. The risk therefore, generally increases with the number of sexual partners, the introduction of a new sexual partner, and the sexual history of any partner. Persistent infection by high-risk HPV types is detectable in more than 99% of cervical cancers.

The cervical screening programme offered to 25-64 year old women is of high quality, it is however important to reduce the risk of cervical cancer by immunising before a woman is sexually active. Around 9,000 women die of cervical cancer in England each year. However, many of those who develop it have not been screened regularly.

HPV is offered as a three dose programme to year eight girls, with the second dose given one month after the first and the third dose five months later. For optimum protection it is important that all three doses are encouraged. Uptake for dose 1 is good at 85.2% but this falls to 84.7% for dose 2 and 76.6% for the third dose in 2010/11.

Within Plymouth the vaccination programme for year eight girls is discussed at school assemblies and consent forms distributed. If girls don't attend for any or all the vaccinations through the schools-based programme then they are offered the vaccine at their GP practice. Further measures are being put in place this year to ensure the promotion of the vaccination prior to each session, reviewing the process for the return of consent forms and exploring a system of reminders through school and by using text reminders.

3.1.4 Tuberculosis

The TB vaccination (Bacillus Calamette Guerin or BCG) is currently only given to children most at risk of exposure to TB (the immunisation programme in schools was stopped in 2006). The BCG immunisation offers partial protection against tuberculosis (TB). It is more effective at protecting some forms of TB (Meningeal and Miliary TB) than against pulmonary/lung or lymph node TB. Current immunisation concentrates on unimmunised infants, children and adults, or their immediate family who have come from a country where TB numbers are greater than 40 per 100/000 of the population. Immunisation of children is via Plymouth Hospitals Trust/Derriford Paediatric Unit. The Chest Clinic at Plymouth Hospitals Trust has a fundamental role in the control of TB, investigating the contacts of cases of active TB, screening immigrants and students from highly endemic areas and managing the complex and lengthy treatment regimes for cases of TB. Over the past decade there have been 11-16 cases per annum of Tuberculosis in Plymouth. Nationally we see an increase in TB and across the UK the risk of TB is significantly higher in people from minority ethnic groups.

3.1.5 Hepatitis B

The Department of Health recommends that pregnant women are screened for Hepatitis B and that infants born to infected mothers are immunised. In 2010 all pregnant women in Plymouth were offered and undertook a blood test for Hepatitis B via the antenatal screening programme; less than 10 women were identified as Hepatitis B positive. Within the first 24 hours of life, their babies have been offered immunoglobulin dose to give immediate protection and the first dose of their immunisation programme. This is then followed at 12 months with a blood test

to check if the child has been exposed and developed hepatitis B or has protection from the infection. A system of ensuring that this happens involves the GPs, Practice Nurses and Health visitors. There are a number of babies who also commence a programme for hepatitis B protection due to the risk assessment carried out in the antenatal period by the midwives.

Hepatitis B immunisation is also promoted for adults where there are lifestyle risks such as multiple sexual partners and gay men, or for occupational protection reasons such as for health care workers or foster parents who take short term emergency placements where the full health history of the child may not be known or the child may be at risk because of their previous family circumstances.

3.1.6 Influenza

Influenza is an acute viral infection of the respiratory tract; Influenza A and influenza B are responsible for most clinical illnesses. It is characterised by the sudden onset of fever, chills, headache, aching limbs and extreme tiredness. It has a very short incubation period (time from exposure to developing symptoms) between one and three days. It can be passed on very easily by coughing and sneezing droplets of the infection and so it can spread rapidly. Public Health Plymouth works in collaboration with health and social care agencies in ensuring planning and delivery of seasonal flu programmes as well as preparing for emerging pandemics. The objective of the influenza programme is to protect those who are most at risk of serious illness or death should they develop influenza. For otherwise healthy individuals, influenza is an unpleasant but usually short term disease with recovery within two to seven days. The illness may be complicated by bronchitis, bacterial pneumonia or infection of the middle ear. Serious illness and death from influenza are highest amongst very young babies, older people and those with certain long-term illnesses. A full list of those eligible can be found at www.dh.gov.uk.

The World Health Organisation decides each year, usually in February, what Influenza strains should be included in the vaccine for the next winter, based on evidence of circulating viruses for the last flu season. In 2011 all flu vaccines contain a group A H1N1 strain which is the 'swine flu' type. This strain was responsible for

450 deaths in England last season so is a very important inclusion.

Seasonal flu vaccination uptake is reported and measured in a number of ways. Table 5 below identifies the uptake for seasonal flu vaccination reported in Plymouth for the last season 2010/11.

Table 5 - Uptake of influenza vaccine by risk group and associated targets for the 2011/12 season (%).

	Plymouth	Southwest	England	Target for 2011/12
People over 65 years	73.6	73.0	72.8	75.0
Under 65 years with a clinical condition	54.3	51.2	50.4	75.0
Pregnant women	42.2	44.8	38.0	60.0
Pregnant women with a clinical condition	40.1	43.5	36.6	

Plymouth's figures show that a quarter of over 65s, nearly half of under 65s with long term health conditions, and more than half of pregnant women who are all at much greater risk of both getting flu and getting serious complications from it do not take up the flu vaccination when offered it. During the recent flu pandemic we saw just how vulnerable pregnant women are with an increased risk of dying and an increased risk of losing their babies to the complications of flu and yet there is a safe vaccine available. The Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency has given a clear recommendation that the GlaxoSmithKline vaccine Pandemrix can be given safely to all pregnant women. A review of studies on the safety of flu vaccine in pregnancy concluded that inactivated flu vaccine can be safely and effectively administered during any trimester of pregnancy and that no study to date has demonstrated an increased risk of either maternal complications or adverse foetal outcomes associated with inactivated influenza. A number of studies show that seasonal flu vaccination during pregnancy provides passive immunity against flu to infants in the first few months of life. Last year we achieved just over 40% uptake of flu vaccination for pregnant women and this was broadly similar to the regional and national picture. Public Health are supporting midwives to promote immunisation and provide information to pregnant women to improve uptake.

Public Health Plymouth is supporting a number of initiatives to promote vaccine uptake for health care staff including making the vaccine available closer to where people work. Vaccination of healthcare workers against flu can significantly lower rates of flu-like illness, hospitalisation and mortality in the elderly in healthcare settings. Vaccination of staff in social care settings may provide similar benefits. Flu immunisation of frontline health and social care staff may reduce the transmission of infection to vulnerable patients, some of whom may have impaired immunity that may not respond well to immunisation.



The confirmed emergence of a novel flu virus H1N1 in Mexico in March 2009 brought to an end a 41 year wait for a flu pandemic with the last ones being Spanish Flu (H1N1) in 1918, Asian Flu in 1957 and Hong Kong Flu in 1968 and together they had claimed many millions of lives worldwide (Spanish Flu accounted for 20-50 million deaths, with many estimates exceeding the death toll from World War One) so it was not surprising that there were some grave predictions as to the impact the virus could have Worldwide and in particular the UK.

An influenza pandemic occurs when a new influenza virus emerges and spreads around the world and most people do not have immunity to it. Unlike ordinary seasonal influenza that occurs every winter in the UK, pandemic flu can occur at any time of the year.

In preparation for and during a pandemic, Public Health Plymouth has a lead role in protecting the local population. Working within the national frameworks it ensures that seasonal influenza vaccination is offered to those over 65, those with long-term conditions, pregnant women and health care staff. It encourages uptake for this offer in order to offer some protection to vulnerable individuals.

Public Health ensures timely and effective health service response to a pandemic through planning and working with Local Resilience partners developing coordinating and testing plans.

When an influenza pandemic occurs, large swathes of the population may become infected by the new virus over a relatively short period of time. It may be associated with mild to moderate illness in the population or significant severe illness and mortality in certain age or patient groups and may disrupt the normal functioning of society.

In many respects, pandemic influenza can be responded to in the same way as seasonal influenza. The same good hygiene measures can reduce the spread of infection. The same self-care measures - staying at home, keeping warm, and drinking plenty of fluids and use of over-the-counter cold and flu medicines to treat symptoms of influenza - will be sufficient to meet the needs of most patients infected with an influenza virus causing mild to moderate symptoms.

Plans are in place to respond as a health and social care community to the phased challenges of a pandemic from initial detection and evaluation to phased treatment responses of health care and eventually to a recovery phase. This includes the use of antiviral drugs, newly developed vaccines in response to a pandemic and supporting increased demands for healthcare provision. The UK Pandemic Preparedness Strategy, produced by the Department of Health and the Cabinet Office was published for consultation in March 2011. It builds on the 2007 National Framework and incorporates the lessons learned and the latest scientific evidence from the H1N1 (2009) influenza pandemic.

When the first cases of the 2009 H1N1 were identified in the UK there was still little known about H1N1. Therefore, in order get a better understanding of the virus it was necessary to invoke a new strategy (Containment Phase) to try to work to slow its spread while learning more about it this would mean that a more measured response could be initiated. Through this phase new arrangements were put in place to enable the NHS and Health Protection Agency to:

- Test patients suspected of having Swine Flu to confirm the infection;

- Offer anti-viral drugs to all patients suspected or confirmed as having Swine Flu;
- Collect detailed information about these patients to learn more about how the virus affects people;
- Close schools where medical advice deemed it appropriate; and
- Trace people that patients have had close contact with and giving them prophylactic anti-viral drugs to try to prevent further spread.

The understanding once the containment phase had been decided upon was that at some point the UK would need to move to a Treatment Phase. This became the case in July 2009 when community transmission had become widespread across many parts of the country. This also resulted in establishing national systems to deal with high numbers of Swine Flu cases which in itself became an issue as tried and tested processes did not appear to be utilized to their best, if at all.

Probably the most key aspects of the responses were the lack of clarity behind the introduction of untested and unplanned for arrangements i.e. Containment Phase, the apparent muddled reporting processes adopted by some Government Departments and the impact that the virus had on business continuity which could have been far worse if the early predictions when the virus was first reported in Mexico had come to fruition.

Learning from the 'swine flu' pandemic happened on many levels within and across organisations, including a multi-agency debrief through the Local resilience Forum. High on the list for the future are that plans for a pandemic should be reviewed to ensure that steps in the plans are triggered correctly; plans for maintaining the continuation of business are checked in advance; all staff members are aware of their role and responsibilities during a pandemic; and that the way we use the media to convey messages to the public are joined up and convey essential messages.

3.1.7 Rubella

Maternal rubella infection in pregnancy may result in loss of the baby or in congenital rubella syndrome (CRS). Although rubella infection

numbers remain low, evidence suggests that we must ensure high levels of protection in both males and females to protect the unborn child. As part of the antenatal screening programme protection from rubella is tested, further immunisation may be recommended for some women after the baby is born. Current arrangements are for the woman to have the first dose prior to discharge from hospital and the second at her GPs. Out of 5371 women tested in 2010 we had 154 (2.9%) who have been identified requiring further immunisation.

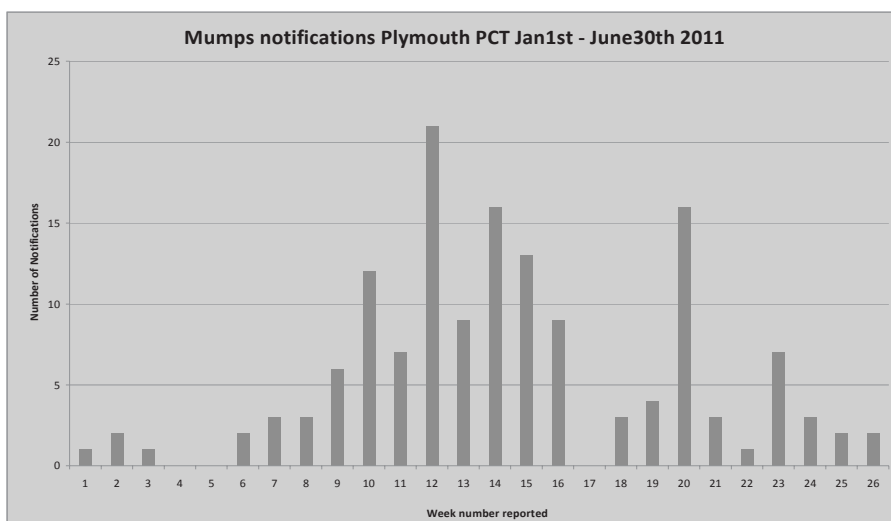
3.1.8 Mumps and the University

During 2009 Plymouth, along with many parts of the UK, experienced an increase in the number of cases of Mumps infection. In Plymouth we saw an increase from 40 cases per year to 235 cases in 2009. This centred on the students aged 18 to 25 who, newly congregating at University, creating new networks, experienced a sharing of infection that they may not have been exposed to before. Public Health Plymouth worked with the Health Protection Agency and the University in sending messages out to students notifying them of the increase and encouraging immunisation as well as supporting primary care to extend immunisation programmes with MMR vaccine to this age group. During the early part of 2011 an increasing number of cases of mumps were seen. As a result, Public Health Plymouth worked with the Health Protection Agency, the University and GPs in again promoting MMR immunisation to students aged 18 to 25. This was based on the age range of those who were developing the infection confirming the risk of infection in this age group.

Plymouth has a good uptake of MMR vaccine achieving around 95% of children receiving the first dose and 87% for the second dose by the age of 5 years. MMR uptake however has not always been this good in Plymouth and there is still room for improvement in the current uptake. In the run up to the summer of 2011, Public Health Plymouth became aware of a small outbreak of measles in Devon affecting unimmunised school children; internationally there was a large measles outbreak in Europe which is why we need to maintain our vigilance for MMR uptake. Outbreaks of measles have been reported from 24 countries in Europe in 2011 including Belgium, Denmark, France, Germany, Italy, the Netherlands, Romania, the Russian Federation, Serbia, Spain, Turkey and the former Yugoslav Republic of Macedonia. France reported the largest number of cases to date in 2011. In January and February 2011, there were 3,749 reported cases (the total number of cases reported from France during 2010 was 5,021).

The outbreaks of mumps in university students and the very large outbreaks in Europe prompted a public health investigation into mumps and measles protection for the population of Plymouth. Although recent good performance on uptake of MMR is reported at 24 and 60 months, and past catch-up campaigns, opportunistic immunisation and communication to students via the university and colleges has improved the level of community protection, there will still be a number of adults under the age of 30 years who will have no protection due to an absence of immunisation and not previously exposed the circulating virus. This number is thought to be small but undetermined.

Figure 2 - Notification of mumps by week of notification



Public Health Plymouth has promoted information to new and returning students with the University and colleges identifying that they should have completed their immunisation schedule prior to starting at university and to take steps to complete as soon as possible ensuring 2 doses of MMR. During the period of increased numbers of mumps we extended the opportunity for young people to be immunised with MMR up to the age of 25 years. Consistent with plans across Devon we

extended this offer to all up to the age of 30 years for MMR through GPs in the run up to the summer, given the heightened risk in France and Europe. Public Health Plymouth promoted media articles through the radio and local newspapers and worked with the department for education in alerting schools for their risk assessments as many support trips abroad into mainland Europe.

Public Health Plymouth is working with Primary Care and Child Health to establish the burden of unimmunised and partially immunised adults aged 18-30 years and designing a package of MMR immunisation to best close the gaps by extending current services and offering opportunistic immunisation.

3.2 HIV as a re-emerging disease for sexual health

Public Health Plymouth is clear that prompt diagnosis and treatment of Sexually Transmitted Infections (STIs) remain key to preventing onward transmission and further cases. Also, through the sexual health strategy with partners Public Health Plymouth secures health promotion services to provide information, advice and support around sexual health and may also offer some testing services, or referral onto other services. A clear relationship exists between sexual ill health, poverty and social exclusion. Groups who are most at risk of poor sexual health and who may experience barriers to accessing services include young people, asylum seekers and refugees, black and minority ethnic groups, single homeless people, gay and bisexual men, sex workers, looked after young people, injecting drug users, and people with physical and/or learning disabilities. Sexual health promotion services are provided in a wide range of locations across the city with a concentration of services in the city centre and South West, which are areas with high numbers of younger people and are also more deprived areas. However, services are provided in all localities. Services include the Eddystone Trust, Young People's Sexual Health Team and The Zone.

Rates of Chlamydia, Herpes and Genital Warts have been increasing year on year since 2004, nationally and within the South West. The rate of Gonorrhoea has shown a small decline and the rate of Syphilis has remained stable. Table 6 show rates, (per 100,000) of sexually transmitted infections in Plymouth residents in 2010.

Table 6 - Rates of sexually transmitted infections per 100,000 population in 2010.

	Chlamydia	Gonorrhoea	Syphilis	Herpes	Warts
England	359.4	30.8	4.8	55.6	141.7
Southwest	304.8	12.2	2.0	45.1	130.6
Plymouth	469.0	19.1	3.5	100.1	219.7

Since 2005 the total number of people being seen at the Plymouth GUM department has increased dramatically; this is due to service modernisation and additional funding to improve, expand and extend services and make them more accessible. Improved services for Plymouth includes a Local Enhanced Service to provided GUM clinics in Primary Care Centres at the University and at Ernesettle Health Centre. This has resulted in the excellent performance of offering 100% of clients an appointment within 48 hours and seeing 89.9% of clients within 48 hours, which is above national and regional average performance.

In 2009 there were 36 new diagnoses of HIV made at the GUM department at Derriford Hospital and there were 225 HIV positive patients actively attending the department for treatment and care during this year. There are currently 40 HIV positive people receiving intensive one-to-one support packages from Eddystone and the cohort of HIV positive patients receiving their care in Plymouth continues to rise. At the time of writing this Annual Report in 2011, the greatest percentage (77%) of new HIV diagnoses has been in men who have sex with men (MSM). This is similar to recent years: 57% in 2009, 44% in 2010, but to a greater extent and with a significant majority being in very young men (median age 22 years; range 18-51).

In terms of prevention, HIV prevention messages are discussed with all MSM attending the GUM clinic. The clinic has focused very deliberately on contact tracing for all our new diagnoses and their health advising team have worked very hard on this. HIV services have debated and discussed the use of treatment as prevention and the GUM Health Advisers have been out to gay venues in Plymouth city centre promoting HIV testing, alerting men to the recent increase in HIV diagnoses and offering HIV testing on site. The GUM department try to encourage HIV testing within primary care and in other departments within the hospital, often unfortunately, with little success as some people do not want to know their HIV status.

They have also supported research into opt out HIV testing in the Emergency Department at Derriford Hospital.

Plymouth has, however, seen a spike over recent months in the number of people testing positive for HIV, of significant concern is the number of younger men aged 25-30 years testing positive. It is increasingly the case that many younger people might have heard about HIV but not know about how it is transmitted and whether they are at risk. At least 25% of people living with HIV will not have been tested and will not know that they have the virus; this could be as many as 55 people in Plymouth.

3.3 Healthcare associated infections

Public Health Plymouth has a commissioning and assurance role in the control and prevention of infection. Through collaboration and surveillance, NHS organisations put infection control at the heart of good management and clinical practice and Public Health Plymouth is assured that appropriate resources are allocated to ensure effective protection of the public's health particularly with regard to the prevention of healthcare associated infections (HCAI).

The Health and Social Care Act 2008 sets out the overall framework for the regulation of health and social care activities and underpins the requirement for infection prevention and control and cleanliness with the provision of a statutory code of practice, 'The Hygiene Code'.

New statutory registration requirements were introduced in 2009 in which NHS organisations covered by the Code of Practice for the prevention and control of healthcare associated infections were required to declare compliance with the Health and Social Care Act 2008 to the Care Quality Commission.

Plymouth Hospitals NHS Trust [PHNT] (Derriford Hospital) and the new community health care provider Plymouth Community Health Care (formerly NHS Plymouth) have implemented detailed action plans to effectively drive down health care associated infections due to Meticillin Resistant Staphylococcus Aureus (MRSA) and Clostridium difficile. Health care associated infections at PHNT due to Clostridium difficile are 33% below trajectory whilst the numbers of MRSA cases remain below five for the current collection year.

Each case of MRSA and Clostridium Difficile is followed-up to understand the care delivered and circumstances that may have contributed to the infection. Collaborative work by the hospital and community infection control teams ensures that any important learning points from this are identified and disseminated to improve infection prevention and control which includes informing prescribing practice.

Two new infections have been included from 2011 for mandatory surveillance; Meticillin Sensitive Staphylococcus Aureus (MSSA) since January 2011 and e.coli since June 2011. Although entered into mandatory reporting no targets have yet been set for reduction. However the provider organisations are developing plans from learning already achieved to reduce further the burden of infection.

3.4 Panton Valentine Leukocidin (PVL) - an emerging infection in Plymouth

Staphylococcus Aureus (SA) is one of the most common bacteria associated with skin and mucous membranes (e.g. inside the nose) without causing any problems. It has also been identified as one of the most common bacteria responsible for soft skin and tissue infections (SSTI). A toxin (Panton-Valentine Leucocidin or PVL) produced by a small percentage of staphylococcus aureus strains (PVL-SA strains) causes destruction of white blood cells resulting in the development of boils, abscesses and other skin infections. These lesions can vary in size and severity and can impact on the health of the individual and in some cases close contacts.

Although rare, respiratory infection has also been associated with PVL causing invasive infection. In general PVL-SA has been responsible for soft skin and tissue infections for over a century. PVL-SA has been most commonly associated with groups and individuals within the community who are generally fit and healthy and predominantly under the age of 40 years; however it should be emphasised that anyone can be susceptible. Surveillance through the HPA in early 2011 indicated that there were approximately 2000 cases of PVL-SA being reported each year in England and Wales (this being a mix of (MSSA) Meticillin Sensitive Staphaureus and (MRSA), Meticillin Resistant Staphaureus the larger proportion being contributed to MRSA)

Locally, the Health Protection Agency (HPU) has been involved in investigating individual cases and outbreaks of PVL-SA since 2003. Plymouth has had a particular strain of PVL-SA which is recognised in the local laboratory by its antibiotic resistance pattern. Predominantly there was evidence of transmission of PVL – SA in community care facilities requiring the collaborative involvement of the local Health Protection Unit, infection prevention and control team for Plymouth Primary Care Trust and microbiology for the Acute Trust.

A range of interventions were implemented to manage the number of outbreaks within these care facilities. Education and training for care staff was implemented alongside bespoke training for GP practices and healthcare professionals. The main approaches to PVL-SA management have been good infection control practice and good personal and environmental hygiene combined with decolonisation of the group within which the PVL-SA is thought to be circulating.

Further situations have arisen within the Plymouth area among sports facilities and education and have been successfully managed with collaborative approach with the Health Protection Unit, NHS, microbiology colleagues and other stakeholders. It is recognised that further information was required for the general public to raise awareness in relation to soft tissue and skin infections so that the public do not regard these infections as normal and realise that help is available. This was prepared by the HPU and was sent out for consultation with local NHS organisations. This was published and provided to all PCTs in Devon and Cornwall to cascade to GP practices and pharmacies. In addition the Health Protection Unit set up a web page facility with local GPs in order to facilitate cascade of further information as required.

Panton-Valentine Leucocidin is in the local area and other strains of PVL-SA are becoming more common, as well as the Plymouth strain causing an outbreak elsewhere in the South West. Continuing to raise the profile of PVL is essential to ensure early recognition of cases and to reduce the risk of further transmission and potential outbreaks within the local communities. Collaborative working developed further information for health professionals to promote early recognition; this has taken the form of a poster and guidelines. This

information is accessible via the Royal College of Nursing website. It remains essential to encourage the cascade of information on skin infections and skin management to the public through appropriate and effective routes and resources.

3.5 Changes due to the way we live

Increasingly we run complex lives and have high expectations about standards of health, basic requirements such as food and water, and standards of products and services we purchase. We have expectations that standards we enjoy in the UK exist across the world and that due to the advances in health technology we have high expectations for effective treatment. Public Health Plymouth helps to make sense of the expectations and the reality, assessing risk through evidence of disease and inequality, commissioning of health promotion advice, information and services and ensuring fair access to safe quality health care services through collaborative working.

3.5.1 Travel

Vaccination is not the only line of protection for travellers, but is one in a range of actions that must be assessed as appropriate for the risks involved. There are a number of vaccine preventable diseases that are not prevalent within the UK and so are not included in our national programme. These risks become notable when individuals travel to parts of the world where these diseases are more prevalent, these may include Typhoid, Hepatitis A, Rabies and Yellow Fever to name a few. The majority of travel vaccinations are offered through GPs but may incur costs to the traveller which could be prohibitive. Other considerations for a healthy trip away should include safe water and food, sun safety, safe sex and personal safety.

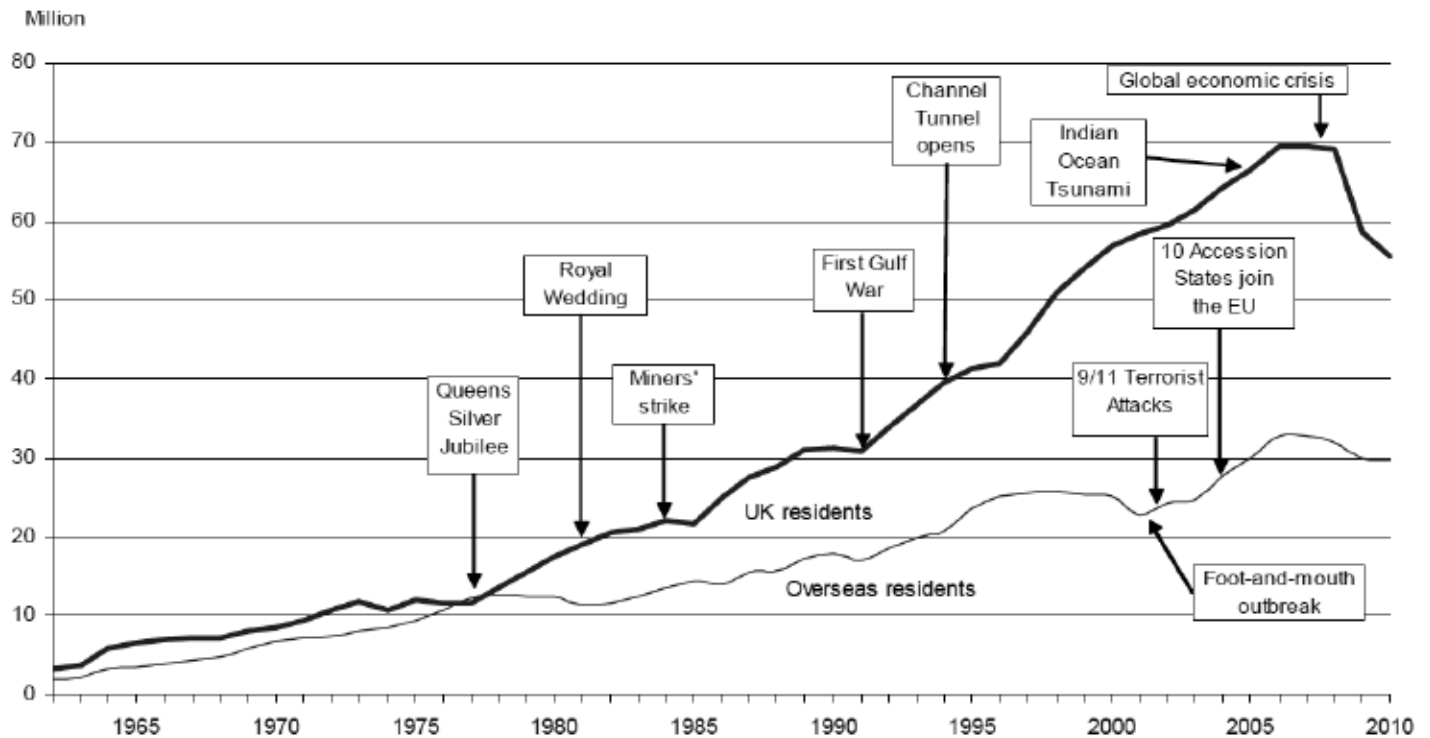
Travel to countries outside of the United Kingdom is a feature of life, undertaken for a number of reasons such as for holidays, for visiting family and to a lesser extent, for business. Each brings possible risks to health determined by the nature of activities undertaken whilst away, the length of stay, the country visited and the environment.

Travel to and from the UK has grown substantially over the past 50 years. Visits to the UK by overseas residents have grown from 1.9 million to 29.8 million, a 15-fold increase.

Visits abroad by UK residents, meanwhile, have grown from 3.3 million in 1961 to 55.6 million in 2010, a 16-fold increase. Figure 3 shows the number of visits to the UK and abroad together

with some of the key UK and global events which may have influenced travel during the past 50 years.

Figure 3 - Visits to and from the UK



Mexico was reported as the centre of the 'swine flu' outbreak in 2009. Visits to Mexico (defined as completed visits abroad, on which Mexico was the main country of visit) fell that year to 19,000 from 334,000 in 2008. However, in 2010 Mexico returned to favour as a destination for UK residents, and the total of 314,000 visits was within 10 per cent of the 2008 figure.

Despite increases in visits to countries such as Tunisia and Turkey, Spain and France continue to be by far the most visited countries by UK residents, accounting for over a third of visits abroad between them.

The stronger emphasis on visits to longer-haul destinations by UK residents has brought an increase in average length of stay which, following falls in each decade from the 1960s to the 2000s, has grown from 9.9 nights in 2007 to 10.9 nights in 2010. In recent years, the number of visits abroad made by United Kingdom (UK) residents to visit friends and relatives has increased and often involves travel to regions that have a higher risk of certain, preventable, infectious diseases such as malaria, typhoid, paratyphoid, and hepatitis A. For these diseases, a disproportionate burden falls on

those who have travelled to visit family and friends. To reduce the number of cases of travel associated illness reported in the UK, particular attention needs to be given to protecting the health of these travellers. Although about 90% of the Plymouth population would describe themselves as White British we have a growing and varied connection with the rest of the world. 4,600 people would claim family relationships with India, 900 people with family members in Pakistan, and 400 people with a family reason to travel to Bangladesh. We can also see that 900 people would have family connections with the Caribbean, 1,400 people may know somebody living in Africa and 900 people could have a member of family to talk to in China. There are many more connections offered by the increasing diversity of the city that talks in up to 81 different languages. A staggering 9,100 possible reasons to travel to see family and of course family and friends will travel to Plymouth too.

The best way to ensure adequate preparation for travel abroad is to visit your general practice surgery or a travel medicine clinic at least six weeks before you travel. However, it

is never too late to seek advice. If you have a medical condition, you are advised to discuss the suitability of the trip before you book. The National Travel Health Network and Centre (NaTHNaC) promotes standards in travel medicine, providing travel health information for health professionals and the public. The site offers expert advice for non-infectious health risks such as:

- Altitude illness
- Disasters and conflicts
- European Health Insurance Card (EHIC)
- Food and water hygiene
- General advice for travellers; Hajj and Umrah - advice for pilgrims; festivals - health advice
- Insect bite avoidance
- International sporting events - advice for travellers

- Medical tourism
- Medicines - transportation by travellers
- Personal safety during travel
- Sun protection
- Travel related DVT
- Infectious disease health risks.

Within Plymouth most General Practices will offer general health advice and immunisations for travel; the ones such as Tetanus, Diphtheria, Polio and Hepatitis A are generally available free of charge. Some practices will absorb the costs of Hepatitis B immunisation but generally there is a charge for this. Specific vaccines such as the meningitis vaccine for Hajj, Yellow fever and rabies vaccines will incur a cost to the traveller. MASTA also offer a private travel clinic at Lisson Grove Medical Centre.

Examples of alerts from across the globe in the last year

Advice for Pilgrims for the Hajj and Umrah Season of 1432 (2011)

Hajj, the annual pilgrimage to Makkah (Mecca), is the largest gathering of its kind in the world. Each year over two million Muslims from around the world gather in Makkah. The Hajj pilgrimage occurs from the 8th and 12th day of the twelfth month of the Islamic calendar, and is estimated to fall between 4 and 9 November 2011.

Rabies in Bali, Indonesia

Human cases of rabies following dog bites continue to be reported in the local population of Bali. This includes Balinese nationals from areas near tourist resorts on the southern tip of the island.

In 2010, the Indonesian Ministry of Health reported a total of 74,858 animal bites to humans countrywide, resulting in 195 deaths from rabies. Health authorities are pursuing mass vaccination of the dog population in Bali with the aim of eradication of rabies on the island by 2015.

Outbreak of botulism in France

Two clusters of botulism were reported by French health authorities on 5 September 2011. There have been a total of eight cases of botulism; five were from the district of Vaucluse in southern France, and three cases were reported from the district of Somme in northern France. All cases have been hospitalised.

An epidemiological investigation has determined a common origin of the two clusters. Tapenade, a food product based on ground olives, produced in the Vaucluse under the brand name "Les Délices de Marie-Claire" (batch number 112005) has tested positive for botulinum toxin [1-3]. Further products from the same producer and sold under the trademarks "Terre de Mistral" and "Les secrets d'Anais" have also tested positive

Vector-borne diseases

Malaria is not present in Medina or Makkah, but malaria is a risk in the south-western, rural region of Saudi Arabia. Pilgrims planning further travel before or after Hajj or Umrah to malaria risk areas in Saudi Arabia or Asia, Africa and Latin America, should seek advice about malaria prevention.

Pilgrims are advised to practise insect bite avoidance measures that will reduce the risk of other vector-borne diseases, such as dengue fever.

As a resettlement centre for asylum seekers, we have people escaping war and political unrest in distant parts of the world. They are particularly vulnerable to ill health and have experienced, if anything, the most basic of health care. Integration requires addressing health needs which often means accelerated immunisation programmes and managing infectious disease.

Frequently, travel details are not put on samples sent to the laboratory so the true burden of travel ill health is often masked.

It is worth remembering that diarrhoea is one of the most common health problems experienced by travellers, affecting 20% - 60% of overseas travellers. Many illnesses, including: cholera, hepatitis A and typhoid are also spread by food and water contaminated with human waste. Many countries use human or animal waste (often called "night soil") to fertilise their crops. Some foods, especially those growing near the ground, can become contaminated with harmful bacteria if this type of manure is used. An often used piece of advice is 'boil it, cook it, peel it or forget it!'

3.5.2 The management of infections through the use of antibiotics

The appropriate use of antibiotics is vital for three reasons. Firstly, to ensure the best clinical outcome for patients, secondly, to reduce the

development of antibiotic resistance, and thirdly, to ensure cost effective prescribing.


Reducing the use of antibiotics is particularly important in cases of self-limiting respiratory tract infections where antibiotics have shown little, if any, benefit.

A range of strategies are required at national and local levels to optimise antibiotic use. Antibiotic prescribing is greatly influenced by patients' expectations. Therefore, important messages need to be communicated to the public as well as health professionals.

The Plymouth Area Joint Formulary (PAJF) contains antimicrobial guidelines for prescribing in secondary care and for the management of common infections in primary care. Both reflect local resistance patterns and are updated regularly.

Prescribing antibiotics for patients with self-limiting conditions can be counterproductive. It reinforces the belief that antibiotics are beneficial, and encourages future consultations. Antibiotic prescribing and re-consultation rates can be reduced by using patient information leaflets or 'non-prescription' forms. Offering delayed prescriptions, which many patients do not redeem, can also be a useful negotiating tool. Figure 4 shows an example of a non-prescription form.

Figure 4 - A non-prescription form for coughs colds sore throats and earache



Coughs, Colds, Sore Throats and Earache

Coughs, colds, sore throats, earache and 'flu are mostly self-limiting illnesses. This means that most of the time, they will get better without any medicine. A lot of the time, they are due to viruses, which **cannot** be cured by prescribing antibiotics.

Here are some tips to help you look after yourself at home:

- Stay at home, if possible. Going to work / school will spread the 'bug' and may delay your recovery. If you need a few days off work, you may need to get a "self certificate". You get these from your employer. The surgery does not issue certificates for illnesses lasting less than 7 days.
- Keep warm. You will feel tired because your body is using its energy to fight the 'bug'. Give your body the rest it needs.
- Drink plenty of fluids. You may not feel like eating solid food, try soup instead.
- Take paracetamol. This will bring your temperature down and ease your sore throat and aching muscles. Most people can take paracetamol safely. If in doubt, ask your pharmacist for advice. It is particularly important to keep young children cool and give them paracetamol if they run a high temperature.
- There is no need to spend a lot of money on cough medicines. They usually don't work! Take soothing drinks or use a simple, soothing cough linctus instead.

IF YOU SMOKE – STOP!

When should you visit the doctor?

- If your cough or cold is lasting longer than 5 days and you are getting worse instead of better.
- If your earache is lasting longer than 3 days and you are getting worse instead of better.
- If you suffer from serious asthma, lung or heart conditions are diabetic or have other serious health problems.
- If you develop chest pain, or start coughing up a large amount of green or yellow phlegm from your lungs.
- If the back of your throat or your tonsils are covered in lots of white spots.
- If you develop severe headaches, vomiting, or unusual rashes.
- Babies and very young children should be brought to the surgery for a check over if they are ill.

This year, as a Plymouth health community we supported European Antibiotic Awareness Day on 18th November. The number of infections due to antibiotic resistant bacteria is growing globally and is related to the over-use of antibiotics and inappropriate prescribing.

EUROPEAN
ANTIBIOTIC
AWARENESS DAY

NHS



3.5.3 Blood-borne viruses

Blood-borne infections are transmitted by blood and bodily fluids from one infected person to another and the main three we see in the UK are HIV infection, Hepatitis B and Hepatitis C.

Along with antenatal screening, for which we had 100% uptake in 2010 and prompt action for new cases of infection, we have a targeted Hepatitis B immunisation programme. In Plymouth we have seen the numbers of new cases of Hepatitis B fall below five for 2010. Hepatitis C though, for which there is no vaccine, has increased from 11 cases in 2009 to 47 cases in 2010. Because hepatitis C is usually asymptomatic and there is no laboratory marker of recent infection, laboratory reports reflect patterns of testing, rather than trends in incidence or prevalence, to reduce the number of undiagnosed infections.

Hepatitis C is spread by contact with blood or

body fluids from an infected person. It is a world-wide public health problem with estimates of around 185,000 individuals living with chronic infection in the UK. Large numbers are chronically infected with hepatitis C virus and a substantial proportion will develop chronic liver disease in the future. Those at greatest risk are current and past injecting drug users. It is an infection that is often spread by sharing contaminated injecting equipment. Other less efficient routes of transmission are spread from an infected mother to her infant, unprotected sex with an infected partner and medical and dental procedures abroad.

The costs to Plymouth from blood borne virus infections are significant and for the past decade Plymouth has taken an inclusive and multi-agency approach to the prevention, testing, treatment, care and support of those either living with, or at risk of, HIV and viral hepatitis. As a city we have on the whole already benefitted from close partnership working, including links between sexual health and drug and alcohol agencies, to support people living with these blood borne viruses.

Partnership activity has historically included: early diagnosis of hepatitis in the community through appointment of a blood borne virus nurse; access for people who inject drugs to needles and syringes via community pharmacies and the Third Sector; education of people who inject drugs (and those key services working with them) in the use of sterile injecting equipment; and provision of regular training and development to ensure the competence and confidence of our varied workforce to engage more meaningfully with the blood borne virus agenda.

We are, however, increasingly aware of the impact of inequalities concerning blood borne viruses and that those most at risk remain the most vulnerable members of our communities. As a result we are looking to provide more 'person centred' approaches to future health protection, understanding that increased and improved targeted testing, early diagnosis and effective treatment need to be supported by good quality personal and social support, as well as education for all those identified as being most at risk or as having special needs. People most at risk include, but are not exclusive to: young people; gay and bisexual men, injecting drug users; commercial sex workers and those people already living with HIV.

Over the past year we have offered testing for Hepatitis C in the community to 70% of injecting drug users, the actual number accepting the offer is closer to 30%, so we need to understand why there is a reluctance to test. We are doing preventive work in the community but something is failing if people are still testing positive for these viruses, or if at risk of infection, still refusing to test. If we want to succeed in our attempts to protect the health of people affected by blood borne viruses we need an integrated and inter-sectorial response. We need to set challenges whereby more attention is given to working alongside people most at risk, to make sure that prevention work is designed and delivered in ways that are most culturally sensitive. Blood borne viruses will be best avoided by ensuring the public receives the right information at the right time, has ability to access appropriate services, and gets protection required when they need it most.

3.6 Pandemics and viral mutations

The World Health Organization currently defines a pandemic as 'the worldwide spread of a disease.' Two recent pandemics of note were SARS (Severe Acute Respiratory Syndrome) and the H1N1 'swine flu' pandemic in 2009.

The first known case of SARS occurred in Guangdong Province in China in November 2002 and spread world-wide before being contained by July 2003. The SARS coronavirus is believed to be an animal virus that crossed the species barrier to humans. The international spread of the coronavirus resulted in 8098 SARS cases in 26 countries with 774 deaths. SARS caused significant social and economic disruption in areas with sustained local transmission; and in the travel industry in addition to the impact on health services directly.

3.7 Food borne infections

The statutory requirement for the notification of certain infectious diseases first came into being towards the end of the 19th century. Health protection legislation in England has recently been updated to give public authorities new powers and duties to prevent and control risks to human health from infection or contamination, including by chemicals and radiation. The revised measures are contained within the amended Public Health (Control of Disease) Act 1984 and its accompanying regulations.

Table 7 identifies counts of food borne disease that have been notified either by formal means to the Local Authority via the 'Notification of Infectious Disease' (NOIDs) process from GPs or via the laboratory at Derriford Hospital.

Table 7 - Cases of food poisoning in Plymouth 2008-2010 (note: values between 0 and 5 or those allowing values between 0 and 5 to be determined by subtraction are shown as*).

	2008	2009	2010
Campylobacter	388	591	428
Salmonella	51	73	88
E. coli 0157	6	19	*
Cryptosporidium	27	49	22
Giardia lamblia	24	33	19
Shigella	*	18	13
Suspected food poisoning (other)	55	66	39
Total suspected FP	576	849	612

Public Health Plymouth colleagues within the Plymouth City Local Authority Public Protection Team ensure that through a programme of risk assessment, inspection, education, monitoring and testing, that commercially available food is safe for human consumption. Public Health Plymouth collaborates with the Public Protection Team and the Health Protection Agency in protecting the health of Plymouth residents when the standard is breached, i.e. an unusual number of cases of a particular infection or outbreak occurs. The key is early detection of new cases or clusters and taking action to prevent further cases. This also involves searching for all those possibly exposed and therefore all cases, working with GPs and hospitals in the provision of advice and exchange of information, identifying the source of the food borne infection and taking action to prevent it happening again, possibly through a number of measures including prosecution. This is usually brought together through an outbreak control team.

Campylobacter still accounts for the bulk of food poisoning cases. In the majority of cases Campylobacter probably entered the kitchen on contaminated meat. Chicken carcasses are the most commonly contaminated but pork, lamb and beef may also be affected. The Food Standards Agency is working at reducing the burden of infection in poultry. Effective cooking of chicken, good kitchen hygiene and hand hygiene practices can help protect individuals. In Plymouth we have seen 428 cases of food poisoning caused by Campylobacter infection.

Shigellae cause intestinal infection including bacillary dysentery. Cooking kills Shigella and good hygiene practices, particularly hand washing after going to the toilet are important. In Plymouth we have seen little change in the number of reported cases of Shigella.

Importantly Plymouth has seen few cases of E. Coli 0157, recognised as a major cause of bloody diarrhoea in Europe. E. Coli 0157 may

be food borne and can cause large outbreaks with the potential for secondary spread. Meat may be contaminated through contact with intestinal contents at slaughter; farm visits and direct contact with animals may also pose a risk. Secondary spread from an infected person is common, particularly in families. This year we have seen an outbreak of E Coli 0157 in Plymouth linked with crab meat sales.

First Escherichia coli O157 outbreak linked to crab meat, Plymouth, August 2011

In August 2011, five adult cases of Escherichia coli (VTEC) O157 infection were reported in Plymouth. Initial Environmental Health investigations identified crab meat in the city as a possible source. Action by the Environmental Health officers was aimed at tracing the crab meat supplier and to find and destroy any other potentially affected crab meat.

A total of nine cases were identified, eight laboratory confirmed and one with a link to the outbreak. An epidemiological study into the outbreak showed a statistically significant association between cases and the consumption of crab meat away from home. The environmental health investigation, which is not yet concluded, revealed a possible link to unapproved crab supplier(s) in the city.

This is the first reported outbreak of E Coli O157 associated with the consumption of crab. Cross-contamination of crab meat in unregulated premises is a possible explanation and this investigation is ongoing.



4. Environmental risks and the built environment



4.1 The environment and health

The linkages between the environment and human health are well established, it is accepted that the environment in which we live impacts greatly on our health and wellbeing, by means of the air we breathe, the water we drink, the land we live on and have access to. The pollutants that we inhale, ingest or absorb can have immediate or delayed effects on our health, the extent of the effect is dependent on the pollutant and the dose received, as well as the susceptibility of the individual, so different doses are required to produce the same effect in different people. The effects we experience can also be acute or long term, again depending on the pollutant, the dose and the individual. The impacts of the environment are more keenly felt by some higher risk groups; children are a high risk group because their bodies are still developing and they can therefore be disproportionately affected. People with pre-existing health conditions and older people are also more susceptible to impacts of environmental pollution. Exposure to a mixture of different pollutants, at different concentrations and with different levels of accumulation mean that it can be very difficult to identify the health effects that are directly attributable to one source of pollution.

Most often we consider the negative impacts that pollution of the air or water can have on our health, or the negative impact of inadequate housing in run down areas. However, the environment can also have positive impacts on our health and wellbeing; accessing open green spaces or other natural environments is proven to be good for our mental health and wellbeing.

4.1.2 Traditional environmental concerns

Traditionally, when we think of the urban environment and the risks it can pose to our health, we mostly picture industrial buildings, smelting works, factories and houses with chimneys bilging smoke into the air which

lingers over a city skyline. The industrial revolution is credited as being the start of the large scale production of pollution. However, even as far back as 1272, King Edward I banned the burning of sea coal in London because the smoke that it produced was considered to be “prejudicial to health”. In the 1940’s, British cities were regularly polluted with coal smoke in winter, giving rise to infamous smogs. The Great Smog in London in 1952 resulted in 4,000 premature deaths (from heart disease and bronchitis) and finally resulted in legislation to ensure the provision of clean air in our cities.

In the UK, a system of environmental regulation has developed since the late 1800’s with Public Health acts that aimed to clean up urban environments with controls on sewerage and housing and protect clean water supplies. From this starting point, a complex system of integrated pollution control for potentially polluting processes has been developed and enforced. With regards to air pollution, there is now a National Air Quality Strategy that sets standards to ensure that air quality in the UK improves.

The World Health Organisation (WHO) also publish air quality guidelines based on the latest assessment of the health effects of pollution and also make recommendations for targets for air quality that would significantly reduce health risks. WHO consider air pollution to be a major environmental risk to health that impacts globally on the burden of disease from respiratory infections, heart disease and lung cancer.

The ‘environment movement’ really began in the 1960’s when public concern was raised over things like the pollution of the environment with pesticides such as DDT. ‘Silent Spring’ (a book by Rachel Carson) was important in documenting the visible detrimental effects that DDT was having on the environment and, in particular, on birds. Public campaigning finally lead to a ban on the use of DDT in USA in 1972 and ensured that public authorities

no longer accepted industry claims about chemicals uncritically. The Environment movement today continues to campaign for improved environmental conditions and to hold authorities to account for their actions in controlling polluting processes.

So traditionally we have been able to see the pollution that impacts on us and we are

somewhat assured by thinking that if there was something harmful in the environment, then we would be able to see it. However, in the 21st century, there are new and developing technologies and sources of pollution and many of the sources are not so easily visible to us; this invisibility makes our response to them and perception of the risks they pose very different.



5. New and emerging environmental concerns



5.1 Energy from waste

Despite being seen as a relatively modern concept, solid waste incineration actually started at the end of nineteenth century. The first incinerator, called the 'Destructor', was built in 1876 in Manchester, by Alfred Fryer and was originally introduced for reasons of hygiene and volume/weight reduction. In 1893 an incinerator producing steam existed in Hamburg and between 1903 and 1905 there were two plants for district heating and cogeneration in the United States. By 1912 in Britain there were more than 338 waste incinerators and more than 80 of them also generated electricity for local use. The destructors were generally viewed favourably as a hygienic method for disposing of refuse and far better than allowing refuse to accumulate and attract vermin and cause odour nuisance.

Nowadays, incineration represents only a part of a complex waste management system that should include reduction of production, differentiated collection and re-use of waste, recovery (of materials and energy) and final disposal. The goal of current waste incineration technology is to treat waste so as to reduce its volume and hazard, to capture, concentrate and destroy potentially harmful substances and to recover energy from combustion.

In 1923, there was a 'destructor' in operation at Prince Rock that was not able to cope with the amount of waste generated in Plymouth and so consideration was being given to building another 'destructor' in Devonport to prevent the need to transport waste long distances away from the city; almost a century later, this scenario is being replayed within the city today.

'With the constant addition to our population, the collection and proper disposal of household refuse becomes a matter of increasing difficulty and concern to those responsible for the Public Health. The existing destructor is totally inadequate for the 'requirements of the borough' and as a consequence no less than 33,164 tons of the town's refuse has to be conveyed long distances and deposited on waste ground. These pits receive the surface water from surrounding land, the rising and falling water giving constant objectionable exhalations from the fermentation of organic filth.

In windy weather, dust, paper and germ laden rags are scattered about, the decomposing material attracting flies which may invade houses in the neighbourhoods and contaminate food. Rats usually abound on such tips.

Destruction by fire is the only scientific and hygienic method and steps should be taken immediately to increase the plant at Prince Rock and to provide another destructor in the Devonport area'.

2011 saw a high profile planning application for a large Energy from Waste incinerator to be located within Devonport Dockyard near Weston Mill. The planned incinerator would burn up to 265,000 tonnes of municipal solid waste from the South and West Devon Waste Partnership area per year. It would generate steam and electricity for the Dockyard, which it is estimated, would result in a carbon reduction of 73,000 tonnes of CO₂ per year. The proposal

provides an alternative to the disposal of municipal waste to landfill. Remaining landfill space in the area is increasingly scarce and taxes on the disposal of waste by this method are being increased year-on-year in order to make it an even more expensive and less desirable waste management option. If approved, the proposal could save the South West Devon Waste Partnership in the region of £675m over the 25 years of the life of the plant.

The operation of municipal waste incinerators is heavily regulated to control the levels of emissions and pollution; the Environment Agency controls such undertakings by means of a permitting process. All incinerators must meet the European Waste Incineration Directive standards for emissions.

The Health Protection Agency position statement on municipal waste incineration states that 'Modern, well managed incinerators make only a small contribution to local concentrations of air pollutants. It is possible that such small additions could have an impact on health, but such effects, if they exist, are likely to be very small and not detectable.'

The World Health Organisation considers that the evidence is inadequate to draw conclusions that are valuable for guiding current policy choices on incineration because there are relatively few good quality studies that exist and those that do refer mostly to old generation incineration plants rather than new plants. The WHO also says that any increases in relative risks are difficult to detect, because they are generally caused by long-term low-level exposures. WHO recognise that the adoption of the Best Available Technology (BAT), enforced by the EU, reduces emissions and means that the occurrence of measurable health effects in populations resident in close proximity of new generation incinerators is becoming less likely. However, WHO consider that the overall impact of waste incineration on the general environment and on human health through indirect mechanisms has not been fully evaluated yet.

There is considerable public concern over waste incineration, especially in those communities living closest to planned or operational plants. The public perception of potential risks to their health from such operations does not match that of the national agencies which control and monitor these undertakings. Open communication and exchange of information and the involvement of local communities in the planning, operating and monitoring of incinerators is critical if such operations are to gain public acceptability.

Public Health Plymouth, in association with Devon HPU, has conducted a rapid 'desk-top' prospective health impact assessment of

the proposed energy from waste incinerator in Devonport Dockyard. The assessment highlighted the potential positive and negative impacts of the proposal and made recommendations how negative impacts could be mitigated or minimised and how positive impacts could be enhanced. The team were able to consider the proposal in the context of the existing health of the local population. The assessment was used to frame the NHS Plymouth response to the planning consultation on the proposal and has been made available publicly to add to local debate of the proposal.

5.2 Nuclear submarine dismantling

Every day all over the world people are exposed to ionising radiation, almost all from natural sources in the environment or from medical diagnostic and treatment equipment. Ionising radiation is an invisible, odourless and tasteless form of energy that is emitted spontaneously by radioactive materials. Ionising radiation has enough energy to cause damage cells which can increase the risk of cancer later in life. However risks to health are actually low and ionising radiation is widely used in cancer therapy. In general the health effects of ionising radiation are dependent on the dose received. Low doses of ionising radiation increase the risk of cancer later in life, very high doses of ionising radiation act like a poison and can be fatal.

In the UK it has calculated that on average people are exposed to about 2.7 millisieverts (mSv) of radiation a year, a millisievert is a measure of radiation dose which accounts for the fact that ionising radiation can affect different parts of the body to differing degrees. The millisievert dose also allows for the different effects of different types of radiation, x rays, gamma rays, neutrons, alpha particles and beta particles.

The 2.7 mSv dose that people in the UK are exposed to comes from a number of sources. Many building materials contain low degrees of natural radioactivity and radon gas seeps from the ground into all buildings, so the largest exposure is to naturally occurring radiation in homes and workplaces. There are also significant contributions from naturally occurring radioactivity in food and from medical exposures.

Table 8 - Comparison of doses from sources of exposure

Source of Exposure	Dose
Dental X-ray	0.005 mSv
135g bag of Brazil nuts	0.01 mSv
Chest X-ray	0.02 mSv
Transatlantic flight	0.07 mSv
Nuclear power station worker average annual occupational exposure	0.2 mSv
UK annual average radon dose	1 mSv
CT scan of the head	1.4 mSv
UK average annual radiation dose	2.7 mSv
USA average annual radiation dose	6.2 mSv
CT scan of the chest	6.6 mSv
Average annual radon dose to people in Cornwall	7.8 mSv
Whole body CT scan	10 mSv
Annual exposure limit for nuclear industry employees	20 mSv
Level at which changes in blood cells can be readily observed	100 mSv
Acute radiation effects including nausea and a reduction in white blood cell count	1,000 mSv
Dose of radiation which would kill about half of those receiving it in a month	5,000 mSv

All types of ionising radiation are easily detectable and measurable and the level at which harm to health can be caused is well known; this does not, however, allay people's fear of an invisible potential hazard.

Plymouth is home to HM Naval Base Devonport, which is the largest naval base in Western Europe, the Devonport site is the operating and maintenance centre for the Commodore Devonport Flotilla. The Devonport site also carries out all major refitting and refuelling of nuclear powered submarines in Royal Navy service, the nature of this work means that the dockyard is a registered site under the Radiation (Emergency Preparedness and Public Information) Regulations (REPPPIR) because of the presence of sources of ionising radiation. On and off-site emergency plans that deal with any potential radiation incident, resulting from dockyard activity, are in place and are exercised and updated regularly

Local residents are aware of these activities within the dockyard and of the off-site emergency plan; they are aware of the potential for a radiation incident, of the hazard this could pose and of the main public message in case of an incident, which is 'Go in, Stay in, Tune in'. The nature of the risk of a radiation incident is less well understood and the public

perception of the risks posed by the current dockyard activities is therefore inflated.

The dockyard also undertakes first stage decommissioning activities on nuclear submarines leaving operational service. The Devonport site provides berthing for 10 laid up submarines; these submarines are stored afloat in a safe condition awaiting final disposal, some are de-fuelled and some are waiting to have their fuel removed. There is limited additional berthing available for submarines that will be leaving service in the future and a permanent solution for the disposal of the submarines is required.

The Ministry of Defence (MOD) is currently holding a public consultation on their proposals to dismantle defueled submarines and to store intermediate level radioactive waste prior to final geological disposal in the UK. The public are being consulted on:

- How radioactive material is removed from the submarines
- Where the removal of the radioactive material is carried out
- Which type of site is used to store the radioactive waste that is awaiting disposal

The MOD assessment of available options has not identified a preferred option for disposal and dismantling of de-fuelled submarines, however, the assessments indicate that the following are likely to offer the best options;

- To remove the radioactive material by removing the reactor pressure vessels from the submarines and storing them intact
- To remove the radioactive materials in Rosyth and Devonport Dockyards (to deal with submarines where they are currently berthed) at least initially
- To undertake further assessment on costs and benefits of storing intermediate level radioactive waste in existing Nuclear Decommissioning Authority facilities, or of building a new storage facility, or using existing MOD facilities

It therefore is very likely that there will be additional activities within Devonport Dockyard which will require regulation under the Radiation (Emergency Preparedness and Public Information) Regulations. Submarines are likely to be dismantled to some extent on the Devonport site and there may, in addition, be some on-site storage of intermediate level radioactive waste; this activity could result in the accumulation of risks to the local population. Public Health Plymouth will therefore participate in impartial consideration of the potential impacts on the health of the local population of the MOD proposals and will be instrumental in the preparation of a report to inform the local population of the findings.

5.3 Mobile phones, masts and other electromagnetic fields

In the space of 20 years, mobile phone use has gone from being rare to there being 4.6 billion users worldwide. There are reportedly more mobile phones in the UK than there are people. They continue to become more popular as new features become available and they are now an accepted part of everyday life for the vast majority of people. Along with mobile phones come the base stations and masts that they need to operate. There are some 47,000 mobile phone base stations in the UK and there are approximately 200 within Plymouth.

The potential health risks posed by mobile phone use have been debated and a huge amount of

research has been conducted. Health concerns of mobile phones relate to the exposure to the radio waves that are produced by the phones and the base stations that serve them. Radio waves produce electromagnetic fields, which are a form of non-ionising radiation. Sources of electromagnetic fields are now pervasive in the modern world and include electrical appliances, televisions, radios, microwaves and wi-fi (wireless computer networks) and our exposure to a range of frequencies and sources has grown dramatically. The radiofrequency energy emitted by mobile phones can be absorbed by tissues closest to where the phone is held. This can cause heating in those tissues, depending on how much energy is absorbed. There is some concern that such exposure can increase the risk of developing certain types of cancer. This theoretical risk is of great public health significance due to the number of people that are mobile phone users and therefore the potential impact on the population if the risk were realised.

Recently the International Agency for Research into Cancer (IARC) considered the latest evidence on health risks associated with mobile phone use. They concluded that 'there is some evidence that there may be an association between the use of mobile phones and certain types of brain cancer'. IARC go on to say that there is not enough evidence to rule out this risk, although most research has failed to identify a definite link. As such the IARC have reclassified radiofrequency electromagnetic fields as possibly carcinogenic; evidence on these potential risks is still accumulating and in particular about long term use and exposure and the effect on children and young people.

In areas where there is inconclusive or conflicting evidence, it is always advisable to take a precautionary approach to public health advice. As such, the advice in the UK from the Department of Health and the HPA is that whilst there is no clear scientific evidence of a cancer risk from exposure to radiofrequencies at levels below international guidelines, the possibility remains. They consequently recommend that use of mobile phones by children and young people should be discouraged and under 16's should use mobile phones for essential purposes only and keep calls short.

Exposure to radiofrequency electromagnetic fields from mobile phone base stations and masts is classified differently, as exposure

levels are accepted as being much lower than those associated with mobile phone handsets. There is no clear scientific evidence of any adverse health effect associated with exposure to signals from mobile phone masts. Planning controls exist on the location of masts over 15 metres in height and OFCOM carry out an audit of emissions from base stations and publish the results on their website.

Wi-Fi networks are wireless local area networks where computers and other devices communicate by means of radio waves rather than connecting cables. Wi-Fi networks are now commonplace in our homes, in schools and in many public areas such as libraries, transport hubs and cafes. People using Wi-Fi and those in close proximity of Wi-Fi equipment are exposed to the radio signals it emits and some of the transmitted energy in the signals is absorbed in their bodies. The signals are very low power and evidence to date shows that exposures are well within international guidelines. The Health Protection Agency advice is that there is no consistent evidence that exposure to radiofrequency signals from Wi-Fi equipment adversely affects the health of the general population and the exposure from Wi-Fi is less than those from mobile phones. The European Parliament however has indicated that they believe there are continuing uncertainties about the risk, particularly to young people, from the electromagnetic fields emitted by all wireless technology and in France some public libraries and schools are removing Wi-Fi networks in an effort to stop the proliferation of exposures to radiofrequency electromagnetic fields.

The proliferation of radiofrequency electromagnetic fields has led to some people, believed to be between 1% and 3% of the population, suffering from electromagnetic sensitivity. They have a physical reaction to levels of electromagnetic radiation that cause no noticeable effect in most people. Symptoms can include headaches, nausea, lack of concentration, feeling dull and groggy and feeling pain when too close to mobile phones or other sources of electromagnetic radiation. Whilst there is inconsistent evidence to support the existence of electromagnetic hypersensitivity, one vocal sufferer is Gro Harlem Brundtland, the former Director General of the WHO. The Swedish Government recognise electromagnetic hypersensitivity as a disability and provide support to sufferers.

5.4 Nanotechnology

Nanotechnology is a rapidly developing and growing industry that exploits the unique properties of tiny particles (nanoparticles). Nanoparticles range from 1-100 nm (millionths of a millimetre) and can only be seen with an electron-microscope. They are all around us and some occur naturally, whilst others are man-made. They are so small that they have different properties than the same substance in normal sized particles. For example, gold nanoparticles are actually red in colour, and are black when mixed with water. Nanoparticles are very reactive, due to their large surface area compared to their volume and this could lead to them speeding up reactions and behaving in an unpredictable way.

Engineered nanoparticles are being used in a growing number of ways for industrial purposes, in medical imaging and disease diagnosis, drug delivery and cancer therapy. Many textiles, fibres, dyes and paints contain nanoparticles. Titanium dioxide nanoparticles do not reflect visible light and so cannot be seen. They are used in the manufacture of sunblock creams because they block out harmful UV light without appearing white on the skin. Some nanoparticles are being used to deliver tiny doses of medicines direct to individual cells, meaning that the medicines work quicker and can be given in lower doses because of the improved delivery mechanism.

Nanotechnology is seen to be capable of great medicinal and industrial applications and there is huge economic investment in the development of this technology. However, nanoparticles have the same dimensions as some biological molecules and can interact with these in unpredictable ways. In the human body, nanoparticles can cross cell membranes and so can be carried around the body in blood and reach the main organs. Insoluble nanoparticles in particular have the ability to persist for long periods within the body. Engineered nanoparticles could also exhibit toxic biological effects and might speed up reactions in living organisms in unpredictable ways, perhaps causing side effects and ill health. Particulate matter in air pollution is a major cause of morbidity and mortality and nanoparticles have the potential to increase this. There is no suitable portable equipment for measuring nanoparticles and no clear opinion on which measures are most

appropriate for assessing exposure. There are huge gaps in existing knowledge about how nanoparticles behave in the human body and in the environment and good evidence of the impact of exposure to them is lacking. This means there is no consensus of opinion as to whether this modern and fast developing technology is a great modern development, or a potential to be the asbestos of the 21st century.

5.5 Understanding the evidence base around new technologies: the role of Public Health Plymouth

Public Health Plymouth's role is to provide leadership in the consideration of environmental risks to health, old and new. This role begins with finding, critically appraising and interpreting the available evidence base; this can include dealing with the uncertainties brought about by conflicting evidence. Public Health Plymouth is ideally placed to provide local health data and intelligence and to add this to the consideration of the available evidence to interpret risks in terms of the local population they serve. Public Health Plymouth provides added value and understanding to statutory decision making bodies to better inform their processes; they can be seen as a critical friend to decision making processes. Public Health Plymouth has a key role in communicating evidence and information to the public on complex issues, to ensure that local populations can have trusted and balanced information to consider and debate.

Whilst in some considerations of public health risks the evidence is conclusive, definitive and agreed, it is often the case that there is a degree of uncertainty or conflict amongst scientific opinion and the risk to health is unclear or the evidence is incomplete. Public Health Plymouth provides leadership in such cases to ensure that a precautionary approach is taken to provide the maximum level of health protection for the local population. The precautionary approach requires the due consideration of the uncertainties of potential direct and indirect health impacts in existing evidence in relation to different hazards and risks. Precaution emphasises that the absence of evidence of

harm to health is not the same as evidence of absence of harm to health. There are examples in history of environmental impacts on human health not being accepted and acted upon until considerable harm has been caused. A notable example would be asbestos. The evidence that asbestos was causing harm was slow to build, mostly because the ill health that results from exposure to asbestos particles does not begin until some 20 years after exposure. Once evidence built, action began to be taken, but the time lapse in accepting the evidence and acting upon it lead to the continued exposure of workers to the hazard for many years. The precautionary approach in such instances enables the maximum level of health protection and is therefore the starting point for much public health consideration.

5.6 Climate change

Climate change has been described by Sir David King, former Chief Scientific Advisor to the Government, as 'the most severe problem that we are facing today, more serious even than the threat of terrorism'. Climate change has been a matter for scientific and political concern since the 1980's but only since 2007 and the Intergovernmental Panel on Climate Change scientific report has there been real scientific consensus on the acceptance that the world is warming up, (even if there is still debate on the causes), and that climates around the world are changing because of this activity. There is now an urgent need to take action to reduce greenhouse gas emissions and to adapt to the impacts of climate change. Failure to act decisively and substantially within the next decade will have severe health and social consequences. Changes are needed at global, national, regional, local and individual levels. There needs to be a dramatic reduction in carbon emissions to avoid the worst outcomes of climate change. The UK Government have set a target of reducing the 1990 levels of emissions by 80% by 2050. This is seen as the minimum that is required globally to ensure that temperature rise is not above two degrees Celsius by the end of the 21st century. Any rise above this is predicted to produce levels of economic and social breakdown that would be very bad for population health.

Potential Health Impacts of Climate Change in the UK

- **Heatwave-related health problems:** Heatwaves are projected to become more frequent resulting in increased heat and pollution-related illness and deaths as a result of hotter, drier summers. The very old and young, chronically ill and poor are most susceptible
- **Cold-related illness and deaths:** Cold-related illness, falls, crashes and deaths are likely to decline due to warmer, wetter winters
- **River, coastal flooding and flash floods:** The risk of major flooding disasters caused by severe winter gales, heavy rainfall and coastal erosion will potentially increase contamination of drinking water, increase water borne infections and exposure to toxic pollutants, accompanied with psychological consequences, disruption, injuries and deaths. Later effects of flooding include stress and mental health problems. River floods or storm surges, which can be forecast several days in advance, have fewer casualties compared to flash floods where there is no prior warning
- **Infectious diseases:** Cases of food poisoning (Campylobacter infections, Salmonellosis) and water borne disease (Cryptosporidiosis) linked to warm weather are likely to increase
- **Vector-borne diseases:** (ticks and Lyme disease) may present local problems due to changes in the ecosystem, but the increase in their overall impact is likely to be small
- **Sunburn and skin cancer:** are likely to increase because of greater exposure to warmer weather
- **Possible ancillary health benefits:** such as increased physical activity due to extended warm weather but outcomes could be worse due to extreme heat. Possibly healthier eating if sustainable farming and food policy are adopted
- **Extreme weather-related events** (natural disasters, droughts, hurricanes): leading to social disruption, injuries, deaths, disability, migration, homelessness and food shortages.

The changes needed are achievable, affordable and will create a healthier and more just society. People need to be encouraged to act at all levels. The challenge is to demonstrate that small changes matter. This is well described by an African proverb which says 'if you think you are too small to make a difference, try sleeping in a closed room with a mosquito'. The role of public health is to provide leadership in the mitigation of climate change and in adaptation to cope with it. Public health practitioners need to be urging action within and without the NHS to support low carbon, sustainable communities and services.

5.6.1 Changing weather patterns for Plymouth

Changing weather patterns are occurring all over the world as a result of global warming. Global temperatures rose by 0.74% between 1906 and 2005. It is predicted that global

temperatures could rise between another 1.1 and 6.4 degrees Celsius by the end of the 21st century. In England, the average mean temperature has risen by about 1 degree Celsius since the 1970's and in the South West the annual daily mean temperature rose by 1.37 degrees Celsius between 1961 and 2006.

Annual mean precipitation across England and Wales has not changed significantly since records began in 1766. Seasonal rainfall is highly variable, but appears to have decreased in summer and increased in winter. All regions have experienced an increase in the past 45 years in the contribution to winter rainfall from heavy precipitation events. In the South West, total annual precipitation increased by 9.7% between 1961 and 2006 with a winter increase of 15.9% and a summer decrease of 8.8%; the trend is seen to be of increasingly wetter winters and drier summers.

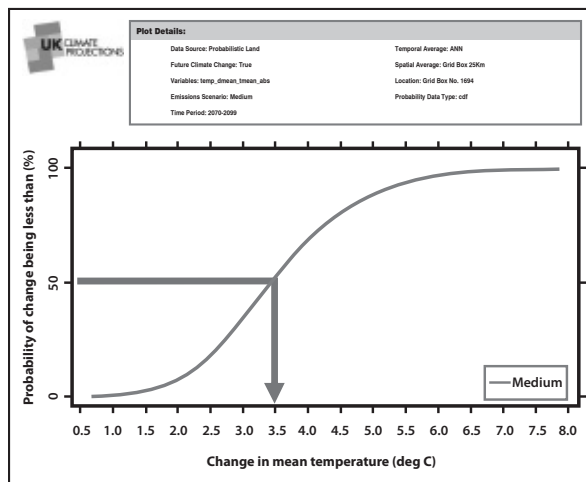
Predictions in climate change for the South West in the 2050's show a very likely increase in winter mean temperatures of 1.1 degrees Celsius, a very likely increase in summer mean temperatures of 1.3 degrees Celsius, a very likely increase in winter mean precipitation of 4% and an estimated decrease in summer mean precipitation of 20%. Over this time period the predictions are for overall precipitation to remain stable. Again these predictions show a continuation of the trend for overall warmer

temperatures, with wetter winters and drier summers.

Predictions for Plymouth for the next 100 years, provided by the Met Office Hadley Centre in Exeter, (Figures 5-8) show these trends continuing and also indicating rising sea levels. Flooding risks are likely to rise with the Barbican area and areas immediately alongside the rivers Plym and Tamar being the most at risk areas of the city.

Figure 5 - Met Office Hadley Centre Climate Change Predictions for Plymouth (getting warmer)

 **Climate Change in Plymouth:
the next 100 years**

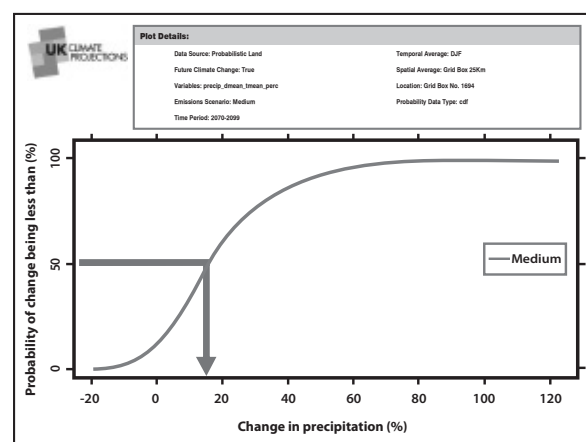


Getting warmer



Figure 6 - Met Office Hadley Centre Climate Change Predictions for Plymouth (wetter in Winter)

 **Climate Change in Plymouth:
the next 100 years**



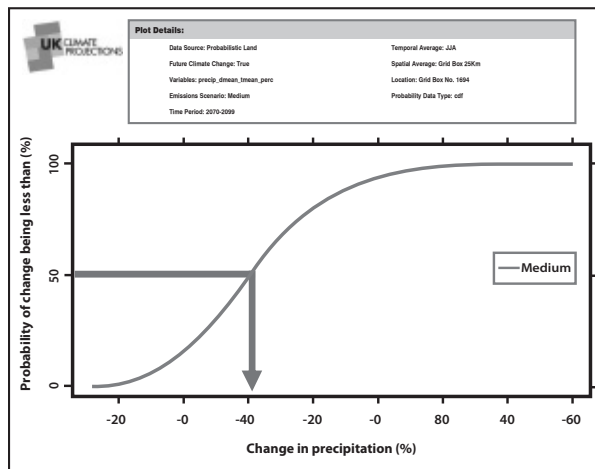
Wetter in winter



Figure 7 - Met Office Hadley Centre Climate Change Predictions for Plymouth (drier in Summer)



Climate Change in Plymouth: the next 100 years



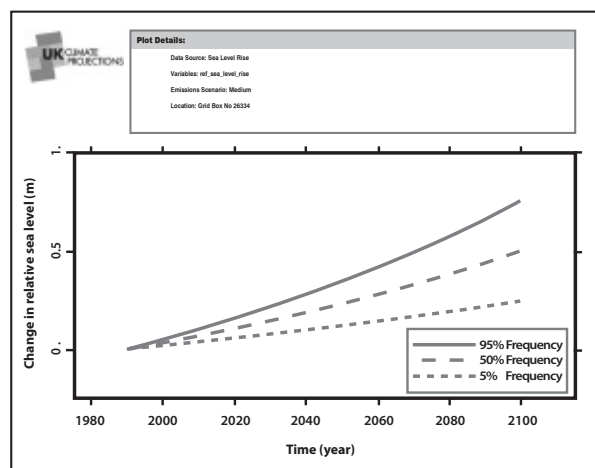
Drier in summer



Figure 8 - Met Office Hadley Centre Climate Change Predictions for Plymouth (rising sea level)



Climate Change in Plymouth: the next 100 years



Rising sea level



Public health practitioners are and will need to continue to provide a leadership role in planning preparedness, mitigation and adaptation for climate change.

5.6.2 Planning preparedness and adaptation for climate change in Plymouth

Adaptation in terms of Climate Change involves preparing for events that are likely

because of the change in climate, so for example heatwaves, flooding, food and water shortages and movement of populations. Adaptation measures protect people and critical infrastructure from the effects of Climate Change that are already happening. Planning preparedness involves monitoring of hazard warning systems, in partnership with other agencies, for severe weather events and flooding and ensuring that the health services

are able to respond to changing conditions and demands on services. National plans now exist for action at times of cold weather and during heatwaves. The Public Health Team is responsible for translating these national plans into local plans and actions.

5.6.3 Cold weather planning in Plymouth

A national Cold Weather Plan was published for the first time in November 2011. The aims of the plan are to enhance resilience in the event of severe cold weather, to reduce winter mortality and to reduce health and social care system pressures during the busiest months of the year through better anticipatory actions with vulnerable people. A system of winter weather alerts will be made by the Met Office to NHS and local social service providers so that action can be taken to help ensure people are safe in their homes. Currently there are in the region of 27,000 excess deaths each winter in England and the plan aims to reduce this. There are four levels of response set within the plan; preparedness, alert and readiness, severe weather action and emergency action. As well as ensuring planning takes place to ensure an appropriate response to each level of alert, the plan details other actions that contribute to the aims, including a flu vaccination programme for all at risk groups of people and additional financial resources to help vulnerable people to maintain their homes at appropriate temperatures. Latest estimates are that cold weather costs the NHS over £850 million as a result of treating disease due to cold private housing, so additional investment should result in savings within the NHS.

Health Effects of Cold Weather

- Increase in cardiovascular disease symptoms
- Hypothermia
- Increase in respiratory illness
- Increase in Influenza
- Increase in infectious diseases e.g. winter vomiting virus, respiratory viruses
- Increase in falls and injuries
- Increased incidence of carbon monoxide poisoning
- Increase in poor mental and social health

Health Effects of Heatwaves

- Heatstroke
- Hyperthermia
- Dehydration
- Increase in infectious diseases e.g. food poisoning
- Exhaustion
- Heat cramps
- Exacerbation of symptoms of many existing conditions

5.6.4 Heat-wave planning in Plymouth

As with the national cold weather plan, a system of weather alerts will be made by the Met Office to NHS and local social service providers so that action can be taken to help ensure people are safe in their homes when heatwave conditions are expected or ongoing. Heatwave conditions can lead to excess mortality as was seen in France in 2003, when an additional 15,000 deaths took place due to the prolonged high temperatures. Again the national plan has 4 action levels; preparedness, 60% risk of heatwave in next two to three days, heatwave in one or more regions, and heatwave for four or more days in two or more regions.

Public Health Plymouth makes sure that the local health and social care providers have robust plans and resilience within their systems to cope with these conditions whilst continuing to provide their vital services. As active partners in the Local Resilience Forum, Public Health ensure that emergency plans for weather conditions and other emergencies are fit for purpose and shared with all relevant partners.

5.6.5 Mitigation for climate change in Plymouth

Climate change mitigation strategies are almost synonymous with health improvement strategies. Through improved housing, active transport, changes in food consumption and economic localisation, not only would carbon emissions be reduced, the aim of mitigation, but also population health would be improved. Public Health Plymouth is working to ensure that the dual benefits of strategies such as active transport are identified and understood by local policy makers, who are then encouraged to support such strategies. Public health

practitioners work with colleagues within the Local Strategic Partnership to support and implement the Sustainable Community Strategy for Plymouth. Public health practitioners are also championing these strategies within health organisations, in particular by encouraging the reduction of carbon emissions and improving energy efficiency and by establishing active travel plans. These interventions are known to be cost saving as well as carbon saving.

It falls to the Public Health Plymouth team to ensure that policy makers and the public

are aware of the need to adopt low carbon ways of living, working and of delivering services. They must continue to promote the evidence that demonstrates that low carbon lifestyles are also beneficial to physical and mental health and to work to embed genuine sustainability and assessment of environmental risk into health and healthcare evaluation, including examination of resource use and the environmental impact of health care to inform the design of better and more sustainable models.



6. Plymouth's Public Health Challenges: 2011/12

Last year I described how despite great improvements in the health of the population in the last 20 years, inequalities have persisted and a clear social class gradient in health exists. I described how an individual's position within society is indicative of their health status, whether socio-economic status has been based upon occupational classifications, housing, car ownership or educational level and that this relationship exists in all societies and is apparent throughout the social scale. The Marmot report (2010) had set this relationship out in detail and given us a clear steer on what the priorities should be for the UK and also for Plymouth. In my report last year I issued the Marmot Challenges to the city to move us forward in addressing health inequalities. These are:

Challenge 1: Give every child the best start in life

Challenge 2: Enable all children young people and adults to maximise their capabilities and have control over their lives

Challenge 3: Create fair employment and good work for all

Challenge 4: Ensure healthy standard of living for all

Challenge 5: Create and develop healthy and sustainable places and communities

Challenge 6: Strengthen the role and impact of ill health prevention

Since then the Coalition Government issued a Health and Social Care Bill in January 2011 which proposes unprecedented levels of reform, more complex and controversial than the original Bill which set up the NHS in 1948 and embarked on a dramatic programme of budget cuts and service reform in response to the international debt crisis. The budget cuts are impacting across the whole public sector and the debt crisis is affecting us all. The scale of the budget cuts will necessarily mean reduction in services and impact significantly on local people.

The Health and Social Care Bill introduced in January 2011, has received large scale opposition on its plans to apply market-based principles to the provision of health care, restructure the entire NHS and to put health care commissioning into the hands of family doctors. At the same time the NHS needs to find £20 billion in productivity improvements to maintain quality and avoid significant cuts to services. No health care system in the world has ever managed to deliver this level of productivity improvements or savings. The scale of the structural changes set out in the Bill and the challenges associated with implementing them present risks that could both damage NHS performance, (evidence for which is already emerging) harm patient care and put the £20 billion productivity savings in jeopardy. The uncertainty and constantly changing proposals of the last year has caused significant instability within the NHS.

The one part of the Health and Social Care Bill which was met with general approval was the proposal for Local Authorities to set up Health and Wellbeing Boards which will be responsible for producing joint strategic needs assessments and developing a joint health and wellbeing strategy for their local area. This new way of working will provide an opportunity to strengthen democratic legitimacy and join up commissioning across the NHS, social care and public health. In Plymouth the Local Authority have already begun the process of setting up this new Health and Wellbeing Board to lead the work with partners to develop a different and more inclusive approach to improving health and tackling inequalities. The key to delivering this will be strong leadership and cultural change to develop real joint working at a local level and to turn what we know about what works into an effective partnership action plan that will improve everyone's health and reduce health inequalities in the city.

So my challenges from 2010/11 remain in place for another year and are now firmly in the hands of the emerging Health and Wellbeing Board for Plymouth.

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