PLYMOUTH CITY COUNCIL

Subject:	Framework for addressing health inequalities (4-4-54)
Committee:	Cabinet
Date:	11 November 2014
Cabinet Member:	Councillor McDonald
CMT Member:	Kelechi Nnoaham (Director of Public Health)
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Ref:	
Key Decision:	No
Part:	I

Purpose of the report:

This report has been produced in response to the January 2014 recommendation from Budget Scrutiny that 'an action plan addressing the revised approach to health inequalities across the city is brought to the Caring Scrutiny Panel within six months by the incoming Director of Public Health.' In addition, it has been produced in recognition that there is opportunity to define and agree a coherent approach to addressing health inequalities in the city by organising and directing society's effort to promote health, prolong life and prevent disease. Although the 10-year supporting campaign has now been branded as 'Thrive Plymouth', the framework itself is based on the 4-4-54 construct. In summary, poor diet, lack of physical activity, tobacco use and excess alcohol consumption are risk factors for coronary heart disease, stroke, cancer and respiratory problems which together contribute to 54% of deaths in Plymouth. The health inequalities associated with these behaviours is set out in the paper by focusing on the socioeconomic and ward/neighbourhood patterns in the behaviours, the diseases and the fractions of deaths which they are responsible for. Changing these four behaviours would therefore help prevent the four diseases and consequently reduce health inequalities in the city. The aspiration of the 4-4-54 framework is to reduce health inequalities in Plymouth by building a Plymouth City Health and Wellbeing Collaborative with multiple participating organisations and one or more sponsors. This report is to seek the approval of Cabinet for the revised approach and the supporting action plan to address health inequalities in the city.

The Brilliant Co-operative Council Corporate Plan 2013/14 -2016/17:

The action plan that will support the delivery of 4-4-54 in Plymouth will be based on the four individual themes that have been brought together to form the city's public health vision. These four themes have been linked to the four values in the Councils' Corporate Plan (democratic, responsible, fair, and partners) and the four objectives in the Council's Corporate Plan (pioneering, growing, caring and confident).

Implications for Medium Term Financial Plan and Resource Implications: Including finance, human, IT and land

This approach to addressing health inequalities in Plymouth will be a key focus of the Public Health Team's work programme in the short, medium and longer term. It will be overseen by one of the Consultant Team supported by a Public Health Specialist. It is not anticipated at this stage that there will be any additional resources required to support the co-ordination of the programme. Instead multi-agency partners will be encouraged to take ownership of this approach and plan their services accordingly.

Other Implications: e.g. Child Poverty, Community Safety, Health and Safety and Risk Management:

The 4-4-54 framework for addressing health inequalities in Plymouth will address child poverty issues by drawing together existing work on this topic and through new work that is commissioned as part of the development of the supporting action plan. In addition, as the focus of the second year of the programme will be on schools and educational settings within the city, reducing child poverty will be a priority focus.

One of the four themes of the action plan focuses on 'engaged communities.' It is anticipated that this will have a positive impact on crime and disorder.

The focus of activity in year one will be to work with employers and businesses in the city (including the Council). It is anticipated that this will have a positive impact on health and safety.

As Plymouth does not currently have an agreed approach to addressing health inequalities, failure to adopt the approach outlined in this paper could result in a widening of health inequalities in the city.

Equality and Diversity

Has an Equality Impact Assessment been undertaken? Yes

Recommendations and Reasons for recommended action:

1. Agree and adopt the 4-4-54 framework to address health inequalities in Plymouth.

2. Agree the principles underlying the framework (i.e. long-term, collaborative, inclusive, fair, flexible, integrated and evidence-based).

3. Agree the three approaches of the framework (i.e. population prevention, common risk factor approach and changing the context of choice-making).

4. Support the development of the action plan in the short, medium and longer term.

5. Support the focus on employers and businesses in year one and on schools and educational settings in year two.

Alternative options considered and rejected:

A number of alternative frameworks to reducing health inequalities were reviewed. However it was felt that 4-4-54 would be the most appropriate (and innovative) framework to be taken forward in Plymouth.

Published work / information:

None

Background papers:

Title	Part I	Part II	Exemption Paragraph Number						
			1	2	3	4	5	6	7
Equality impact assessment	x								

Sign off:

Fin	mc14 15.51	Leg	lt/215 11	Mon Off	lt/215 11	H R		Assets		IT		Strat Proc	
Originating SMT Member: n/a													
Has the Cabinet Member(s) agreed the contents of the report? Yes													

1. Context and Purpose

1.1 Public health is defined as the art and science of promoting health, prolonging life and preventing disease through the organised effort of society.

1.2 In January 2014, the following recommendation was agreed at a Budget Scrutiny meeting, 'an action plan addressing the revised approach to health inequalities across the city is brought to the Caring Scrutiny Panel within six months by the incoming Director of Public Health.'

1.3 With the help of my colleagues in Public Health, I have produced this paper partly in response to that recommendation but crucially in recognition that there is opportunity to define and agree a coherent approach to addressing health inequalities in the city by organising and directing society's effort to promote health, prolong life and prevent disease.

1.4 The framework and action plan will be presented to the Caring Plymouth Panel on 20th November 2014.

1.5 Plymouth City Council as part of its new public health function is seen as a leader for the local public health system and is expected to lead on setting a coherent city-wide strategy for public health in Plymouth. Accordingly, I have made explicit the relationship between the 4-4-54 action plan and the Council's Corporate Plan in Table 2 and figure 12. However, my overriding purpose in the 4-4-54 framework is to reduce health inequalities in Plymouth by building a Plymouth City Health and Wellbeing Collaborative with multiple participating organisations and one or more sponsors. Along with my colleagues in Public Health, I will champion this initiative, lead the development and delivery of the action plan with internal and external partners and provide strategic advice and technical support to partners.

1.6 In addition to developing the workplan detailed in appendix 1, I have chosen to focus activity in year one on working with employers and businesses in the city. In doing so, I believe that not only will the health and wellbeing of the working population in the city be improved, but also that considerable economic benefits will become evident. The focus in the second year of the programme will be on schools and educational settings within the city.

1.7 Since developing the original 4-4-54 Framework, I have had discussions with the Council's Communications Leads to determine whether the 10-year campaign should retain the 4-4-54 name, or whether it should be known by a different title. The view of the communications experts was that the individual 4-4-54 elements were somewhat negative as they focussed on unhealthy behaviours, diseases, and death.

1.8 On that basis an alternative name for the 10-year campaign has been chosen. The campaign will be known as 'Thrive Plymouth.' Thrive is much more positive and can be defined as doing well, 'prospering, being successful and flourishing. The focus is therefore on 'Positive choices for better health in a growing city.'

1.9 The following sections retain the references to the individual 4-4-54 elements in order to explain the development of the framework.

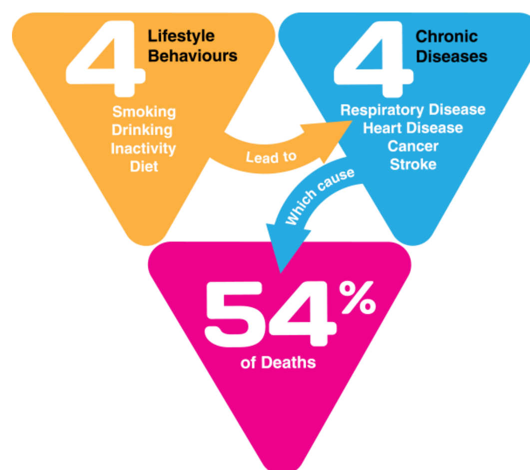
2. Background

2.1 The 4-4-54 framework which I outline in this paper is based on the original work of the Oxford Health Alliance (OxHA). The OxHA came up with the concept of 3four50 in response to global concerns about chronic diseases. This construct reflects the observation that there are three risk factors to health that together contribute to four chronic diseases which, in turn, contribute to more than 50% of preventable deaths worldwide. This focus on chronic diseases is appropriate as they are now the major cause of death and disability worldwide, having surpassed infectious diseases and injuries.

2.2 Based on the work of the OxHA and implementation of the approach in the City of San Diego, U.S.A, the Council's Public Health Intelligence Team has undertaken a detailed Plymouth-specific analysis of the local data to inform the development of a relevant version of this construct and approach to chronic disease reduction for Plymouth as a means of addressing health inequalities in the city.

2.3 The relevant framework for Plymouth will be known as 4-4-54 and within it will sit an action plan to tackle health inequalities across Plymouth by building a new Plymouth Health and Wellbeing Collaborative of multiple partner organisations in the city. In summary, poor diet, lack of physical activity, tobacco use and excess alcohol consumption are risk factors for coronary heart disease, stroke, cancers and respiratory problems which together contribute to 54% of deaths in Plymouth. Changing these four behaviours would help prevent these four diseases and reduce the number of deaths due to those chronic diseases. I have shown this in Figure 1.

Figure 1: 4-4-54 Plymouth



3. The relationship between health behaviours and health inequalities

3.1 People's lifestyles (whether they smoke, how much they drink, what they eat, and whether they are physically active) affect their health and wellbeing. Each of these lifestyle risk factors is unequally distributed in the population.

The overall proportion of the English population that engages in three or four of these unhealthy behaviours has declined significantly, from around 33% of the population in 2003, to 25% in 2008. However these reductions have been unequal as they have been seen mainly among those in higher socio-economic and educational groups. Furthermore, the gap between these groups in terms of how common these behaviours are has widened in recent years; people with no qualifications were more than five times as likely as those with higher education to engage in all four poor behaviours in 2008, compared with only three times as likely in 2003. So although the health of the overall population has improved as a result of the decline in these behaviours between 2003 and 2008, the poorest and those with least education have benefitted least, leading to widening inequalities and avoidable pressure on health and social care services.

4. What are the four behaviours?

4.1 Smoking

4.1.1 Smoking is one of the leading causes of death and illness in the UK. It accounts for 40-60% of the life expectancy gap between men and women in England. Every year around 100,000 people die from smoking, with many more deaths caused by smoking-related illnesses. Smoking increases the risk of developing more than 50 serious health conditions. Some conditions may be fatal and others can cause irreversible long-term damage to health. Smoking consequently accounts indirectly for the growing burden on both the health and social care service.

4.1.2 About 9 out of every 10 cases of lung cancer have been caused by smoking, which also causes cancer in many other parts of the body, including the mouth, lips, throat, voice box (larynx), oesophagus (the tube between the mouth and stomach), bladder, kidney, liver, stomach, and pancreas.

4.1.3 Smoking damages the heart and blood circulation, increasing the risk of developing conditions such as cardiovascular disease (which includes coronary heart disease, stroke and peripheral vascular disease). Smoking also damages the lungs, leading to conditions such as chronic bronchitis (inflammation of the main airways in the lungs), emphysema (damage to the small airways in the lungs), and pneumonia (infection in the lungs). Smoking can also worsen or prolong the symptoms of respiratory conditions such as asthma, or respiratory tract infections such as the common cold.

4.1.4 In men, smoking can cause impotence because it limits the blood supply to the penis through the sclerosing (thickening, narrowing) effects it produces on blood vessels. It can also affect the fertility of both men and women, making it more difficult to have children.

4.1.5 Smoking during pregnancy puts the unborn baby's, as well as the mother's, health at risk. Smoking during pregnancy increases the risk of complications such as miscarriage, premature (early) birth, a low birth weight baby and stillbirth.

4.2 Alcohol misuse

4.2.1 Alcohol is a powerful chemical that can have a wide range of adverse effects on almost every part of the body, including the brain, bones and heart. Alcohol misuse and its associated risks can have both short-term and long-term effects. According to the Longevity Science Advisory Panel, alcohol misuse accounts for about 20% of the gap in life expectancy between men and women in England.

4.2.2 Some of the risks associated with alcohol misuse include:

- Accidents and injury (more than one in 10 visits to the Derriford accident and emergency department are due to alcohol-related illnesses)
- Violence and antisocial behaviour (each year in England over 1.2 million violent incidents are linked to alcohol misuse; in Plymouth the number is likely to be in excess of 5,000)
- Unsafe sex (this can lead to unplanned pregnancies and sexually transmitted infections)
- Loss of personal possessions (many people lose personal possessions, such as their wallet or mobile phone, when they are drunk)
- Unplanned time off work or college (putting an individual's job or education at risk)

4.2.3 Alcohol poisoning occurs when excessive amounts of alcohol start to interfere with the body's automatic functions such as breathing, heart rate, and gag reflex (which prevents choking). Alcohol poisoning can cause a person to fall into a coma and could lead to their death.

4.2.4 Drinking hazardous amounts of alcohol for many years will eventually take its toll on many of the body's organs and may cause organ damage. Organs known to be damaged by long-term alcohol misuse include the brain and nervous system, heart, liver and pancreas. Heavy drinking can also increase blood pressure and blood cholesterol levels, both of which are major risk factors for heart attacks and strokes. Long-term alcohol misuse can weaken the immune system, increasing vulnerability to serious infections. It can also weaken bones, placing an individual at greater risk of fracturing or breaking them. There are many long-term health risks associated with alcohol misuse. They include high blood pressure, stroke, pancreatitis, liver disease, liver cancer, mouth cancer, head and neck cancer, breast cancer, bowel cancer, depression, dementia, sexual problems, such as impotence or premature ejaculation and infertility.

4.2.5 As well as having a significant impact on health, alcohol misuse can also have long-term social implications. For example, it can lead to family break-up and divorce, domestic abuse, unemployment, homelessness and financial problems.

4.3 Lack of physical activity

4.3.1 Many people take no physical activity during a typical week. Physical inactivity is the most common risk factor for heart disease in the UK with seven out of 10 women and six out of 10 men not active enough to achieve health benefits. It is estimated that in the UK, about 36% of deaths from heart disease in men and 38% of deaths from heart disease in women are related to lack of physical activity, compared to only 19% of heart disease deaths being related to smoking. Physical activity is one of the best preventative medicines. It halves the risk of developing heart disease and could avert 9% of deaths from coronary heart disease if people who are currently physically inactive or have a low level of physical activity increased their activity to a moderate level.

4.3.2 Physical activity plays an important part in preventing heart disease by helping to lower high blood pressure which in turn reduces the risk of having a stroke (particularly the more dangerous ones involving bleeding in the brain). It also increases the HDL-cholesterol level (the good cholesterol) in the blood, reduces weight if you are overweight and helps to maintain it, controls blood sugar (glucose), reduces the chance of developing diabetes, prevents blood clotting and lowers the risk of osteoporosis.

4.3.3 Just getting moving everyday can also help people feel more energetic, feel better about themselves, relieve stress, reduce feelings of anxiety and depression, and relax.

4.4 Poor diet

4.4.1 The Department of Health recognises food poverty as 'the inability to afford, or to have access to, food to make up a healthy diet.' Tackling food poverty is recognised as key to achieving government targets on reducing inequalities. Those who are most likely to experience food poverty are people living on low incomes or who are unemployed, households with dependent children, older people, people with disabilities, and members of black and minority ethnic communities.

4.4.2 A poor diet is characterised by excessive intakes of saturated fat, salt or sugar, and an insufficient consumption of fruit and vegetables, and dietary fibre. Inequalities in people's diets can result in inequalities in people's health. People on low incomes eat more processed foods which are much higher in saturated fats and salt. They also eat a smaller variety of foods. This is related to economies of scale and fear of potential waste. People living on state benefits eat less fruit and vegetables, less fish and less high-fibre breakfast cereals. People in the UK living in households without an earner consume more total calories, and considerably more fat, salt and non-milk extrinsic sugars than those living in households with one or more earners. Socioeconomic differences account for 5,000 deaths a year in men aged less than 65 years of age. In all age groups, people living on a low income have higher rates of diet-related diseases than other people. There are differences in diet-related disease in different ethnic groups. For example, stroke mortality rates are around 50% higher in South Asian and black Caribbean men and women than in the general population.

4.4.3 Poor diet is a major health risk. It contributes to almost 50% of coronary heart disease deaths, 33% of all cancer deaths, increased falls and fractures in older people, low birthweight births, increased childhood morbidity and mortality and increased dental caries in children. There is also growing evidence to support the link between poor diets and anti-social behaviour.

4.4.4 A relevant aspect of poor diet related to early years is infant breastfeeding. Breastfeeding has been suggested as a potential protective factor against weight gain in childhood and this is important because overweight children and adolescents are at risk of becoming overweight adults. In Plymouth the breastfeeding initiation rate was 70.3% in 2013. However, this ranged from 43.1% in Barne Barton to 89.9% in the Greenbank & University neighbourhood (a more than two-fold difference). By the time of the 6-8 week check only 36.6% of Plymouth children were still being breastfed in 2013, ranging from 13.6% in Barne Barton to 63.1% in Peverell & Hartley (a more than four-fold difference).

4.4.5 We can secure significant health benefits at both the population and individual level in Plymouth by enabling a shift towards the recommended balanced diet and achievement of targets for breastfeeding initiation and maintenance at 6-8 weeks. For example, lowering cholesterol levels by just 10% in the UK would prevent approximately 25,000 deaths every year.

5. What are the four chronic diseases?

5.1 Cancer

5.1.1 Cancer is a group of conditions where cells in a specific part of the body grow and reproduce uncontrollably. Although cells in different parts of the body may look and work differently, most repair and reproduce themselves in the same way. Normally, cells divide in an orderly and controlled way but if for some reason the process gets out of control, the cells carry on dividing and develop into a lump called a tumour (swelling). Tumours are either benign (slow growth, non-spreading) or malignant (rapidly growing and spreading). In a benign tumour, the cells do not spread to other parts of the body. However, they may carry on growing at the original site, and may cause a problem by pressing on surrounding organs. In a malignant tumour, the cancer cells have the ability to spread beyond the original area of the body. If the tumour is left untreated, it may spread into surrounding tissue. Sometimes cells break away from the original (primary) cancer. They may then spread to other organs in the body through the bloodstream or lymphatic system.

5.2 Heart disease

5.2.1 Coronary heart disease (CHD), is the leading cause of deaths in the UK, causing around 82,000 deaths each year. About one in five men and one in eight women die from the disease. There are an estimated three million people living with the condition in the UK and two million people affected by angina (the most common symptom of CHD). CHD generally affects more men than women, but from the age of 50 the chances of developing CHD are similar for men and women.

The main symptoms of CHD are angina (chest pain related to reduced oxygen supply to the heart muscle but not associated with death of the heart muscle) and a heart attack (death of the heart muscle). Over time, CHD can weaken the heart muscle and lead to heart failure (in which the heart can't pump enough blood to meet the body's needs) and arrhythmias (problems with the rate or rhythm of the heartbeat).

5.2.2 CHD is the term that describes what happens when the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries. Over time, the walls of the arteries can become furred up with fatty deposits. This process is known as atherosclerosis and the fatty deposits are called atheroma. Atherosclerosis can be caused by lifestyle habits and other conditions, such as smoking, high cholesterol, high blood pressure (hypertension) and diabetes.

5.3 Stroke

5.3.1 A stroke occurs when the blood supply to part of the brain is cut off. Strokes are a medical emergency and prompt treatment is essential because the sooner a person receives treatment, the less damage is likely to happen. Like all organs, the brain needs the oxygen and nutrients provided by blood to function properly. If the supply of blood is restricted or stopped, brain cells begin to die. This can lead to brain damage and possibly death. There are two main causes of strokes (1) ischaemic - the blood supply is stopped due to a blood clot (accounting for over 80% of all cases) and (2) haemorrhagic - a weakened blood vessel supplying the brain bursts and causes brain damage. There is also a related condition known as a transient ischaemic attack (TIA), where the supply of blood to the brain is temporarily interrupted, causing a 'mini-stroke'. TIAs should be treated seriously as they are often a warning sign that a stroke is coming.

5.3.2 Every year over 150,000 people in England have a stroke and it is the third largest cause of death, after heart disease and cancer. The brain damage caused by strokes means that they are the largest cause of adult disability in the UK. People over 65 years of age are most at risk from having strokes, although 25% of strokes occur in people who are under 65. It is also possible for children to have strokes. People of South Asian, African or Caribbean descent are at a higher risk of strokes; this is partly because of a higher prevalence of diabetes and heart disease, which are two conditions that can cause strokes. Smoking, being overweight, lack of exercise and a poor diet are also risk factors for stroke. Also, conditions that affect the circulation of the blood, such as high blood pressure, high cholesterol, atrial fibrillation (an irregular heartbeat) and diabetes, increase the risk of having a stroke.

5.4 Respiratory disease

5.4.1 Chronic obstructive pulmonary disease (COPD) is the name for a collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease. People with COPD have difficulties breathing, primarily due to the narrowing of their airways, this is called airflow obstruction. The main cause of COPD is smoking. The likelihood of developing COPD increases the more a person smokes and the longer they've been smoking. This is because smoking irritates and inflames the lungs, which results in scarring. Over many years, the inflammation leads to permanent changes in the lungs.

The walls of the airways thicken and more mucus is produced. Damage to the delicate walls of the air sacs in the lungs causes emphysema and the lungs lose their normal elasticity. The smaller airways also become scarred and narrowed. These changes cause the symptoms of breathlessness, cough and phlegm associated with COPD. Some cases of COPD are caused by fumes, dust, air pollution and genetic disorders, but these are rarer.

5.4.2 COPD is one of the most common respiratory diseases in the UK. It usually affects people over the age of 35, although most people are not diagnosed until they are in their fifties. It is thought there are over three million people living with the disease in the UK, of which only about 900,000 have been diagnosed. This is because many people who develop symptoms of COPD do not get medical help and some dismiss their symptoms as a 'smoker's cough'. COPD affects more men than women, although rates in women are increasing.

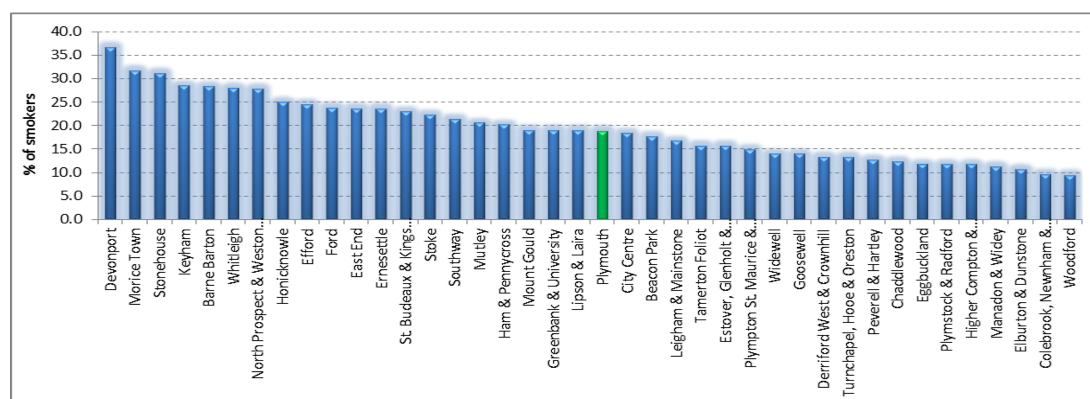
6. What are the 4-4-54 patterns of behaviour in Plymouth's neighbourhoods?

6.1 In this section, I present neighbourhood-based information. This is made possible as the numbers of 'events' (e.g. adults smoking) are sufficiently large and the data is sufficiently robust. This is not the case with mortality data from the four chronic diseases presented in a subsequent section. In other words, as the number of deaths is much smaller than the number of people engaging in a particular behaviour, this information is best presented on a larger geographic basis (e.g. electoral wards or the city as a whole).

6.2 Information relating to two of the specific behaviours (smoking and alcohol consumption) is presented below. As neighbourhood-based information on diet and exercise is not currently available, I present information on the neighbourhood distribution of 'excess weight' as a proxy measure to indicate the likely distribution of levels of poor diet and exercise at neighbourhood level in Plymouth.

6.3 I will address the lack of data on each of the four behaviours at sub-city level through the Wellbeing Survey which the Council's Public Health Team has commissioned with support from Public Health England. As well as collecting information on patterns of wellbeing at electoral ward level across the city, this survey will record information on smoking, diet, exercise and alcohol consumption. I will use the intelligence from this survey to inform the development of the 4-4-54 programme in Plymouth.

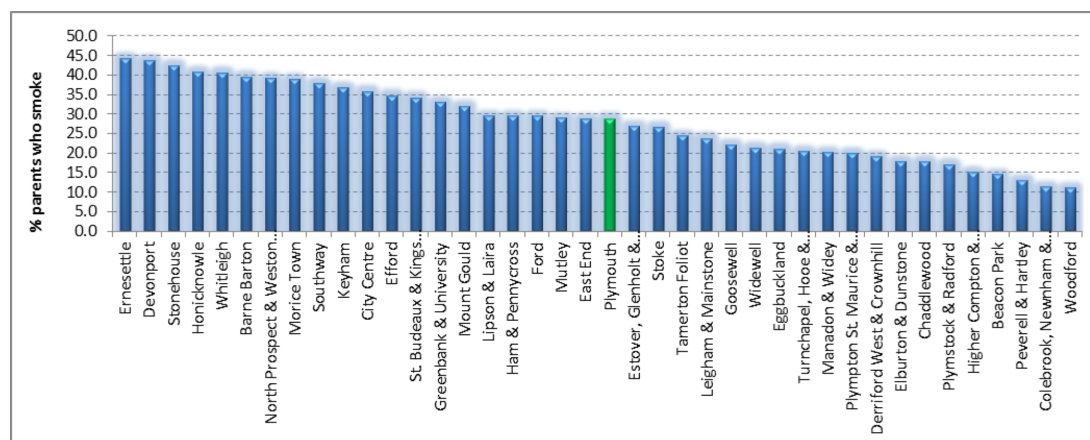
Figure 2 - Adult smokers by neighbourhood (%), 2012/13



Source: Tamar Referral and Appointments Centre data extract

6.4 In 2012/13 the percentage of smokers in Plymouth was 18.9%. The percentage of smokers by neighbourhood ranged from 9.4% in Woodford to 36.7% in Devonport (an almost four-fold difference). It's worth noting that this data is based on the smoking status of adults who were referred to hospital (for any condition) as opposed to the population as a whole and as such should be considered as a proxy measure of smoking in the Plymouth population as a whole.

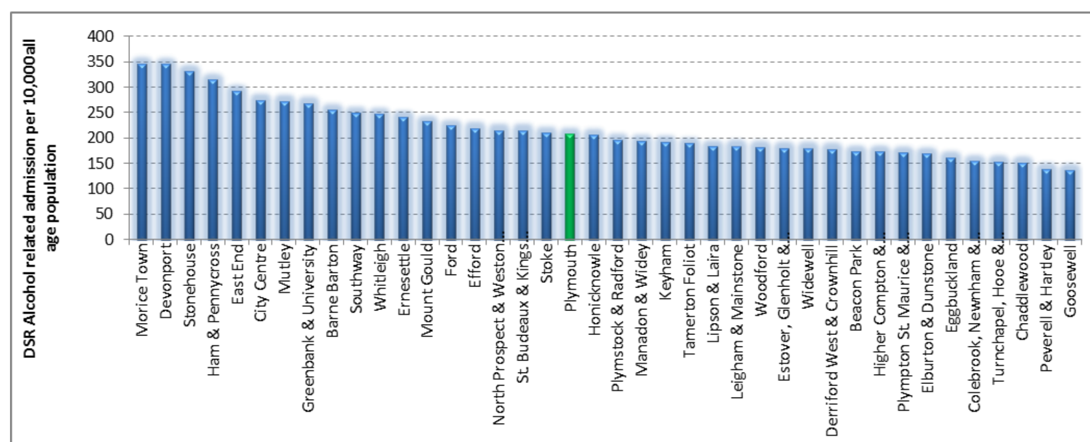
Figure 3 - Percentage of families with parents who smoke, according the Plymouth Health Visitor Caseload Survey



Source: Survey of Health Visitor caseloads 2012

6.5 In 2012/13 the percentage of families where 'one or more parents smoke' was 28.8%. This ranged from 11.2% in Woodford to 44.4% in Ernesettle (an almost four-fold difference).

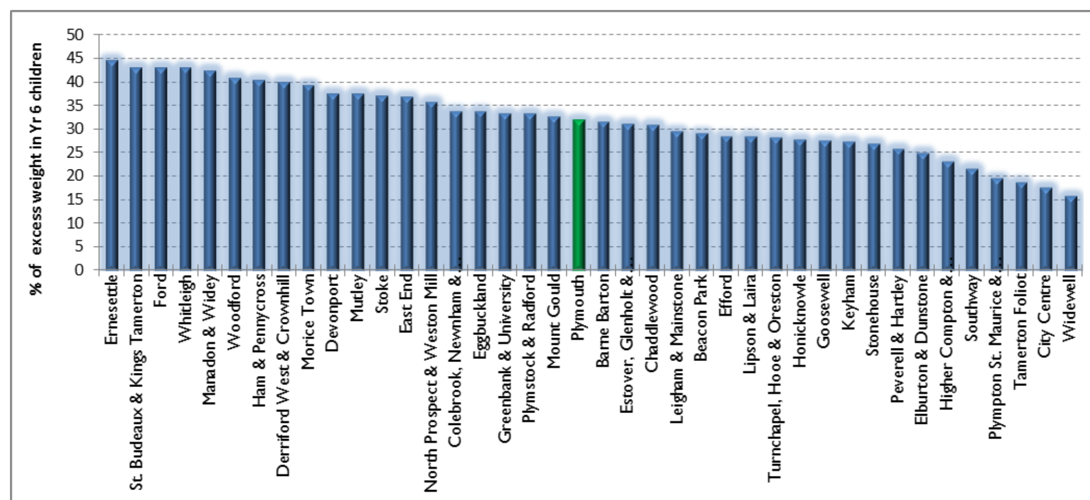
Figure 4 - Alcohol-related hospital admissions (directly age-standardised) per 10,000 all-age population by neighbourhood, 2012/13



Source: SUS alcohol-related admissions data

6.6 In 2012/13 the rate of alcohol-related hospital admissions in Plymouth was 209.7 per 10,000 all-age population. This ranged from 137.7 per 10,000 in Goosewell to 346.5 per 10,000 in Morice Town (a more than two-fold difference).

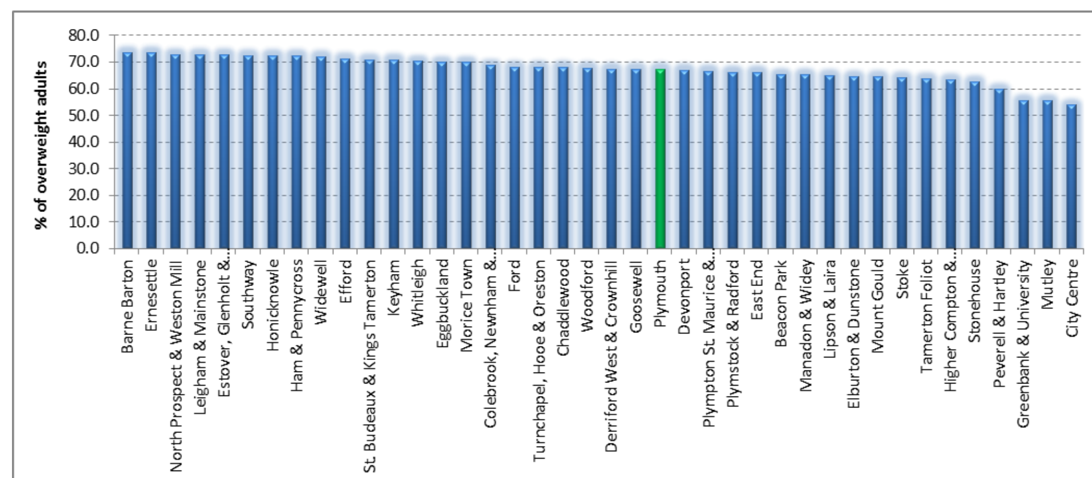
Figure 5 - Excess weight in Year 6 children by neighbourhood (%), 2012/13



Source: National Child Measurement Programme

6.7 In 2012/13 the percentage of Year 6 children with excess weight in Plymouth was 32.1%. The percentage of Year 6 children with excess weight by neighbourhood ranged from 16.0% in Widewell to 44.6% in Ernesettle (a more than two-fold difference).

Figure 6 - Excess weight in adults by neighbourhood (%), 2012/13



Source: Tamar Referral and Appointments Centre data extract

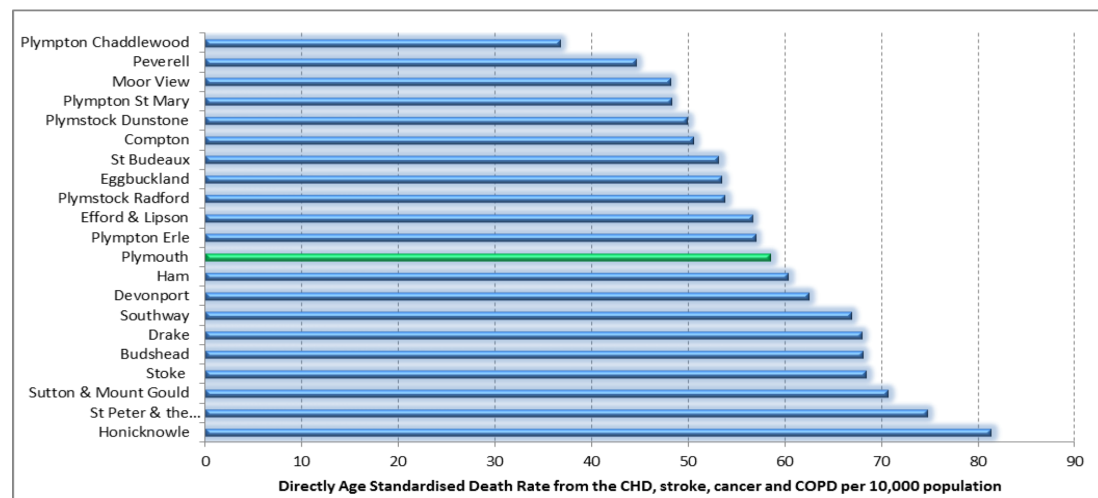
6.8 In 2012/13 the percentage of adults with excess weight (i.e. classified as overweight or obese according to their Body Mass Index) in Plymouth was 67.4%. The percentage of adults with excess weight by neighbourhood ranged from 54.3% in City Centre to 73.8% in Barne Barton (a difference of nearly 20 percentage points). This data is based on the body mass index of people who were referred to hospital (for any condition) as opposed to the population as a whole and as such should be considered as a proxy measure of overweight in the Plymouth population as a whole.

6.9 The information I have presented in Figures 2 to 6 highlights the clustering of behaviour patterns in certain areas of the city.

7. What are the 4-4-54 variations in mortality rates within Plymouth?

7.1 In this section, I present electoral ward-based mortality rates for the four chronic diseases (combined) to highlight the variation that exists across the city. The rates are age-standardised to remove the variation in rates that would be found as a result of the areas having populations with different age structures.

Figure 7 - Mortality rate for CHD, stroke, cancer, and COPD combined per 10,000 all-age population by Plymouth electoral ward, 2012



Source: ONS mortality extract 2012

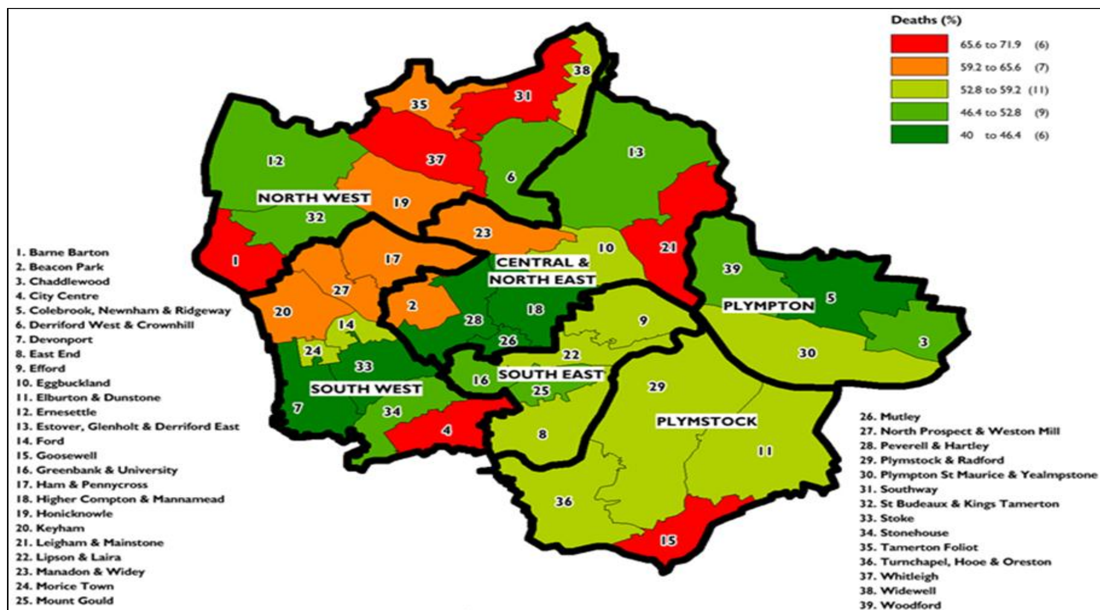
7.2 In 2012 the mortality rate for CHD, stroke, cancer and COPD combined in Plymouth was 58.5 per 10,000 all-age population. The rate by ward ranged from 36.7 per 10,000 in Plympton Chaddlewood to 81.2 per 10,000 in Honicknowle (a more than two-fold difference).

8. What are the 4-4-54 proportions of deaths in Plymouth?

8.1 In this section the percentages of total deaths due to the four chronic diseases are shown in maps of Plymouth's neighbourhoods (Figure 8) and electoral wards (Figure 9).

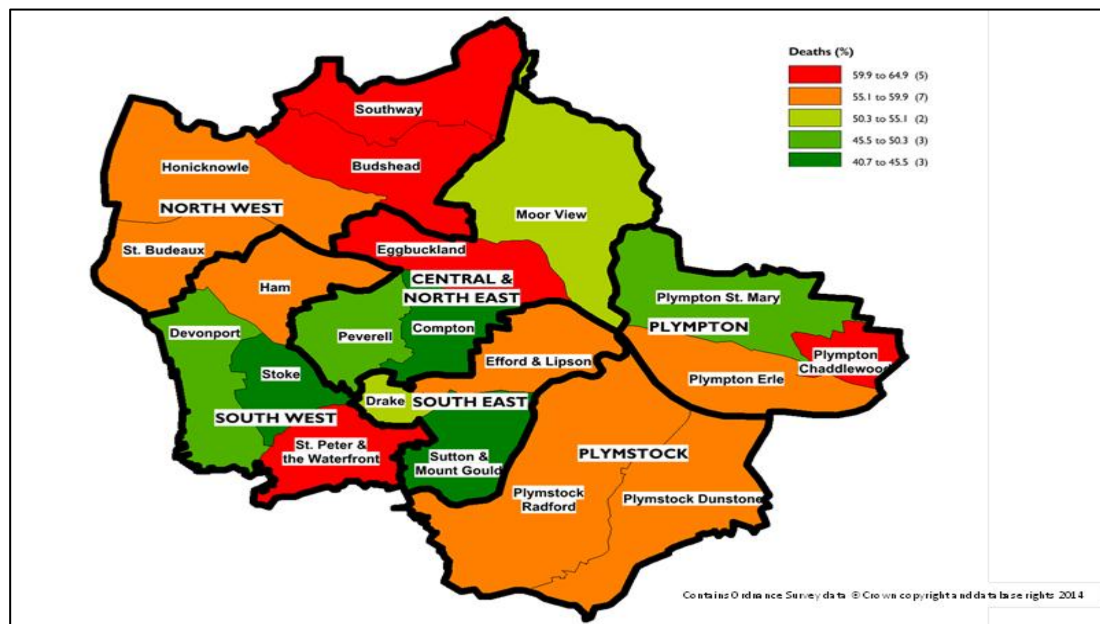
8.2 In 2012 there were a total of 2,453 deaths in Plymouth. Of these 1,324 (54%) were from the four chronic diseases (cancer 715, CHD 307, stroke 152, COPD 150 deaths).

Figure 8 - Deaths from CHD, stroke, cancer and COPD combined (% of all deaths) by neighbourhood, 2012



8.3 The percentage of deaths from CHD, stroke, cancer and COPD combined (as a percentage of all deaths) by neighbourhood ranged from 40.0% in both Mutley and Peverell & Hartley to 71.9% in Goosewell (a difference of more than 30 percentage points). As shown on the map in Figure 8, although there are neighbourhoods with high values (red) scattered across the city, there are considerable concentrations in the North West and South West of the city.

Figure 9 - Deaths from CHD, stroke, cancer and COPD combined (% of all deaths) by electoral ward, 2012



8.4 The percentage of deaths from stroke, CHD, COPD and cancer combined (as a percentage of all deaths) by ward ranged from 40.7% in Stoke to 64.9% in Plympton Chaddlewood (a difference of almost 25 percentage points). Analysis of information on an electoral ward basis often hides the inequalities that exist when the same information is considered at a smaller geographic level. Further electoral ward-based information is shown in Appendix 2.

9. The framework setting out the 4-4-54 approach to addressing health inequalities

9.1 The 4-4-54 approach to addressing health inequalities in Plymouth can be summarised by the framework shown in Table 1. At the heart of the framework is the unifying focus (4-4-54). This is preceded by the recently agreed ODPH vision statement. The principles underlying 4-4-54 are also listed and highlight that it will be long-term, collaborative, inclusive, fair, flexible, integrated, and evidence-based.

Table 1 - Framework setting out the 4-4-54 approach to addressing health inequalities

ODPH vision statement	Supporting the development of healthy and happy communities in Plymouth by using social networks, increasing investment in public health and putting health and wellbeing at the heart of everything we and our partners do
Message	Four behaviours (individually or in combination) increase the risk for four chronic diseases that together cause more than 54% of all deaths in Plymouth
Unifying focus	4-4-54 Plymouth
Objective	To reduce health inequalities in Plymouth by building a Plymouth City Health & Wellbeing Collaborative with multiple participating organisations and one or more sponsors
Principles	1. **Long-term**: 10 year plan to improve health and wellbeing and reduce health inequalities.
	2. **Collaborative**: Work with all partners across the city to realise a shared agenda.
	3. **Inclusive**: Something for everyone (all ages, all abilities, households and institutional settings, homeless, marginalised and vulnerable residents).
	4. **Fair**: Focusing on preventable deaths will help reduce health inequalities across the life course.
	5. **Flexible**: Encourage variety and wide range of options.
	6. **Integrated**: Prevention is linked to early detection and effective treatment of chronic diseases.
	7. **Evidence based**: Drawing on what works elsewhere and assessing work done in Plymouth.

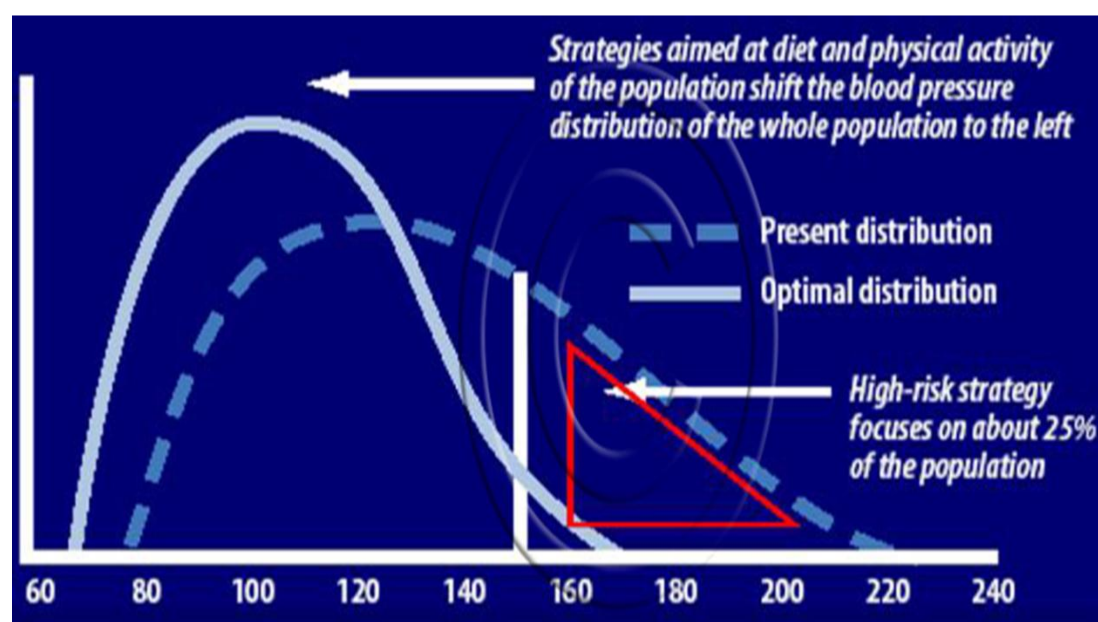
10. The three approaches underpinning the framework

10.1 The population prevention approach

10.1.2 The population prevention approach is a public health oriented approach which consists of shifting the population distribution of a condition (usually a risk factor for a disease) in order to prevent a higher number of cases of the disease. The fundamental concept is that a large number of people at low risk (of developing a disease) may give rise to more cases of the disease than the small number who are at high risk. For example, if there are a lot of 30 year olds with low risk, but a few 50 year olds with high risk, then more cases will occur in the 30 year old cohort, simply because there are more of them. The advantages of this approach are that there is a large potential to change the distribution of a risk factor in a whole population, and that because changes are happening to whole populations, individuals will not have to struggle to change their behaviours in the face of peer-pressure. Although some see disadvantages in the fact that large changes will be seen at a population level while only small changes will be apparent at an individual level, I don't view it that way. Instead, I reckon it's an opportunity to say to Plymouth people – 'you only need to make a little change to help make a big difference in Plymouth'.

10.1.2 The more traditional 'high-risk' approach to prevention is where medical professionals identify people with a condition (e.g. high blood pressure) and prescribe medication to prevent it developing into cardiovascular disease or other hypertension-related diseases. The advantages are that the subjects are likely to be motivated to take the medication and the intervention will be tailored to the individual. The disadvantages are that any fixes may be temporary because the cause is often not identified.

Figure 10 – The population approach applied to the blood pressure distribution in a population



10.1.3 Importantly, the prevalence of adverse risk factors such as smoking, poor diet, lack of physical activity and excess alcohol consumption is higher in areas characterised by higher levels of disadvantage. Appealing to individual willpower to change in these communities leads to a disproportionate amount of effort for small returns. Partly this is because the financial and non-financial cost of personal lifestyle change in these communities is comparatively high (and is starting from a base of poverty and living in deprived environments). So, although the overall success of individual approaches can be impressive, they may mask serious inequalities in health and make them prone to widen.

10.1.4 However, many current interventions are dependent on the individual. They include smoking cessation, vaccination uptake, various forms of screening, uptake of rehabilitation for drug misuse, and reduction in teenage pregnancies. These interventions depend on people accepting preventive and treatment services or taking preventive action themselves. A more strategic population prevention approach is exemplified by mass public health campaigns. This is best undertaken at scale and is the difference between (for example) smoking cessation and tobacco control, using fluoride toothpaste and fluoridating water, traffic calming as well as speed limits, and compulsory immunisation before school entry compared with individual parental choice in presenting their child. Once the population approach is taken, the balance of risk and benefit changes.

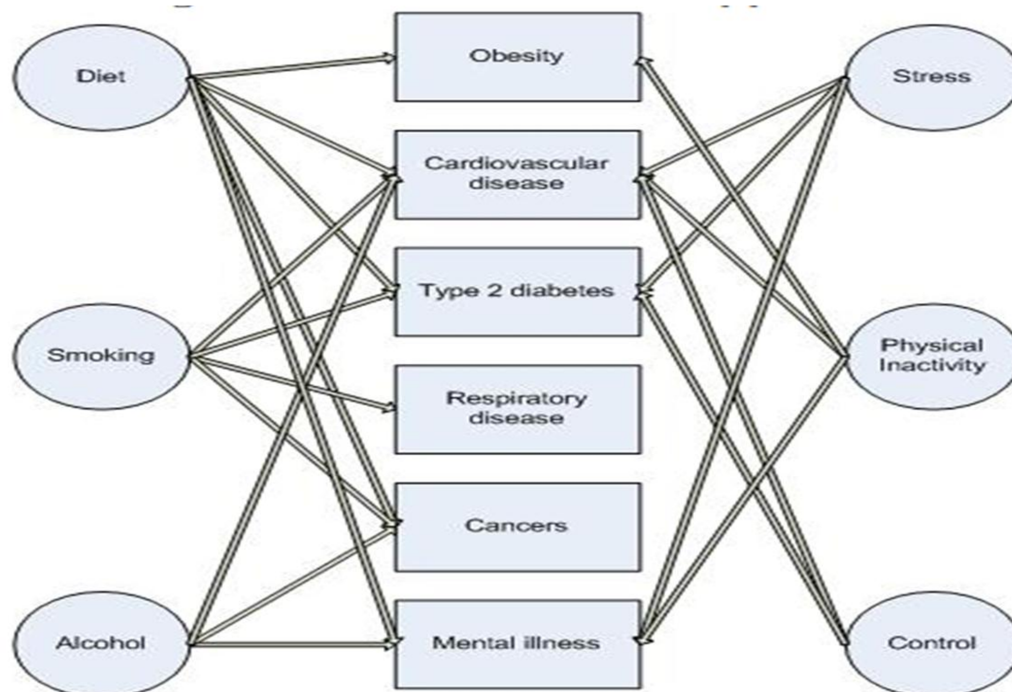
10.2 The common risk factor approach

10.2.1 The risk factors for poor health are often shared by groups or populations. For example, a smoker is likely to drink more alcohol, have a worse diet and take less exercise than a non-smoker. This clustering of risk factors occurs in individuals and groups, particularly those at the lower levels of the social gradient. This highlights the potential of having more integrated interventions aimed at improving health behaviour and engaging communities, rather than parallel interventions for different issues such as smoking, diet, physical activity and alcohol.

10.2.2 A number of chronic diseases have risk factors in common and many risk factors are relevant to more than one chronic disease. The common risk factor approach therefore based on an integrated model that aims to address a small number of risk factors that may have a major impact on a large number of diseases. The approach is considered to have greater efficiency than interventions aimed at disease specific approaches.

10.2.3 A major criticism of preventive and educational programmes has been the narrow and isolated approach adopted. This uncoordinated approach can at best lead to a duplication of effort, but often results in conflicting and contradictory messages being delivered to the public. The common risk factor approach recognises that chronic non-communicable diseases such as heart disease, stroke, cancers, and respiratory problems share a set of common risk conditions and factors.

Figure 11 – The common risk factor approach



10.2.4 The key concept of the common risk factor approach is that by directing action on these common risks and their underlying social determinants, improvements in a range of chronic conditions will be achieved more efficiently and with greater effectiveness. The common risk factor approach provides a rationale for partnership working. A wide range of national and local health initiatives exists, which provide an ideal opportunity to integrate health actions.

10.3 The behaviour change approach (changing the context in which people make choices)

10.3.1 Despite the overwhelming amount of information on the negative effects of smoking, poor diet, lack of physical activity and excess alcohol consumption, all these health risks remain prevalent. Most people know how to improve their health, and many want to do it. Yet, despite good intentions, change is hard to achieve. Research shows that having information and a desire to change is often insufficient. This disconnect between knowing what needs to be done and actually doing it is known as the intention behaviour gap. There are six major factors that undermine healthy intentions.

- We are wired to favour impulsive choices
- We are too busy to make clear headed decisions
- We have limited willpower
- We live for today
- We are influenced by our environment
- We tend to go with the flow

Changing the context in which people make choices can help to achieve better outcomes for the population as a whole either by complementing established policy tools or by suggesting more innovative interventions.

"One of the most important discoveries of behavioural economics is how little our behaviour is influenced by our intentions, and how much it is influenced by context." (Zoë Chance, Yale University)

11. Structure of the 10-year action plan supporting the 4-4-54 framework to addressing health inequalities

11.1 The action plan that will support the delivery of 4-4-54 in Plymouth will be based on the four individual themes that have been brought together to form the ODPH vision. Activities against each of these individual themes will be considered in the short, medium and longer term. These themes and the structure of the 4-4-54 supporting action plan are outlined in Table 2.

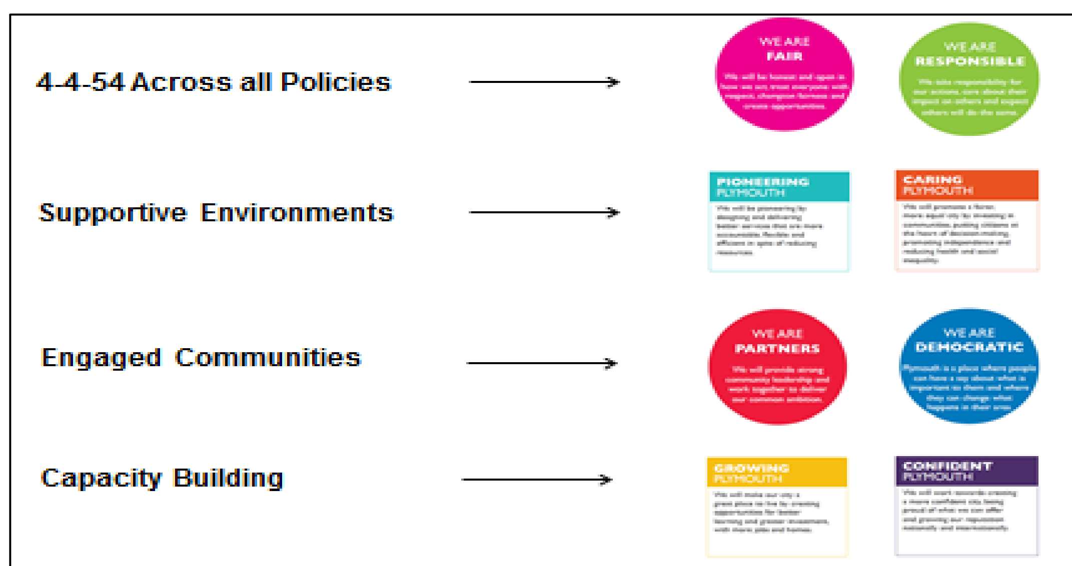
Table 2 - Themes and structure of the 4-4-54 supporting action plan

		Timeframe (years)		
		0-3	**4-6**	**7-10**
Theme 1	**4-4-54 across policies**			
Corporate Plan objectives	Pioneering (objective 1) Caring (objective 3)			
Theme 2	**Supportive environments**			
Corporate Plan values	Fair (value 3) Responsible (value 2)			
Theme 3	**Engaged communities**			
Corporate Plan values	Partners (value 4) Democratic (value 1)			
Theme 4	**Capacity building**			
Corporate Plan objectives	Confident (objective 4) Growing (objective 2)			

11.2 A completed summary version of this action plan covering the first three years of the programme can be found in Appendix 1. This action plan will be developed in the coming months as a result of dialogue with multi-agency partners across the city.

11.3 The links between the four individual themes and the values and objectives laid out in the Council's Corporate Plan are shown in figure 12.

Figure 12 – The relationship between 4-4-54 and the Corporate Plan



12. Summary

12.1 Most people are aware that health status is influenced by many factors including genetics, social circumstances, environmental exposures, health care, and behavioural patterns. What might be less obvious is that behavioural patterns have the single greatest influence on personal and population health. The behavioural patterns that limit health are socio-economically patterned, tending to cluster in poorer populations in our city.

12.2 There is scope to employ effective ways to support and enable people in lower socio-economic groups and those with the least education to improve their health-related behaviours. This requires collaborative, city-wide effort and a more holistic approach to policy and practice that addresses lifestyles of multiple rather than individual unhealthy behaviours.

12.3 I believe we can secure tangible gains in the health and wellbeing of Plymouth residents by linking behaviour change more closely to inequalities policy and focusing more directly on improving the health of the poorest fastest. This is the ethos behind the 4-4-54 approach to addressing health inequalities in Plymouth.

13. Acknowledgments

13.1 I introduced this concept which was originally developed by the Oxford Health Alliance. Robert Nelder and Moira Maconachie did background research, developed the narrative and wrote the early drafts. Simon Hoad and Sarah Macleod developed the analyses and some of the narrative. I did a final review of the draft with minor editing of the analyses and the text.

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Plymouth City Council

Appendix 1: Summary 4-4-54 action plan for years 0-3

Theme 1	4-4-54 across policies	Planned actions	Date	Comment
(1)	4-4-54 adopted by the Council	Action Plan and 4-4-54 approach presented to Caring Scrutiny Panel	2014	As requested by Budget Scrutiny meeting (January 2014)
(2)	4-4 -54 Plymouth	DPH annual report 2014/15 to focus on 4-4-54	2015	Examples from across the Council included in report. DPH public health annual report and subsequent reports for years 2 and 3 will be based on this framework and action plan
(3)	Build a collaborative of multiple organisations in the city in a Health & Wellbeing Collaborative	Map partners in relevant settings Design and deliver (with Corporate Comms) a social marketing concept to raise awareness of Plymouth 4-4-54 Plan an event to formally launch Plymouth 4-4-54 Draw up a Plymouth 4-4-54 Concordat to which Participating members of the collaborative will be invited to sign up	October 2014 to February 2015	
(4)	Prevention linked to early detection and effective treatment	Influence the CCG's Strategic Plan	New	Will be achieved through engagement with CCG both as part of core offer and through visible leadership achieved by engagement of ODPH with the CCG at both Western locality and NEW Devon
(5)	Prevention linked to improving access to services	Influence the CCG's Strategic Plan	New	Will be achieved through engagement with CCG on the Challenged Health Economy programme

(6)	4 -4-54 monitored and evaluated for impact	Included in the Public Health Team's workplan	2014 onwards	Included in remit of relevant area of Public Health Team following re-alignment of responsibilities
Theme 2	**Supportive environments**	**Planned actions**	**Date**	**Comment**
(1)	Enable wider access to healthy foods and local produce	Links with 'Food Plymouth' and 'Plymouth Food Charter'	Ongoing	Links already established via the Public protection service and the PCH Livewell Team. New work stream created in ODPH to co-ordinate efforts in the City around food poverty, nutrition and healthy diets in liaison with colleagues in City of Service initiative
(2)	Enable wider access to leisure facilities for residents of all ages and abilities	Through reviews of existing commissioned activity and implementation of recommendations of the sport and physical activity needs assessment	Ongoing	Existing commissioned activity focusses on priority groups and in priority areas. The recommendations of the sport and physical activity needs assessment will be considered by a partnership group.
(3)	Enable wider access to active transport routes	Ongoing support of 'Plymotion' work with the Council's Transport Planning Team	Ongoing	New business partnering arrangements between Public Health and other council team will enable this work to continue.
(4)	Enable responsible sale and use of alcohol	Enable safe drinking environments and restrict availability of super-strength alcohol	2014 onwards	The Public Health Team currently co-ordinates the delivery of the Strategic Alcohol Plan
(5)	Enable healthier workplaces and routes into employment	The Business Health Network is currently commissioned through the PCH Livewell team. In addition, the Council is establishing an internal employee health and wellbeing programme.	2014 onwards	The new programme of work within the Council (led jointly by ODPH and HR) will focus on mental health, diet, exercise and smoking

(6)	Routes into employment	Commission the PCH Livewell Team to deliver a programme of work to enable people with mental health conditions to access to meaningful occupations	New	This is a new initiative for the Public Health Team working in partnership with the PCH Livewell team
Theme 3	**Engaged communities**	**Planned actions**	**Date**	**Comment**
(1)	Working with communities	To work with the Council's Homes and Communities Team to develop a plan for working with communities.	New	This is a priority for both Public Health and Homes and Communities. Therefore this work will be taken forward jointly
(2)	Enable civic leadership	Establish a small grant scheme for Councillors to enable identified health and wellbeing priorities in their wards to be addressed	New	This scheme is part of a larger programme of work with Councillors that the Public Health Team will be engaged in in 2014/15 and 2015/16
(3)	Enable active living in neighbourhood areas	Through reviews of existing commissioned activity that focusses on both priority neighbourhoods and client groups.	Ongoing	Future developments will include a commissioned service that includes activity for the elderly
(4)	Enable healthy choices in neighbourhoods areas	Working with elected members and partnership groups to determine the barriers to unhealthy choices	New	This scheme is part of a larger programme of work with Councillors that the Public Health Team will be engaged in in 2014/15 and 2015/16
(5)	Provide accessible services for all residents	Working with the People Directorate, develop a commissioning plan for people with complex needs and multiple vulnerabilities	New	Joint programme of work across the ODPH and People directorates to inform commissioning of services from 2016
(6)	Encourage residents to take up screening programmes	Existing public health commissioned activity carried out by the PCH Livewell Team	Ongoing	This work in ongoing

(7)	Encouraging residents to seek early diagnosis	Existing public health commissioned activity carried out by the PCH Livewell Team.	Ongoing	This work is ongoing
(8)	Engaging the resource of medical students from Plymouth University to deliver targeted behavioural change outreach in Devonport in liaison with Public Health and Primary Care	To develop a proposal for setting up a primary care-public health collaborative for Devonport (which I have titled Devonport TORCh*) in collaboration with Richard Ayres at the Cumberland Centre	July 2014	This work could be possibly sponsored but would involve collaboration with the University of Plymouth, Plymouth Community Healthcare and ODPH
Theme 4	**Capacity building**	**Planned actions**	**Date**	**Comment**
(1)	Increase capacity for delivery of this approach	Build the case through evidence of effect – include a thorough economic analysis for Plymouth Build a local suite of evidence of interventions that have been known to work	From Sept 2014	
(2)	Collaborate and encourage joint working	Business partnering arrangement to be established following re-alignment of Public Health Team's responsibilities	New	This will enable the Public Health Team to have a more effective impact across the Council as a whole.
(3)	Encourage evidence-based interventions	Access guidance documents from LGA, NICE, DH, PHE and ensure they are shared as appropriate across the Council	Ongoing	This work is ongoing

(4)	Share knowledge and information	Ensure that data, information and intelligence is available when required and in the appropriate format. This includes making key publications available to partners via the Council website	Ongoing	This work is ongoing
(5)	Work with local media	Work with the Plymouth Herald and partners to ensure that key health and wellbeing improvement-related messages are communicated to the population via the 'I Love Life' campaign (ensure the programme is evaluated)	2014/15	Other partners involved in this campaign include Plymouth Community Healthcare, Plymouth Community Homes and Marjons
(6)	Monitor and evaluate progress	Included in the Public Health Team's workplan	2014 onwards	Included in remit of relevant area of Public Health Team following re-alignment of responsibilities.
(7)	ODPH commissioned services (link 4-4-54)	Review existing public health commissioned activity carried out by the PCH Livewell Team to ensure links are made to the 4-4-54 priorities	New	Once adopted, there may need to be a shift of focus in in commissioned activity to align with 4-4-54

Appendix 2: Numbers and percentages of deaths due to stroke, CHD, COPD, and cancer, by ward, 2012

Plymouth wards	2012 deaths (persons)	Stroke deaths	CHD deaths	COPD deaths	Cancer deaths	Total number of 4-4-54 deaths	% of all deaths from 4-4-54
Budshead	123	6	18	12	40	76	61.8
Compton	147	10	20	7	26	63	42.9
Devonport	115	4	8	11	33	56	48.7
Drake	61	1	9	7	15	32	52.5
Efford & Lipson	95	5	13	8	29	55	57.9
Eggbuckland	124	9	11	3	53	76	61.3
Ham	122	4	17	13	39	73	59.8
Honicknowle	184	10	25	15	55	105	57.1
Moor View	109	3	20	1	35	59	54.1
Peverell	122	8	14	4	30	56	45.9
Plympton Chaddlewood	37	1	7	5	11	24	64.9
Plympton Erle	107	10	11	9	34	64	59.8
Plympton St Mary	163	16	15	7	37	75	46.0
Plymstock Dunstone	138	16	14	7	44	81	58.7
Plymstock Radford	145	9	14	8	51	82	56.6
Southway	120	10	18	4	41	73	60.8
St Budeaux	101	5	16	9	30	60	59.4
St Peter & the Waterfront	158	9	26	13	47	95	60.1
Stoke	167	11	17	7	33	68	40.7
Sutton & Mount Gould	115	5	14	0	32	51	44.3
Plymouth	**2,453**	**152**	**307**	**150**	**715**	**1,324**	**54.0**