Geo Factsheet

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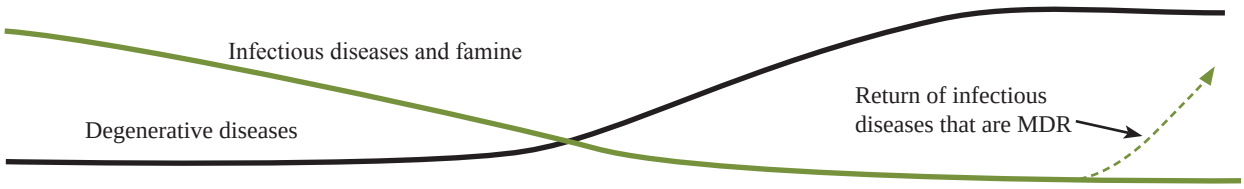
Patterns of Disadvantage - the Link between Poverty and Health

As a country develops economically, its ability to reduce the incidence of many infectious diseases improves. This is usually due to a greater understanding of the importance of hygiene coupled with access to more advanced medicine such as antibiotics. A low income, developing nation is more at risk from infectious diseases such as measles and because of poor sanitation water borne diseases such as cholera are more prevalent. Poor nutrition (which itself can lead to diseases such as kwashiorkor) can make the impact of all diseases more deadly as the individual does not have the resilience to fight the bacteria or viruses. In developed nations vaccination programmes have largely eradicated once fatal diseases like measles and diphtheria (although the 2013 outbreak of measles in South Wales due to under-vaccination shows we cannot become complacent when fighting such diseases).

Most developed nations have access to clean water and sanitation so the diseases that affect regions such as Europe and North America are different and are dominated by degenerative diseases such as cancer, heart disease and strokes. Diseases linked to poor lifestyle choices are also increasing in developed nations such as obesity and type 2 diabetes. Some developing countries such as China are at a crossroads with infectious diseases still rife, especially in the poor, peripheral regions and degenerative diseases increasing as they adopt western-style diets.

Figure 1 Epidemiological Transition Model (ETM)



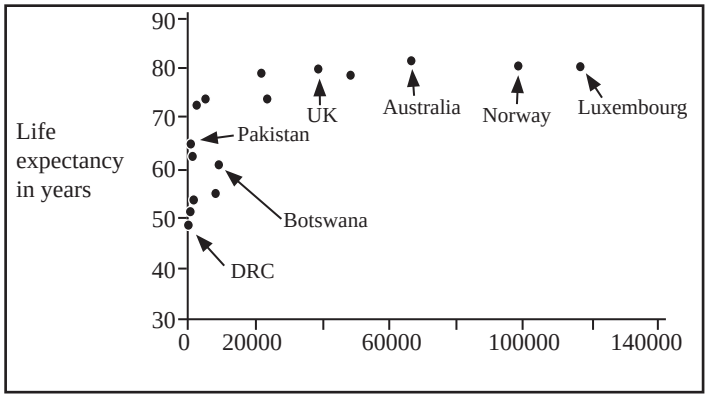
	The Age of Pestilence and Famine	The Age of Receding Pandemics	The Age of Degenerative Diseases	The Age of Delayed Degenerative Diseases	A Return to Pandemics? A Possible Future
Society	• Traditional society with hierarchical structure. • Poor living conditions and little or no sanitation. • Poor nutrition, especially for women and children. • A young population with agriculture as the main occupation	• Science advances and understanding of hygiene and sanitation increase. • Food output increases • Better housing • People less likely to die from infections • But still high in poor areas of cities linked to rapid industrialisation	• Rapid advances in medicine • Life expectancy increases in developed nations to >80. • Nuclear families are the norm. • Better educated women and rising living standards	• More single person households. • Ageing population • Globally, greater wealth disparities • Increase in dependent elderly population • Widespread use and misuse of antibiotics	• Society more divided • Economic recession could lead to breakdown of society. • In some regions, not enough young people to pay for care of elderly.· • Globally mobile population.
Diseases	• High birth and death rates • Epidemics of infectious diseases like measles, dysentery and TB. • Malnutrition and famine. • Unsafe water supplies leading to e.g. typhoid and cholera.	• Increase in diseases such as cancer and heart disease as people not killed off young via infection, so living longer • Diseases caused by industrial pollution e.g. pneumoconiosis	• Rise of degenerative diseases such as cancer and heart conditions. • Access to increased nutrition leading to obesity and Type 2 diabetes. • Respiratory diseases linked to air pollution. • HIV/AIDS increasing in some countries	• People living longer as infectious diseases largely controlled by antibiotics • Increasing numbers of deaths from Alzheimer's disease and from pneumonia	• Already, in 2013, Multi Drug Resistant (MDR) diseases are emerging, especially TB. • Some evidence already exists of Totally Drug Resistant (TDR) strains in India. • Avian Influenza, Ebola virus with rapid transmission due to air travel.
Management	• Use of traditional healers. • Isolation the only way to fight infection e.g. leper colonies	• Dedicated health facilities • Trained professionals e.g. doctors • Vaccinations	• Move to preventative medicine rather than curative. • Screening, monitoring. • Prevention of infectious diseases.	• Problem of long term care of elderly infirm. • More end of life care needed	• A return to isolation as the only method of control? • New medical advances NOT based on antibiotics, using new antimicrobial solutions.

Change over time due to economic development

The change across time as a country develops is called the epidemiological transition model (ETM) and is summarised in Fig.1. This model is a generalisation and aid from developed countries can help a developing country bypass some of the stages. For example, foreign funded immunization programmes can help countries leave the age of pestilence faster than they would have on their own. Developed nations now have to deal with rapidly ageing populations and the associated diseases such as the various forms of dementia, arthritis and osteoporosis. In the future we may return to an era of pestilence as there is the emergence of drug resistant strains of diseases such as TB in India, diseases which were once under control. Although the ETM shows changes over time, different countries exhibit different stages, or elements of these. These differences are largely linked to wealth.

Fig. 2 shows the Preston Curve in which life expectancy is plotted against GDP per capita. Generally, the higher the income the higher the life expectancy indicating link between poverty and the ability to fight disease and remain healthy.

Figure 2: The Preston Curve



- Poverty can be absolute or relative.
- Absolute poverty is usually measured in relation to income e.g. the number of people living on less than $2 a day.
- Relative poverty is measured within the society in which an individual lives. In the UK poverty is defined as those living on less than 60% of the average national income.

In 2012 the national average income per year was c. £26400, so you are poor in the UK if you earn less than £15, 840. Poverty has many causes and negatively impacts on individuals' health. Poverty restricts the ability of an individual to make choices

Fig. 3 summarises some of the links between poverty and health.

Figure 3: Some of poverty's impact on health

Poverty can mean:	leading to →	impact on health
• Less access to clean water • Insecure land tenure +/or population pressure on • Lack of money to access medical services • Cannot afford transport even if it exists • Poor sanitation. • Inadequate housing. • Country may not be able to afford immunization programme • Lack of choice of work leads to working in sex industry • Stress of daily survival • Children out to work at very young age		• Water borne diseases e.g. dysentery and cholera • Inability to feed family - malnutrition • Disease worsens. Death without intervention. • Difficult to access medical care. • Wastes left. Infections more likely to spread. • Lack of protection from elements- damp, cold or heat. • Higher number of deaths in infants from diseases e.g. measles • Increase in sexually transmitted diseases including HIV/AIDS • Mental health issues due to stress of poverty. • Lack of health and safety. Accidents and illness resulting.

Poverty and Health in Developing Countries- Pakistan and Botswana

Table 1 summarises data for three countries used within this Factsheet.

Table 1. Information case studies

	Pakistan	Botswana	Wales (UK in brackets)
GDP per capita in $	1199	9537	28697 (38811)
Life Expectancy	63	60	79.7 (80)
Infant Mortality Rate per 1000	96	46	4 (5)
Adult Death Rate per 1000 aged 15-60	207	348	79 (79)
% population HIV positive	0.1	24	0.04 (0.15)
% population in poverty	33	33	23 (20)
% unemployed	8.3 (much under-employment though)	25	9.5 (8.4)
Literacy Rate % Male	60	77	99 (99)
Literacy Rate % Female	31	82	99 (99)

Case Study: Pakistan

Is a poor country with a third of the population living in poverty, most in rural areas. It has a high level of infant mortality which can be partially linked to a very low level of literacy amongst women. Women in Pakistan, especially in the more rural areas, have a low social status and they have limited life choices. The majority of girls marry young and often have several pregnancies whilst still teenagers. A lack of medical care contributes to a high IMR but also to maternal mortality. The limited access to clean water and sanitation, coupled with low education levels, results in poor hygiene and the spread of infectious diseases. Once children have survived their first year, then poor nutrition can mean they do not develop fully, either physically or mentally, which can negatively impact on them throughout adult life. The population of the country is increasing rapidly and this is putting further strain on services, likely increasing the numbers in poverty even if not the proportion.

The government has a low expenditure on health and there is a lack of secure land tenure for many rural farmers resulting in low productivity of food crops. Children in rural areas are used as agricultural labour. This is especially true of girls who are often kept out of school, whereas boys are more likely to be sent for an education. Although child labour was banned in Pakistan in 1991, many children find illegal jobs. Child labour has many health risks such as the risk of injury due to lack of safety measures, damage to the skeleton or muscles due the carrying of excessive loads or suffering pesticide poisoning whilst working in unregulated agriculture. Poverty reduces choices and families make the decisions they do in order to survive.

Case Study: Botswana

Is a middle income developing nation, gaining wealth from its natural resources such as diamonds. However, it has high levels of poverty and income inequality; this is especially true of rural areas. During the 1990s life expectancy in Botswana actually fell due to the scourge of HIV/AIDS and in 2006, the average life expectancy was only 40 years. The government of Botswana has used some of the wealth generated by its natural resources and has invested heavily in programmes to educate and reduce the levels of infection of HIV/AIDS. By 2011 average life expectancy had risen to 55 years. Rural areas, where there is less access to clean water, infectious diseases dominate; including water borne ones such as cholera. In the wealthier cities, there has been a rise in non communicable diseases such as cancers and heart disease. Referring to Fig.1 Botswana is on the border of the age of receding pandemics and the age of degenerative diseases. Money is being invested in controlling possible pandemics such as drug resistant TB and HIV/AIDS and also the diseases linked to poor water supply, but at the same time diseases associated with higher economic development are becoming more important.

Case Study: Poverty and Health in the Developed World- Wales

In many developed nations such as the USA and the UK, there is a widening gap between the wealthiest and the poorest sectors of society. Reducing taxation to encourage businesses to make more money has not resulted in the expected trickle down of wealth to the poor- in fact it has exacerbated the wealth gap. Some areas within developed nations seem to be suffering higher levels of poverty than others. Looking at Table 1 Wales does not seem to be doing badly on the global scale with high life expectancy and low IMR, yet a quarter of its population live in poverty when compared to the UK as a whole. Within Wales there are marked areal differences in both poverty and health.

Figure 4 Life expectancy & Economically inactive

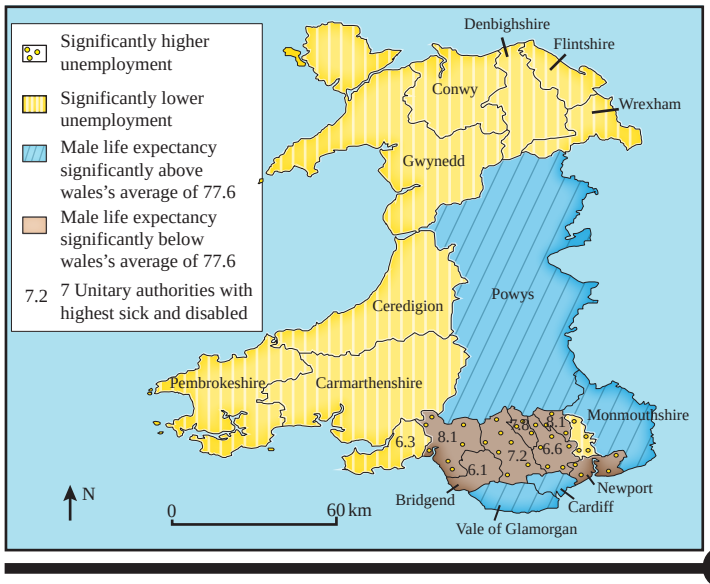


Fig. 4 shows the areas of Wales with the highest and lowest life expectancies, high and low levels of unemployment and those areas where there are high levels of people sick or disabled.
These are clustered in South Wales. These patterns repeat much of what occurred in the Great Depression of the 1930s as it was then that Wales began to suffer the consequences of the withdrawal of heavy industry from the South Wales area. As mining declined, people moved for jobs elsewhere if they could and the communities began to change and become less cohesive. The Coal mining and the steel industry had been the mainstays of the South Wales but with increasing foreign competition, demand fell and unemployment rose. The skills base was linked to these industries and since the 1930s, jobs have continued to be lost despite much government encouraged relocation of other industries to the area. The downturn in the economy since 2008 has continued the decline of manufacturing industry.

Much of the housing in South Wales was built in the 19th century during the period of expansion of industry in the region and consists of large numbers of terraced dwellings. This housing stock is now old and in many cases, in need of upgrading. The houses are poorly insulated and many suffer from damp, which adds to health problems.

Multiple Deprivation

Many studies have shown that material poverty is the most important factor determining life expectancy. A wider concept is that of deprivation where several factors are looked at that negatively impact on life. The Welsh Government have drawn up an Index of Multiple Deprivation incorporating a number of these factors: income; education; health; housing; community safety; geographical access to services and the physical environment. This was calculated across Wales. Although most areas of multiple deprivation occurred within the towns and cities of South Wales, some pockets of severe deprivation (the most deprived 10%)were also shown to exist in Rhyl and Wrexham in North Wales.

Merthyr Tydfil and Ceredigion

In the 19th century, the economy of Merthyr Tydfil in South Wales was based on heavy industry. Merthyr Tydfil was a centre for iron making as it had access to iron ore, coal from the nearby valleys and limestone. These industries declined throughout the 20th century and not enough replacement jobs have been developed. The valleys and high ground make new transport links expensive to build and the old housing stock and derelict industrial sites are not attractive to new industries. Despite government help to locate other industries in the area, few have flourished and this has impacted on the local economy and the health of the population. Ceredigion is in West Wales and although its average income is lower than the Welsh average, the quality of life and health appears to be better. Ceredigion has several small ports plus the university town of Aberystwyth but much of its economy is based on agriculture which historically offers lower than average wages.

The data in Table 2 summarises data for the two local authorities and highlights some of the differences. With much of heavy manufacturing moving abroad, the percentage economically inactive in Merthyr Tydfil is high and with large numbers who are working having to be on Income Support. Nearly a third of adults smoke and obesity is a growing problem, often linked to a lack of physical activity but also to a diet of cheap food which is high in fats. Conception rates for under 18 year olds are higher than average at 67.8 per 1000 births for Merthyr Tydfil but 36.6 per 1000 for Ceredigion. (The average for Wales is 38). Declining industries, the break -up of many of the traditional communities and a degraded environment with reducing numbers of job opportunities is resulting in poverty in Merthyr Tydfil.

Over a quarter of the population is economically inactive and with a third of people having a limiting long term illness, it is likely that incomes will stay low and thus impact on the families involved. With nearly a quarter of the population not having any qualifications, unless there is intervention it is likely that this town will struggle to attract new industries and for people's lives and health to improve. Ceredigion, despite its low average income, has a higher life expectancy and with far fewer claiming income support and disability allowance. Only 11% have no qualifications and there are more people working in professional and managerial roles. It is a more rural local authority with few of the legacies of the old heavy industries of the 19th century or its housing stock and the health of its population seems to be considerably higher than in Merthyr Tydfil. With nearly a third of its area in the 10% most deprived areas of Wales, Merthyr Tydfil is suffering from multiple deprivation, whereas Ceredigion has no areas within that designation. This inequity is being addressed by the Welsh Government to support good community health throughout the country.

Table 2- Merthyr Tydfil and Ceredigion Data

	Merthyr Tydfil	Ceredigion	Wales
% of area in most deprived 10% in Wales	32%	0%	
% on Job Seeker's Allowance	7.4%	2.2%	4.6%
%Economically inactive	26.3%	20.4%	20.5%
% on Income Support	15.1%	7.3%	10%
% on Disability Living Allowance	15.6%	6.8%	9.7%
Average Gross Earnings (2008)	£441	£424	£470
% with no qualifications	22%	11%	15%
% School students having free school meals	25%	12.2%	19%
% in managerial and professional posts	15.4%	20%	22%
% over retirement age	19.6%	23%	21%
Infant Mortality Rate per 1000	5.3	4.4	4.4
Male Life Expectancy at birth (years)	75.4	80.8	77.6
Male death rate per 100000 for circulatory (heart) disease under 65	79	43	58
% Low birth weight babies	8.1%	7.2%	7.4%
% Adults smoking	30%	24%	26%
% Adults exceeding recommended daily intake of alcohol	40%	29%	36%
% With limiting long term illness	33%	27%	27%
% Overweight or obese	60%	52%	55%
% adults who eat 5 portions fruit/veg a day	33%	41%%	35%

Conclusion

It is important for us all that diseases are monitored and controlled globally. With rapid transport links, particularly air travel, the potential for fast-spreading pandemics is always with us. The over-use of antibiotics in medicine and animal rearing has led to drug resistant disease strains such as that of tuberculosis (TB). The new form of this highly infectious disease could easily spread globally. Its main source areas are in the overcrowded, unsanitary living conditions of many of the world's poor. In March 2013 a new coronavirus, similar to the SARS outbreak of 2003, appeared in the Middle East and some deaths have occurred. Many new viruses occur where people and livestock live closely together, usually in very poor areas.

Developing nations should not be left to try and control the diseases within their borders. Health affects us all and its link to poverty means that there is a way out- Michael Marmot says in "Fair Society Fairer Lives" *Inequalities in health arise because of inequalities in society.....The magnitude of health inequalities is a good marker towards creating a fairer society.*

In developed countries not all areas are equal and there are people who are marginalised by poverty and also by access to knowledge and services linked to health. As more countries develop, there is an increase in non communicable diseases such as cancers and heart disease. With development seems to come four main risk behaviours linked to non communicable diseases: the harmful use of alcohol, an unhealthy diet, tobacco use and physical inactivity. Developed nations should prioritise enabling all of their citizens to live as healthy a life as possible and to remove barriers to this end. Growing inequality in income and health may lead to the destabilisation of societies even within the developed world. I t is becoming ever clearer that if we wish to reduce health problems, poverty has to be reduced for any improvement to be permanent and sustainable. This has to occur worldwide for the good of all of us long term- to enable living conditions that do not encourage the development of pandemics and access to health care for all.

Useful Sources of Information

1. Key statistics for Merthyr Tydfil from the Welsh Assembly at: http://www.assemblywales.org/merthyr_tydfil.pdf
2. "Our Healthy Future"- from the Welsh Assembly at: http://wales.gov.uk/docs/phhs/publications/100521healthyfutureen.pdf
3. World Health Organisation "Closing the Gap in a Generation" at: http://whqlibdoc.who.int/hq/2008/WHO_IER_CSDH_08.1_eng.pdf

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