Geography
HOMEWORK _____

9D 10 reasons we can't live forever

Name

Tutor Group

Teacher

The homework booklet contains essential reading on

◎ **Ten global controls on the human population: communicable and non-communicable diseases.**

Your homework will be set and reviewed on ✓

☐ Monday ☐ Tuesday ☐ Wednesday
☐ Thursday ☐ Friday

People ● Place ● Pattern ● Process

In this homework booklet you will read about ten reasons why humans don't live forever. Dearth can be a difficult topic to discuss but understanding how humans face multiple health issues is an important element in understanding the triumphs of civilisation as well as some of the pressures facing human societies. If you, for whatever reason you find this reading difficult then please speak to your teacher.

Introduction: Living longer and healthier

"In this world nothing can be said to be certain, except **death and taxes**, wrote Benjamin Franklin in 1789. Over two hundred years later, despite huge advances in medicines and science, we have yet to learn the secret of immortality. Yet how people pass away has been changing over those two centuries as life expectancy has steadily risen. When Franklin was writing the average American could expect to live for 36 years. Today, life expectancy in the USA is 78 and Hong Kong leads the world with an average life expectancy of 84.7 years.

In Britain, during the Twentieth Century people could expect to add three months of life expectancy for every year they lived. This is perhaps one of the greatest achievements of human civilisation, we can all expect to live much longer then our grandparents and much, much longer then their grandparents. Better food supplies, clean drinking water and sanitation, with the addition of medical advances such as vaccines and anti-biotics has transformed the life expectancy of humanity. It is what lies behind the rapidly growing human population of 7.7 billion and climbing.

But over those centuries the reason people die has changed. For most people famine is a thing of the past. In 1600, one third of the Russian population (2 million people) starved to death during a famine caused by a volcanic eruption in South America. Another 2 million people, one quarter of the Persian (Iranian) population, starved at the end of the First World War. Later between 1959 and 1961, the Great Chinese Famine claimed the lives of up to 40 million Chinese.

However, these deaths are dwarfed by the estimate 108 million premature deaths resulting from the wars of the Twentieth Century.

Today the annual worldwide human death toll of 59 million has many different causes. More than half of deaths (54%) were attributed to one of the top 10 causes. Heart disease and stroke are the world's biggest killers, accounting for a combined 15.2 million deaths in 2016. These diseases have remained the leading causes of death globally in the last 15 years.

Chronic obstructive pulmonary disease (COPD) claimed 3.0 million lives in 2016, while lung and throat cancers caused 1.7 million deaths. Diabetes killed 1.6 million people in 2016, up from less than 1 million in 2000. Deaths due to dementias more than doubled between 2000 and 2016, making it the 5th leading cause of global deaths in 2016 compared to 14th in 2000.

Respiratory infections remained the most deadly communicable disease (one that can be passed from person to person), causing 3.0 million deaths worldwide. Many health professionals fear a repeat of the 'Spanish Flu' epidemic which followed the First World war and claimed between 17 million and 50 million lives worldwide. **Scientists and doctors fear newly-evolving infectious diseases, could become pandemics as the spread rapidly around an increasingly connected world. This fear lies behind the huge international effort to track, trace, understand and, ultimately, develop a vaccine for the coronarius behind Covid-19. This illness first emerged in late 2019 in the Chinese city of Wuhan.**
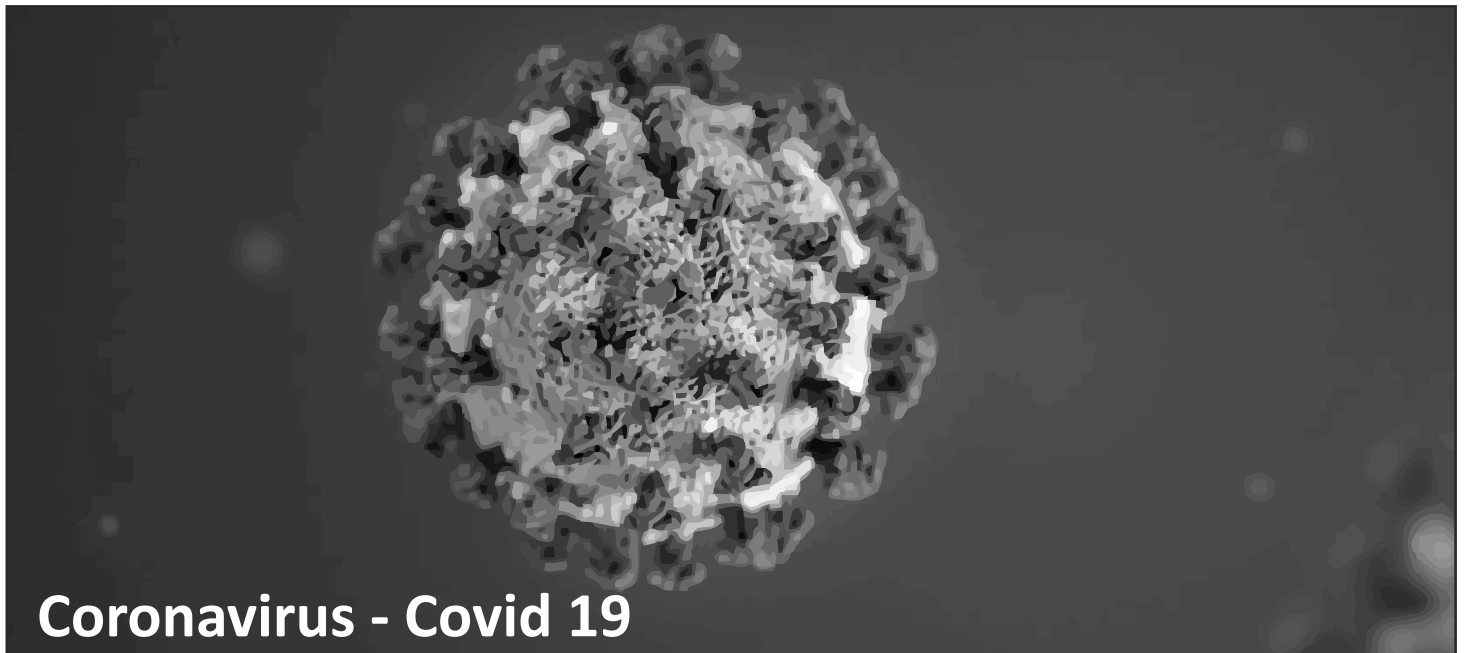
Coronavirus - Covid 19

Fears of a new virus may be scarey but many people die not of mysterious illness but of common, and treatable, diseases. The death rate from diarrhoeal diseases decreased by almost 1 million between 2000 and 2016, but still caused 1.4 million deaths. Similarly, the number of tuberculosis (TB) deaths decreased during the same period, but is still among the top 10 causes, with a death toll of 1.3 million. Over 1 million people died from HIV/AIDS in 2016, despite that number falling over the last decade. 1.5 million died from HIV/AIDS in 2000. Meanwhile, road traffic injuries killed 1.4 million people in 2016, about three-quarters (74%) of whom were men and boys.

Learning about the meaning and spelling of key popoulation words.

For **Homework 2** you must read the following key words and definitions and practise the spelling. You must be ready to spell these words and remember what they mean for next week's homework check.

Practise the spellings on the next page. Fold this page in half along the dotted line to hide the words while you spell them.

Birth rate (birth rate)	Number of births per thousand people in a population each year.
Death rate (death rate)	Number of deaths per thousand people in a population each year.
Demography (dem-og-ra-phy)	The theory of population change over time (*from Ancient Greek dēmos meaning "the people" and graphō, "writing, description or measurement"*
Infant mortality (in-fant mor-tal-i-ty)	The number of deaths of infants below one year in ratio to the number of live births that year.
Population structure (pop-u-la-tion struc-ture)	The number of males and females in a population, divided into five-yearly age groups.
Communicable disease (com-mun-i-ca-ble dis-ease)	A disease that can be transmitted from one person to another or transferred via vector such a biting insects.
Non-communicable disease (non-com-mun-i-ca-ble dis-ease)	A disease that cannot be transmitted from one person to another.
Epidemic (ep-i-dem-ic)	A outbreak of disease that occurs at the same time over a large area of region.
Pandemic (pan-dem-ic)	An epidemic that spreads to infect people across several continents or the entire world.
Ageing population (age-ing pop-u-la-tion)	A population with a high and increasing proportion of the population over 65.

Practise your spellings

Practise your spellings on this page. Spelling the word on the line above the definition and then check. If you get it wrong you can try again.

Number of births per thousand people in a population each year.

Number of deaths per thousand people in a population each year.

From Ancient Greek, the theory of population change over time

The number of deaths of infants below one year per 1000 live births.

The number of males and females in a population, divided into age groups.

A disease that can be transmitted from one person to another.

A disease that cannot be transmitted from one person to another.

A outbreak of disease that occurs at the same time over a large area of region.

An epidemic that spreads to infect people across the entire world.

A population with a high and increasing proportion of the population over 65.

Ten reasons we cant live forever, Part Two.

#10 What is the difference between high income and low income nations?

More than half of all deaths in low-income countries in 2016 were caused by the so-called "Group I" conditions, which include communicable diseases, maternal causes such as conditions arising during pregnancy and childbirth, and nutritional deficiencies. By contrast, less than 7% of deaths in high-income countries were due to such reasons. Respiratory infections were among the leading causes of death across all income groups.

Non-communicable diseases (NCDs are diseases that cannot be transmitted from one person to another) caused 71% of global deaths, ranging from 37% in low-income countries to 88% in high-income countries. All but one of the 10 leading causes of death in high-income countries were NCDs. Injuries claim some 5 million lives each year. More than a quarter (29%) of these deaths were due to road traffic accidents. Low-income countries had the highest mortality rate due to road traffic injuries with 29.4 deaths per 100,000 population (the global rate was 18.8 per 100,000). Road traffic injuries were also among the leading 10 causes of death in low and middle-income countries.

#9 Diarrhoea: Deaths in 2018: 2,195 per day or 800,000 per year

Diarrhoea is a leading killer of children, accounting for approximately 8 per cent of all deaths among children under age 5. This translates to over 1,300 young children dying each day, or about 480,000 children a year, despite the availability of a simple and effective treatment.

Most deaths from diarrhoea occur among children less than 2 years of age, living in South Asia and sub-Saharan Africa. Despite this heavy toll, progress is being made. From 2000 to 2017, the total annual number of diarrhoea deaths decreased by 60 per cent. However, many more children could be saved through basic interventions, where simple solutions can save children's lives. Access to re-hydration mixture of salt, glucose and clean drinking water can save lives. Clean water and better sanitation, are the quickest route to reducing these deaths worldwide.

#8 HIV/AIDS - People living with HIV/AIDS in 2018: 37.9 million, Deaths in 2018: 1.3 million

HIV (**H**uman **I**mmuno-deficiency **V**irus) is a retrovirus that damages the cells in your immune system and weakens your ability to fight everyday infections and disease. AIDS (Acquired Immune Deficiency Syndrome) is the name used to describe a number of potentially life-threatening infections and illnesses that happen when your immune system has been severely damaged by the HIV virus.

HIV continues to be a major global public health issue, having claimed more than 32 million lives across the world since the 1980s. However, with increasing access to effective HIV prevention, diagnosis, treatment and care, including for opportunistic infections, HIV infection has become a manageable chronic health condition. This can enables people living with HIV to lead long and healthy lives.

There were approximately 37.9 million people living with HIV at the end of 2018. As a result of concerted international efforts to respond to HIV, coverage of services has been steadily increasing. In 2018, 62% of adults and 54% of children living with HIV in low and middle-income countries were receiving lifelong anti-retroviral therapy (ART). A great majority (82%) of pregnant and breastfeeding women living with HIV also received ART, which not only protects their health, but also ensures prevention of HIV transmission to their new born babies.

However, due to gaps in HIV services, 770 000 people died from HIV-related causes in 2018 and 1.7 million people were newly infected. Eastern Europe, central Asia, the Middle East and north Africa accounted for around 95% of new HIV infections. **In most cases HIV is a sexually-tranmitted disease. Increased HIV vulnerability is often associated with social factors, such as the social standing of women, as well as that of sex workers within a society. These factors increase exposure to risk situations.** They also create barriers to accessing effective, quality and affordable HIV prevention, testing and treatment. Over two thirds of all people living with HIV (25.7 million) live in the World Health Organisation African Region .

There is no cure for HIV infection. However, effective anti-retroviral drugs can control the virus and help prevent onward transmission to other people. At the end of 2018, an estimated 79% of people living with HIV knew their positive status. 62% were receiving anti-retroviral therapy and 53% had achieved suppression of the HIV virus with no risk of infecting others. In June 2019, 24.5 million people were accessing anti-retroviral therapy and between 2000 and 2018, HIV-related deaths fell by 45%, saving an estimated 13.6 million lives.

Ten reasons we cant live forever, Part Three.

#7 Malaria - Cases in 2018: 228 million, eaths in 2018: 405,000

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected Anopheles mosquitoes. Only the female mosquitoes bite. In 2017, there were an estimated 219 million cases of malaria across 87 countries. The WHO African Region carries a disproportionately high share of the global malaria burden. In 2017, the region was home to 92% of malaria cases and 93% of malaria deaths. One recent estimate by pathologists suggested that over half the humans that have lived during our 200,000 year history have died as a result of diseases carried by mosquitoes.

In 2017, nearly half of the world's population was at risk of malaria but most malarial cases and deaths occur in sub-Saharan Africa. Some population groups are at considerably higher risk of contracting malaria, and developing severe disease, than others. These include infants and children under 5 years of age, pregnant women and patients with HIV/AIDS. **Malaria can be treated. If the right drugs are used, people who have malaria can be cured and all the malaria parasites can be cleared from their body. However, the disease can continue if it is not treated or if it is treated with the wrong drug.**

Total funding for malaria control and elimination reached an estimated US$3.1 billion in 2017. **Currently the best solution to malaria is to avoid being bitten. Insect screens at windows and mosquito nets over beds can greatly reduce the risk of being bitten. Wearing repellent outside at night can reduce bites but many people are concerned about the long-term health effects of using some repellent chemicals, such as DEET. Draining standing water around homes can reduce breeding grounds for mosquitoes.**

While there are 20 prototype malaria vaccines in development around the world, the disease has so far resisted this route to prevention. Mosquirix is the only WHO approved vaccine. It requires 4 injections over time and still has limited success. Prevention through nets, screens and repellents is still advised.

People visiting infectious areas are advised to take anti-malarial drugs. However, some of these, such as *chloroquine*, have become ineffective as the parasites have become resistant. Other anti-malarial drugs, such as *mefloquine*, can have problematic physical and psychological side-effects for some users.

#6 What are the causes of child mortality?

The largest share of deaths in under-5s arises from complications at birth or in the first few weeks of life called neo-natal complications. Under-5s are also highly susceptible to respiratory infections, infectious diseases, diarrheal infections, malnutrition and nutritional deficiencies. This is often because they have yet to develop a fully mature immune-system.

Death rates in under-5s are typically much lower in high-income countries, and the nature of these deaths is different from lower incomes. In the United Kingdom, for example, child deaths tend to be highly dominated by neonatal complications in the first 30 days after birth. Deaths from infectious illnesses, diarrheal diseases and malnutrition are very low in richer countries.

In contrast, infectious diseases and nutritional deficiencies are a large cause of death of infants in lower-income countries. Child mortality rates differ greatly across the world with just 1.7 deaths per 1,000 live births in Finland, compared with 121 deaths per 1,000 in war-torn Somalia.

Some countries have made remarkable progress: Singapore has reduced its child mortality from 43/1000 at independence in 1965 to just 1.77/1000 in 2018.

From children to teenagers: the healthiest time of life

Around the world, deaths in the 5-14 year old age bracket account for a very small percentage of total mortality (1-2%).

There are six dominant causes of deaths in this age category. The leading causes globally are road accidents, cancers and malaria. Respiratory infections, HIV/AIDS, diarrheal diseases, and drowning are also dominant causes accounting for around 40,000-50,000 deaths each year.

Again, this distribution varies country by country. **In the United States, for example, cancers are the leading cause of death while in India, it's diarrheal diseases. Meanwhile in Bangladesh and China this age group is most likely to die by drowning. In South Africa, and a number of other southern African nations, HIV/AIDS is the main cause of death in children and teenagers. Yet in West Africa road traffic accidents are a more serious concern.**

Ten reasons we cant live forever, Part Four.

#5 Getting older: changing patterns of mortality

As people get older non-communicable diseases (NCDs) begin to become more dominant. Globally the leading cause of death in the 15-49 age group is cardiovascular disease, followed by cancers. These both account for more than one million deaths. Road accidents, HIV/AIDS and, sadly, suicide are all significant within this group.

For some countries, such as South Africa and Zimbabwe, by far the dominant cause of death is HIV/AIDS in 15 to 49 year olds. In a number of countries (in particular across Latin America, including Brazil and Mexico), homicide (murder) has become the dominant cause for 15-49 years old, fuelled by gang violence.

In 50 to 69 year olds, non-communicable diseases (NCDs) become even more dominant. At this age cardiovascular disease, cancers, respiratory disease and diabetes are the top causes. However, in some countries HIV/AIDS and tuberculosis remain significant.

For the oldest age category (70 years and older), non-communicable diseases (NCDs) still dominate. However other death result from Alzheimer's and dementia. Diarrheal diseases also become important. These diarrheal diseases remain deadly for many 70+ people living in low-income countries but are very rare at higher incomes. Access to clean water and sanitation remain crucial for the young and old alike.

#4 Dementia

Dementia comprises several forms, the most common being Alzheimer's disease. These are a group of illnesses which result in a deterioration of brain function that is beyond what would be expected from the normal ageing process. It can occur either in a chronic form (relatively stable over time) or progressive form (getting worse over time) . Dementia affects several cognitive functions including memory, comprehension, judgement, language and learning capacity.

Across most countries, the death rate from dementia-related illnesses is below 55 per 100,000 individuals. Dementia rates in some countries have changed slightly since 1990, but significantly less so than other diseases. However, dementia is becoming more of an issue with an ageing population. As people get older there is more chance of them developing dementia. This is often seen in richer countries which have witnessed the greatest rise in life expectancy.

#2 Influenza and coronaviruses

Influenza and coronaviruses are two families of virus common across the world in animals and humans. Only certain types cause illnesses in people. For example, some coronaviruses cause the common cold; others cause diseases which are much more severe, such as the Spanish Flu outbreak in 2018. This may have killed up to 50 million people. Coronaviruses were the cause of Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). In late 2019 COVID-19 emerged in Wuhan, China where people were infected with a new strain of coronavirus not previously seen in humans. Large scale infections may occur across many countries and are known as pandemics.

OUTBREAK	REGION OF EMERGENCE	GLOBAL DEATHS	UK DEATHS
SPANISH FLU 1918-19	UNCLEAR	20-50 MILLION	200,000
ASIAN FLU 1957-58	SOUTHERN CHINA	1-4 MILLION	33,000
HONG KONG FLU 1968-69	SOUTHERN CHINA	1-4 MILLION	80,000
SWINE FLU 2009-10	MEXICO	18,000	457
MERS 2002-03	MIDDLE EAST	861	0
SARS 2002-03	CHINA	774	0
SEASONAL FLU 1989-90	UK	N/A	26,000

#2 Cardiovascular diseases

Cardiovascular disease (CVD) is a term used to refer to the range of disease which affect the heart and blood vessels. These include hypertension (high blood pressure); coronary heart disease (heart attack); cerebrovascular disease (stroke); heart failure; and other heart diseases.

Cardiovascular disease is the top cause of death globally. Overall, there is a strong East-West divide in CVD deaths. Rates across North America and Western/Northern Europe tend to be significantly lower than those across Eastern Europe, Asia and Africa. In most of Latin America, rates are moderate.

In France the age-standardised rate of CVD was around 86 deaths per 100,000 in 2018, while across Eastern Europe this rate was around 5 times higher at 400-500 per 100,000. Meanwhile, at the highest end of the scale, Uzbekistan had a death rate from CVD of 724 per 100,000.

Ten reasons we cant live forever, Part Five
5 #1 Tuberculosis (TB) - 2018 cases : 10 million, 2018 Deaths: 1.5 million

Tuberculosis (TB) is an infectious illness caused by the airborne bacteria *Mycobacterium tuberculosis*. **TB can cause serious health problems – particularly if it is not caught early. Known as 'consumption' in the 18th century, TB had become epidemic in Western Europe, with a mortality rate as high as 900 deaths per 100,000 inhabitants every year. Death rates were higher among young people. For this reason, TB was also called "the robber of youth".**

Today, the illness is curable but many still die through lack of effective treatment or because they are already weakened by other illnesses or a poor diet or living condition. A total of 1.5 million people died from TB in 2018 (including some 251,000 people infected with HIV). Worldwide, TB is the leading cause of death from a single infectious agent. In 2018, an estimated 10 million people fell ill with tuberculosis worldwide: 5.7 million men, 3.2 million women and 1.1 million children. There were cases in all countries and all age groups.

However, TB is both curable with antibiotics and preventable with good hygiene and vaccination. In 2018, 1.1 million children fell ill with TB globally. There were 205,000 child deaths due to TB (many among children with HIV). One reason for this high toll is that child and adolescent TB is often overlooked by health providers as it can be difficult to diagnose. Tuberculosis mostly affects adults.

In 1953 a programme of vaccination against TB was started across all UK schools. Million of children aged 10-14 received the BCG vaccine. In 2005 this £10 million per year programme was stopped in favour of targeting TB vaccination towards babies in high risk areas. TB infections rates began to rise slightly for the next five years before declining. They reached an all-time low of 4,672 new cases reported in 2018. Over 95% of cases and deaths are in developing countries. People who are infected with HIV are 19 times more likely to develop active TB. The risk of active TB is also greater in persons suffering from other conditions that impair the immune system. People with under-nutrition are 3 times more at risk. There were 2.3 million new TB cases globally in 2018 that were attributable to poor nutrition.

Homework Nº6: continued

In 2018, the largest number of new TB cases occurred in South and East Asia (44% of new cases) followed by Africa (24%) and the Western Pacific (18%.) **In 2018, 87% of new TB cases occurred in just 30 'high TB burden' countries. Eight countries accounted for two thirds of the new TB cases: India, China, Indonesia, Philippines, Pakistan, Nigeria, Bangladesh and South Africa.**

Multidrug-resistant TB (MDR-TB) remains a public health crisis and a health security threat. The WHO estimates that in 2018 there were 484,000 new cases with resistance to Rifampicin – the most effective first-line drug. Ending the TB epidemic by 2030 is among the health targets of the United Nation's Sustainable Development Goals.
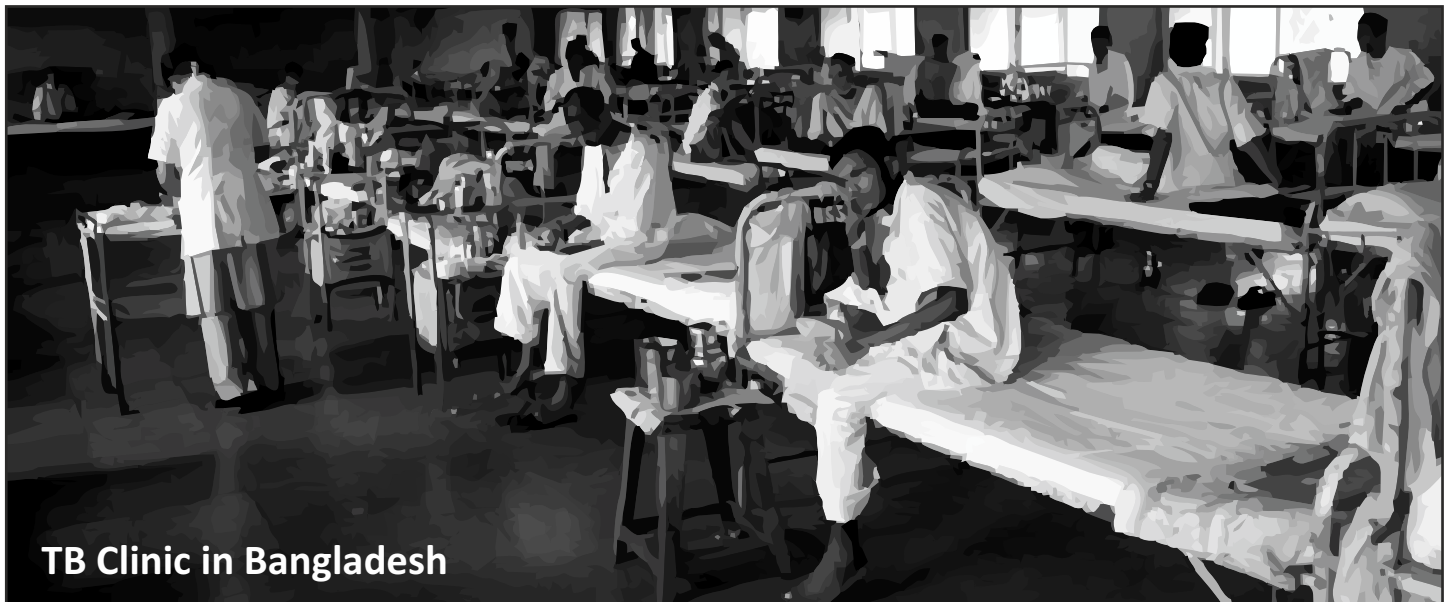
TB Clinic in Bangladesh

9D ten reason we can't live forever

Week 1 questions	Answers
What is the life expectancy in Hong Kong	
What is something that has led to us living longer	
How many of the world's deaths are attributable to a top 10 cause?	
What kind of infections are the deadliest communicable disease?	
Which Chinese city did COVID 19 first appear in?	
Total score	_____/5

HWK 2: complete the practise spellings on page 5

Week 3 questions	Answers
More than half of all deaths in low-income countries are caused by which group of conditions	
What is a non-communicable disease?	
What percentage of global deaths are caused by NCDs?	
Which condition is a leading killer of children?	
What are the quickest routes to reducing diarrhoea deaths?	
What does HIV stand for?	
How many have died due to HIV since the 1980s?	
Is there a cure for HIV infection?	
Is there a cure for HIV infection?	
	_____/9

Week 4 questions	Answers
How do people get malaria	
In 2017, how many cases of malaria were there?	
Can malaria be treated?	
How can you avoid getting malaria	
What is the healthiest time of life?	
	_____/5

Week 5 questions	Answers
Which diseases get more dominant as people get older	
What is the leading cause of death between 15-49?	
As people reach 70 and older, what 2 other diseases have a large effect	
How many global deaths were there from Spanish flu (1918-19)	
What does CVD stand for?	
	_____/5

Week 6 questions	Answers
What does TB stand for?	
What is TB caused by?	
When did a vaccination programme for TB begin in all UK schools?	
Where are 95% of TB cases and deaths?	
Where were the largest number of new TB cases in 2018?	
	_____/5

9D

POPULATION & HEALTH

Ten reasons we can't live forever