Risk difference (RD) = Attributable Risk (AR)

- This is the amount of “extra” disease attributable to a particular risk factor in the exposed group

Population attributable risk (PAR)

- Is the amount of “extra” disease attributable to a particular risk factor in a particular population
- The rates will be lower, because the denominator is larger
- If the association is causal - this is the amount of disease (theoretically) we could prevent if we removed that particular risk factor from the population

PAR = Incidence in the total population (PGO) - Incidence in the unexposed population (CGO)

Or: RD x Prevalence of exposure in the population

Apply the criteria for prioritization to understand why breast cancer is a high priority population health issue in NZ

Descriptive

- Most commonly diagnosed invasive cancer in NZ women
- 2nd leading cause of cancer death

Explanatory

- Risk factors include delayed first birth, high alcohol intake, oral contraceptive use, obesity, lack of physical exercise
- Disparities exist in Maori/ Pacific

Evaluative

- Among postmenopausal Maori, those with higher healthy life scores had lower odds of breast cancer
- Conclusion is that healthy lifestyle recommendations could be important for reducing breast cancer risk in postmenopausal Maori women

LECTURE 27

What were the reasons for and aims of the GBD project?

Reasons

- The data from many countries about the burden of disease were incomplete
- Little information on non-fatal outcomes in available data
- Lobby groups can give a distorted image of which problems are most important
- Unless the same approach is used to estimate the burden of different conditions - it is difficult to decide which conditions are the most important and which strategies may be the “best buys”

Aims

1. To use a systematic approach to summarise the burden of diseases and injury at the population-level based on epidemiological principles and best available evidence
2. To take account of deaths as well as non-fatal outcomes (i.e disability) when estimating the burden of disease

DALYs (disability adjusted life years) was a specific measure developed to achieve these aims

What are the two major contributors to DALYs?

Disability- Adjusted Life Year (DALY)

DALY is a summary measure of population health that combines data on mortality and non-fatal health outcomes to represent the health of a particular population as a single number

DALYS = years of life lost to mortality (YLL) + years lived with disability (YLD)

- A year in perfect health = 0
- A year of life lost due to death = 1
- A year with disability = between 0 and 1

What types of data are required to estimate DALYs?

For YLL
- Number of deaths
- Years lost per death (a specific 'ideal age' is used)

For YLD:
- Incidence of cases with their non-fatal outcomes (impairments)
- Average duration of non-fatal outcomes (impairments)
- Disability weight (representing the severity of impairment)

What are the major disease groups contributing DALYs, and how do these differ in High income countries (HIC) and Low and Middle income countries (LMICs)?

Group 1: Communicable diseases (infectious diseases)
- Eg. diarrhoea, TB, measles, HIV/AIDs
- Maternal and perinatal conditions (problems during pregnancy, childbirth or in very early life)

Group 2: Non-communicable diseases (chronic diseases)
- Eg. heart disease, strokes, cancer, Type 2 diabetes

Group 3: Injury
- Fastest increases in burden of disease are in low and middle income countries

Understand terms: demographic, epidemiologic and risk transitions; 'double burden of disease'

Demographic transition: decline in fertility and mortality rates observed in most developed and several developing countries

Risk transition: Changes in risk factor profiles as countries shift from low to higher income countries, where common risks for perinatal and communicable diseases (eg. unhygienic water) are replaced by risks for non-communicable diseases (eg. tobacco)

Double burden of disease: Previously common risks for perinatal and communicable diseases coexist with increasing risks for non-communicable diseases, in many middle-income countries

Lecture 28: Disability and Social determinants of health

Identify the main limitations of the DALY approach to measuring disability

Two major challenges to the DALY approach to disability

- The GBD project criticised for its potential to **represent people with disabilities as a 'burden'**
- **Disability weights** are considered to be the **same as the severity of an impairment relating to a disease**/ health condition, and do not vary with a person's social position, where they live, their access to healthcare or any other life circumstance

These issues highlight differences in the way that 'disability' as a concept is sometimes viewed

Recognise the (implied) distinctions between the 'medical' and 'social' model of disability

Medical Model	Social Model
• Disabled people are defined by their illness of medical condition • Disability regarded as an individual problem • Disabled person needs to be cured and cared for • Justifies the way in which disable people have been systematically excluded from society • Control rests with professionals; choices for the individual are limited to options provided and approved by the "helping" expert • GBD project seen as taking this view • **The disabled person is the problem not society**	• Disability is no longer seen as an individual problem but as a social issue cause by policies, practises, attitudes, and/or the environment • Disabling factor is the inaccessible environment (e.g. lack of ramp for wheelchair" • Focuses on ridding society of barriers instead of curing people

Right to health approach to disability

- UN convention on the Rights of Persons with Disability (UNCRPD)
- NZ Disability Strategy

These aim to **promote, protect and ensure** equal human rights and freedoms for all disabled people, and to promote **respect** for disabled people's dignity.

The principles are based on respecting differences and accepting disabled people as part of a diverse human society.

They provide guidance to governments and other organisations on how to remove barriers and make sure disabled people have access to their rights.

Describe the overarching recommendations of the Commission on the Social Determinants of Health to improve population health and recognise how you can act on these (link to 'Right to health' concept)

WHO Commission on Social Determinants of Health

Overarching Recommendations

1. Improve Daily Living Conditions
2. Tackle the Inequitable Distribution of Power, Money, and Resources
3. Measure and Understand the Problem and Assess the Impact of Action.

Determinants of Health Inequalities

- Differential access to health determinants or exposures leading to differences in disease incidence
- Differential access to health care
- Differences in quality of care received

Lecture 29: HIV

Recognize key epidemiological features of HIV infection globally, in NZ and in the Pacific nations

- 2⁄3 of infected people live in Sub-Saharan Africa
- AIDS related deaths are decreasing and people are living longer with HIV due to improved treatment and expanded access to treatment and care
- Globally, a high proportion of people with HIV do not know their HIV status, and most people living with or at risk for HIV do not have access to HIV prevention, treatment and care
- Not all communities, regions and populations are affected the same way
- Necessary to tailor the interventions to local circumstances and prevalent risk factors

Of the new infections in 2013

- 95% in low and middle income countries

Among infections of 15+ years old:
- 47% among women
- At a global level heterosexual transmission has become the dominant mode of transmission

Age:
- Half of new HIV infections are among people under 25 - most live in Sub-Saharan Africa

HIV in NZ

- Low prevalence country
- 75% acquired men to men
- 15% men and women sex

Routine Antenatal screening → no cases of mother-to-child transmission since 2007

In a 2008 AKL survey:
- 6.5% of men who have sex with men were infected, 20% were unaware of HIV status
- Need to encourage condom use to reduce risk of HIV transmission
- HIV testing to detect infection early

Pacific Islands

- 90% in Papua New Guinea
- Largely heterosexual transmission
- High prevalence of other STDs- which increases chances of catching HIV
- Pacific Islands apart from Papua New Guinea have low prevalence of HIV, but high prevalence of other STDs makes HIV a potentially major problem

Identify main modes of disease transmission

Transmission mode	High risk groups
• Unprotected sexual intercourse with HIV+ person	• Men who have sex with me • Women and men • Sex workers
• Sharing unsterilised injecting equipment	• Injecting drug users
• Mother to child transmission	• Infants born or breast fed by untreated HIV+ mothers
• Blood-borne	• Anyone receiving unscreened blood produces, organs or injections with unsterilised needles (generally in countries with inadequate screening)

Mother to Child Transmission

- More than 90% of children living with HIV are infected through mother to child transmission through pregnancy, at time of birth or through breastfeeding
- Children particularly vulnerable to ongoing disability and death because they also lose parents to HIV

Describe what is meant by the ‘feminisation’ of the HIV epidemic

- **Feminisation refers to the fact that increasing proportions of new infections are among women, primarily due to heterosexual transmission of the infection**
- 60% of infected people in Sub-Saharan Africa are women
- Leading cause of death and disease among women of reproductive age (15-49 years) worldwide
- Women are likely to face barriers in accessing HIV prevention, treatment and care services (HIV is a shameful disease)
- Women and girls are often the primary caregivers in the family
- Experience of violence is associated with a 3 fold increased risk of HIV

Social determinants influencing feminisation

- Gender inequalities in rules governing sexual relationships, negotiating condom use, sexual abuse/violence
- Poverty and low social status, and consequent limited access to education and reproductive health services
- Social norms, stigma and discrimination that prevent access to prevention efforts and treatment
- Problems with disclosure of HIV status, partner notification and confidentiality (these can prevent getting necessary prevention options, testing for HIV and treatment)

Women’s human rights

- Women's rights to safe sexuality linked to economic independence
- Right most violated where women exchange sex for survival
- NOT about prostitution

But about a basic social and economic arrangement that results from:
- Poverty - affecting both men and women
- From male control over women’s lives in a context of poverty

Identify the main opportunities for intervention including prevention, screening and treatment programs

Mother to child transmission

- Without treatment, about 1⁄3 of children born to women who are HIV+ will become infected with the virus while in the womb, at birth, or through breast feeding
- Risk reduced by screening pregnant mothers and treating those who are HIV+ with Antiretroviral drugs
- Sub-Saharan Africa is home to 91% of pregnant mothers needing Rx

Safer Sex

- Media campaigns to reduce stigma and discrimination
- Educational: teachers, peers, workplaces, mass media campaigns
- Condoms: promote use thru social marketing, increase availability, reduce cost

Safer products and practices

- Screen blood products for HIV
- Needle and syringe exchange programs for IV drug users
- Protect against needle-stick injuries (health professionals)

Increase access to Healthcare

- Voluntary testing and counselling to reduce risk of sexual transmission
- Treatment, care and support for HIV+ people
- Antenatal screening and Rx for HIV to prevent mother to child transmission
- Treatment of STDs
- Provision of family planning services

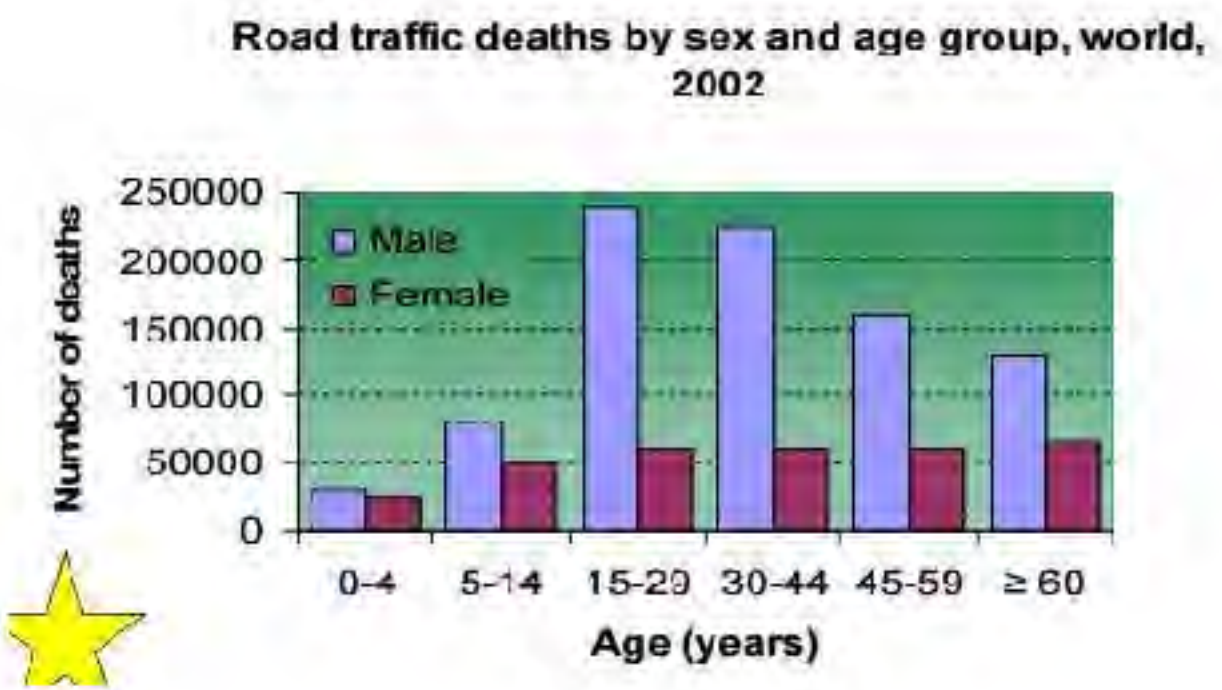
Reduce Discrimination of those 'disabled'

- Wider policy context/ legislation
- Ensuring rights of marginalised populations are protected (social determinants of health)

LECTURE 30

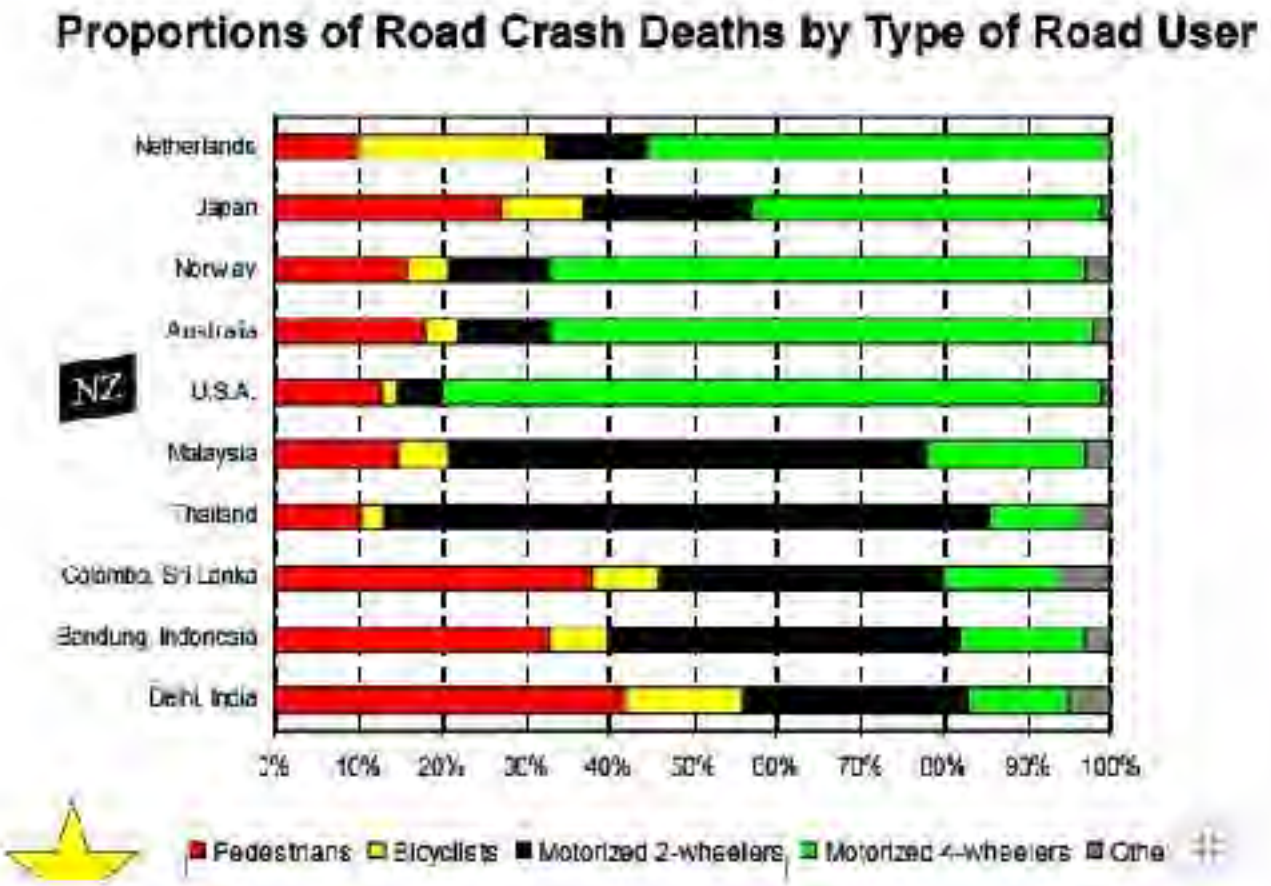
Recognise the inequitable distribution of the burden of road traffic injuries by age, gender and economic development of countries

- Road traffic injuries demonstrate steep socioeconomic differentials (especially pedestrians) in rich and poor countries
    - More male than female
    - Road traffic fatalities predicted to increase by 66% by 2020
    - >95% of road traffic deaths in low and middle income countries



Understand which road user groups are referred to as ‘vulnerable road users’ and why

- Low and middle income countries have higher proportion of deaths in the vulnerable road users (pedestrians, bicyclists and motorized 2 wheelers)
- Over a third of road traffic deaths in low and middle income countries are among pedestrians and cyclists
- But less than 35% of these countries have policies in place to protect these road users



Identify the five key targets proposed by the WHO for road safety adaptations in low and middle income countries

- Speed
- Alcohol
- Seat belts and child restraints
- Helmets
- Visibility

Describe and be able to use the Haddon matrix to identify risk factors and opportunities to minimise the burden of road crashes and their consequences

- (workshop 4 notes)
- Countries which have experienced major decreases in pedestrian mortality are distinguished by having placed greater emphasis on environmentally based prevention strategies (eg. street design) rather than pedestrian skills education

Describe what is meant by “The Inverse Care Law”

- The availability of good medical care tends to vary inversely with the need for the population served