INSTITUTE FOR PUBLIC HEALTH

RESEARCH TECHNICAL REPORT

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3. ABBREVATIONS

AIDS	-	Acquired Immunodeficiency Syndrome
GBD	-	Global Burden of Disease
HIV	-	Human Immunodeficiency Virus
ICD	-	International Statistical Classification of Diseases and Related Health Problem
YLL	-	Years of Life Lost

4. Introduction

Mortality estimates are important parameters for monitoring health, and are routinely used as evidence for health policy development and planning[1]. Many countries have established vital registration systems that legally mandate registration of births and deaths. However, only about a third of countries in the world have complete and valid vital registration system and produce timely birth and death statistics [2].

Malaysia is one of few Asian countries with long standing and functional vital registration system. Registration of births and deaths is a legal requirement in Malaysia, operated by the Ministry of Home Affairs. Under this system, a burial permit is issued upon death registration, which is mandatory before corpse disposal in all locations across the country. The Department of Statistics (DOS), Malaysia compiles data from civil registration obtained from the Ministry of Home Affairs, and these data are commonly referred as vital registration (VR) statistics[3].

Despite having a functional system for the reporting of death events, there are problems such as the ascertainment of cause of death for each death report. Deaths in health facilities are certified as to cause by attending physicians, and subsequently the DOS uses the International Classification Diseases and Health Related Problems (ICD) to classify and tabulate medically certified deaths by age, sex and cause of death[4]. Deaths outside hospitals are reported to the local police station by relatives of the deceased, who provide a 'lay' opinion of the cause to be recorded at the death registry. DOS has established its own classification for these non-medically certified deaths. Though the proportion of medically certified death in Malaysia has improved from 45% in 1998 to 57.6% in 2010, still, the considerably large proportion of non-medically certified deaths has limited the direct use of these mortality data for health policy development and planning in Malaysia.

Therefore, the Ministry of Health conducted a second Burden of Disease and Injury Study in 2010 to apply internationally tested principles for burden of disease assessment to available mortality data in order to develop national estimates of mortality by age, sex and cause in Malaysia in the year 2008. This article documents the methods and results from this mortality estimation research.

5. Methods

5.1 Age- and sex-specific number of deaths

Available mortality statistics by age, sex and cause at the national level for 2008 were used as input data for mortality estimation. The reference point for estimation was chosen as the year 2008, in the second Malaysian National Burden of Disease and Injury Study. At the time of conducting analysis, data collection for the year 2009 had not completed. For this reason, data for the year 2008 were used, which were coded using the ICD10 Revision.

We assumed that the registration of mortality is complete based on the report by the DOS. There are no other sources of mortality data to make formal check. Disaggregated data were evaluated for quality in terms of proportion of deaths and the data were used to construct abridged life tables. Cases with unknown age at death (19 females) had been redistributed to suitable age group based on the cause of death.

5.2 Cause-specific mortality estimates

All death in the National VR were coded either using ICD-10 classification (for medically certified death) or DOS codes (for non-medically certified death). All data were examined for quality on causes of death according to specific criteria[5].

Data of medically certified death were cleaned through 3 steps. First step was assessment of the accuracy of coding done by original coders from DOS on cause of death by sex and age. Secondly, the same mortality data were coded again by independent certified ICD coders. Lastly, inter-coder consistency was checked between the two sets of coding done by the original coders and independent coders. Causes of death with similar codes were accepted whilst causes with disagreed codes were re-coded by another group of independent certified coders of higher ranking.

Non-medically certified deaths were coded according to the guidelines from the DOS. Each specific codes were re-coded into ICD 10 by certified coders and physicians based on available information including age, sex and cause of death.

All deaths were then combined and taken as the cause of death structure. Deaths coded into garbage categories were redistributed, accordingly for each age and sex stratum, based on the guidelines from the Global Burden of Disease 2005 Study[6] with some modifications.

a) Garbage code (1.1): Causes that cannot lead to death- redistributed to all causes.

b) Garbage code (2.1): Causes that cannot lead to death- redistributed to all causes.

c) Garbage code (2.2): Malignant or non-malignant neoplasm without specification of any site – redistributed to all causes of malignancy.

d) Garbage code (2.4): Carcinoma in situ, unknown behaviour neoplasms as a cause of death or benign neoplasm – redistributed to all causes of malignancy.

e) Garbage code (3.1): Unspecified diseases and injuries in one chapter - redistributed to all causes.

f) Garbage code (3.2): Unspecified diseases and injuries in some parts of one chapter or in disease group- redistributed to all causes.

g) Garbage code (4): Intermediate cause in death chain- redistributed to all causes.

h) Garbage code (5): Sequelae as an intermediate cause or as contemporary conditions besides another intermediate cause - redistributed to all causes.

i) Garbage code (6): Immediate cause of death or mode of death- redistributed to all causes.

j) Garbage code (7): Particular garbage codes- redistributed to circulatory causes.

5.3 Life Expectancy

Age- and sex-specific death structure was used to construct abridged life table.

5.4 Years of Life Lost (YLL)

Years of Life Lost (YLL) was calculated according to the procedures in the Global Burden of Disease (GBD) study 2005[7]. YLL is calculated as a simple summation of deaths at each age from a given cause, multiplied by the average life expectancy at that particular age. We used the GBD standard life expectancy revised Model to generate the life expectancy table.

6. Results

The total number of estimated deaths in Malaysia in year 2008 was 124,857, which composed of 72,202 males and 52,655 females. Life expectancy by 5-year age group from abridged life table is shown in Tables 1. Based on deaths registered in 2008, we estimated the life expectancy at birth for Malaysian males and females as 70.2 years and 74.8 years, respectively.

Table 1: Life expectancy by 5-year age group based on registered deaths, Malaysia, 2008

Age (Years)	Life Expectancy (Male)	Life Expectancy (Female)
0	70.2	74.8
1-4	69.7	74.3
5-9	65.8	70.4
10-14	60.9	65.4
15-19	56.0	60.5
20-24	51.3	55.6
25-29	46.6	50.7
30-34	41.9	45.9
35-39	37.3	41.0
40-44	32.7	36.2
45-49	28.1	31.4
50-54	23.7	26.8
55-59	19.5	22.3
60-64	15.5	18.0
65-69	11.8	13.9
70-74	8.4	10.1
75-79	5.3	6.8
80+	1.6	3.4

6.1 Leading causes of death

The top two leading causes of death in both sexes were ischaemic heart disease and cerebrovascular disease (Table 2). Road traffic injuries was the third leading cause of death in males and breast cancer was the third leading cause of death in females.

Table 2: Top 10 causes of death by sex, Malaysia, 2008

	MALE			FEMALE		
	Cause of Death	**n**	**%**	**Cause of Death**	**n**	**%**
1	Ischaemic heart disease	15836	21.9	Ischaemic heart disease	9667	18.4
2	Cerebrovascular disease (Stroke)	7725	10.7	Cerebrovascular disease (Stroke)	7852	14.9
3	Road traffic injury	4895	6.8	Breast cancer	2077	3.9
4	Lower respiratory infection	2816	3.9	Lower respiratory infection	1047	3.7
5	Trachea, bronchus and lung cancer	2816	3.9	Nephritis and Nephrosis	1790	3.4
6	Chronic Obstructive Pulmonary Disease	2732	3.8	Trachea, bronchus and lung cancer	1507	2.9
7	Nephritis and Nephrosis	2020	2.8	Diabetis Mellitus	1392	2.6
8	HIV/AIDS	1421	2.0	Colon & Rectum Cancer	1160	2.2
9	Diabetis Mellitus	1241	1.7	Road traffic injury	940	1.8
10	Liver cancer	1227	1.7	Chronic Obstructive Pulmonary Disease	1039	2.0
	ALL DEATH	**72202**			**52655**	

6.2 Years of Life Lost (YLL)

The total number of YLL in Malaysia in 2008 was 1.5 million. Sixty-one percents of the YLLs were contributed by male (Figure 1). Majority of YLLs occurred in the age group of 45-59 (26%), followed by 60-69 (18%) and 30-44 (16%) (Figure 2). Almost three quarter of YLLs were due to non-communicable disease (68%) followed by communicable disease (20%) and injury (12%) (Figure 3). By disease category, the leading cause of YLL in Malaysia is caused by cardiovascular and circulatory disease

(35%), followed by malignant neoplasm (20%), infectious disease (15%), unintentional disease (14%) and respiratory disease (6%) (Figure 4).

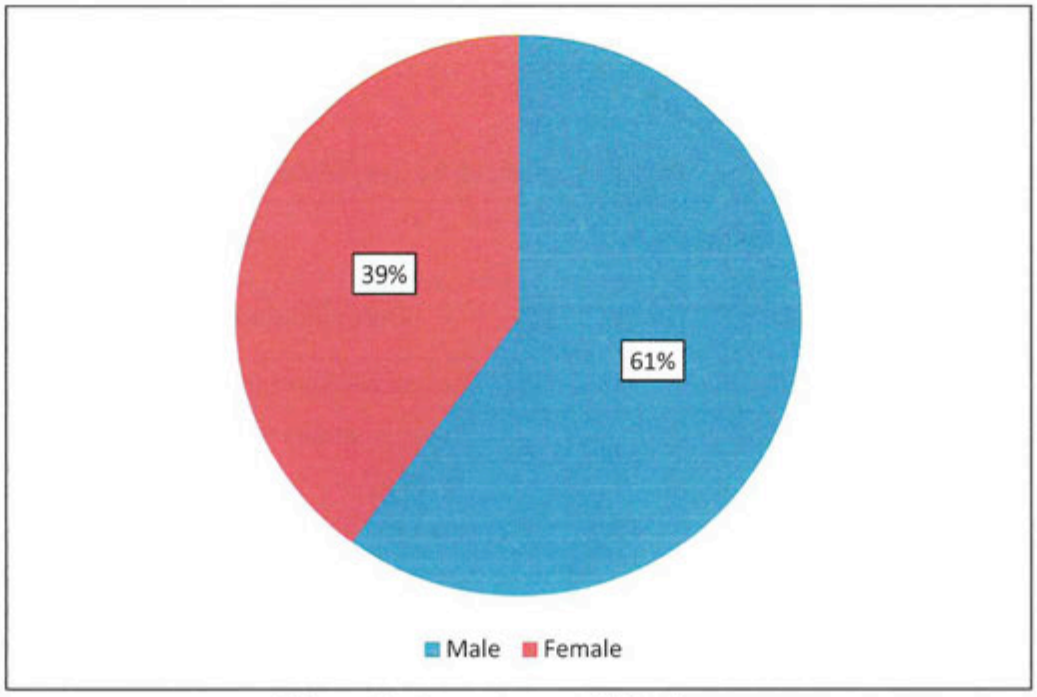

Figure 1 : Percentages of YLL by sex

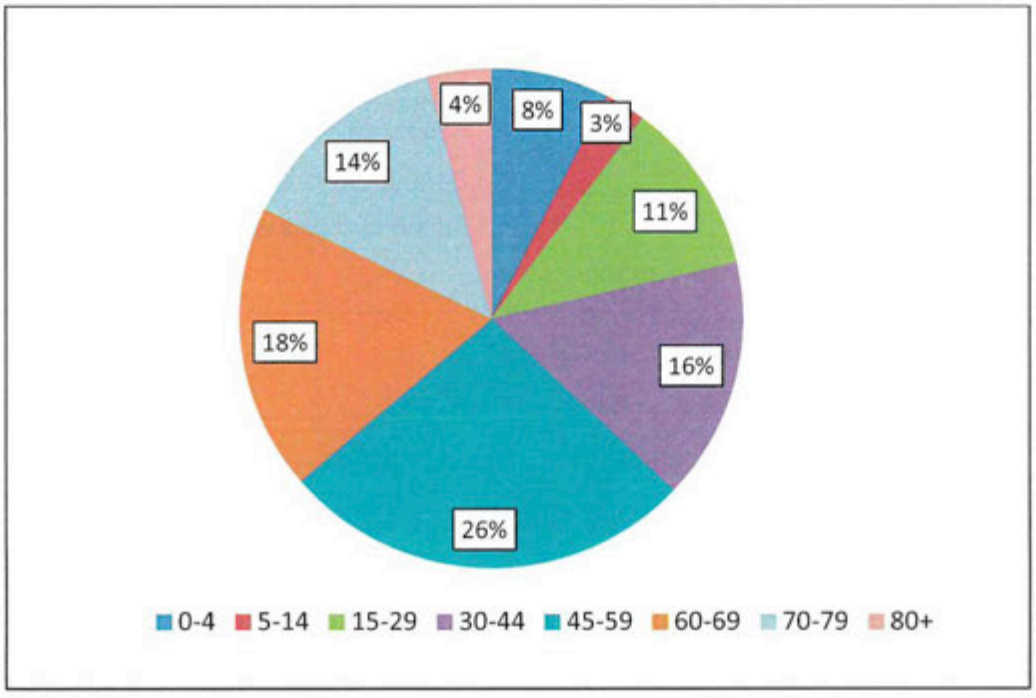

Figure 2 : Percentages of YLL by age group

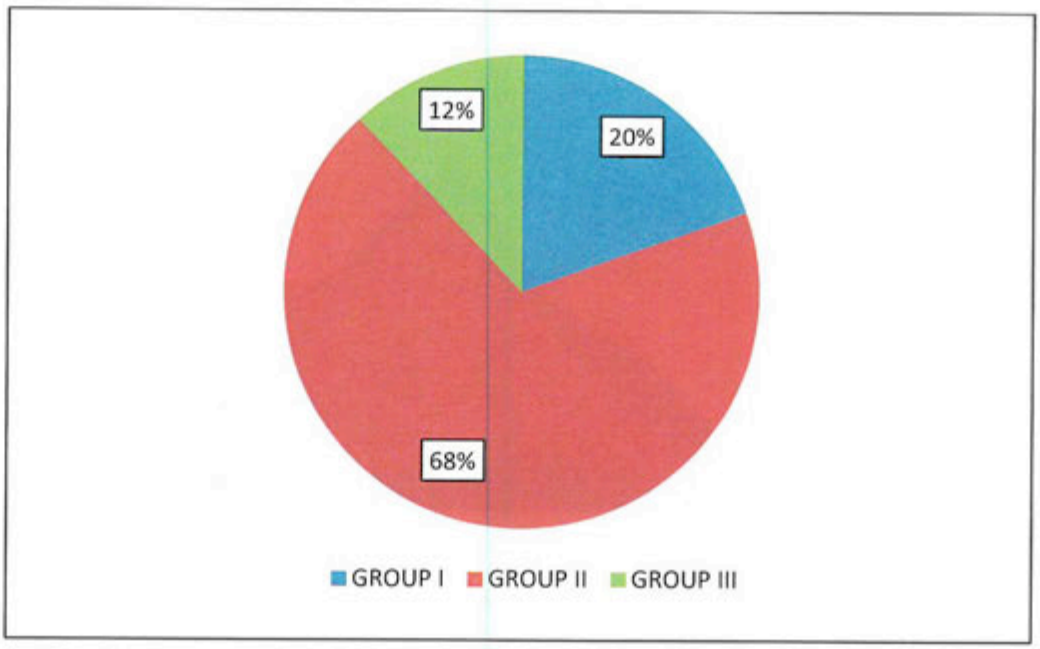

Figure 3 : Percentages of YLL by major disease group

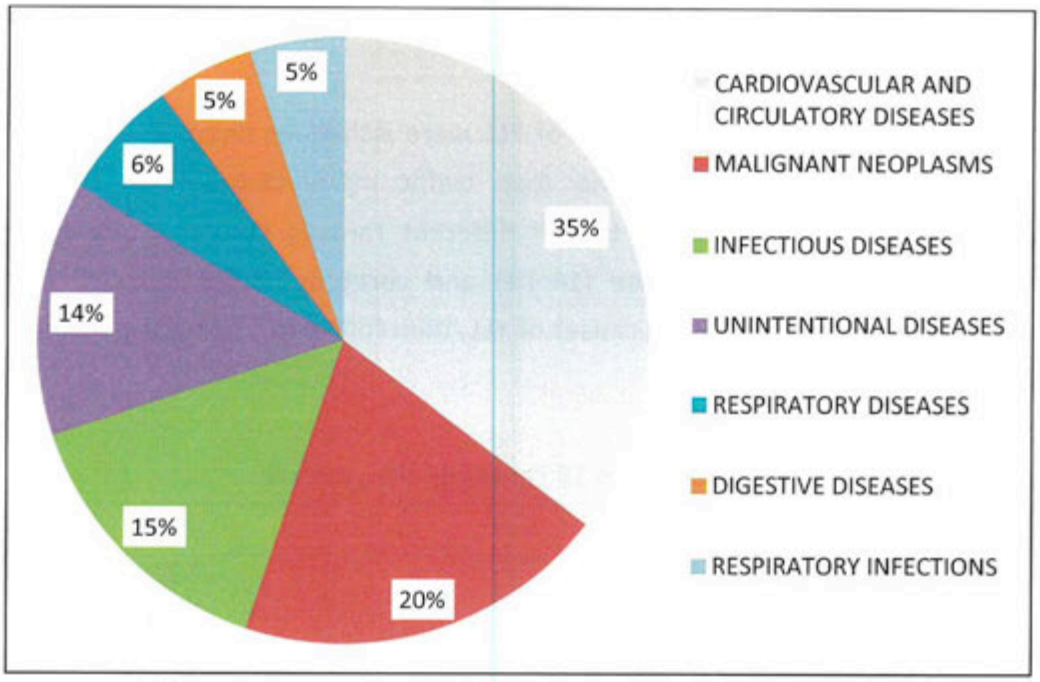

Figure 4 : Percentages of YLL by major disease category

With regards to age group, a large portion of YLLs at age of 0-4 years were contributed by Group I (Communicable disease, Maternal, Perinatal and Nutritional disorder); while for age group 15-29, injury (Group III) was the main cause for YLLs; and for Malaysian aged 30 years and above, non communicable disease (Group II) has been the main contributor for YLLs (Figure 5).

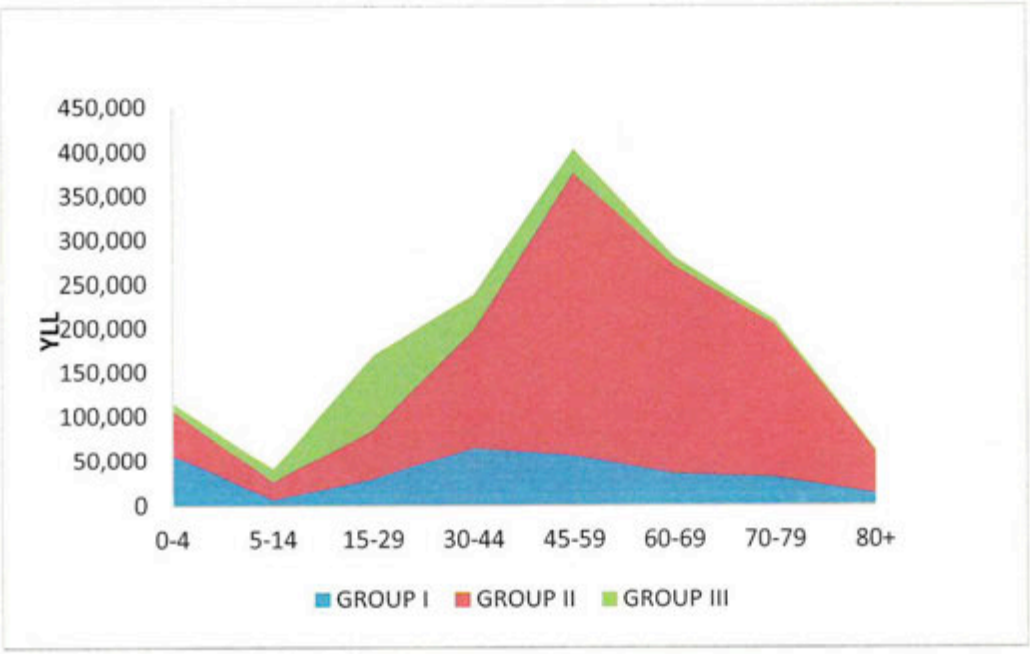

Figure 5 : Distribution of YLL by major disease category across age groups

6.3 YLL by age group :

a) Overall

Overall, the top three leading causes of YLL were ischaemic heart disease (17.1%), cerebrovascular disease (9.6%) and road traffic injury (8.3%)(Table 3). Similar observation was seen in males but of different ranking (Table 4). However, in females, ischaemic heart disease (14.3%) and cerebrovascular diseases (11.7%) remained as the top two leading causes of YLL, then followed by breast cancer (4.3%) (Table 5) .

Table 3 : Top 10 causes of YLL , overall

		YLL	%
1	Ischaemic heart disease	258,232	17.1
2	Cerebrovascular disease (Stroke)	145,694	9.6
3	Road traffic injury	125,106	8.3
4	Lower respiratory infection	63,386	4.2
5	Trachea, bronchus and lung cancer	45,379	3.0
6	Nephritis and nephrosis	40,915	2.7
7	HIV	33,926	2.2
8	Breast cancer	33,139	2.2
9	Diabetes Mellitus	29,822	2.0
10	Colon and rectum cancer	24,444	1.6

Table 4 : Top 10 causes of YLL, males

		YLL	%
1	Ischaemic heart disease	173,040	18.8
2	Road traffic injury	104,259	11.4
3	Cerebrovascular disease (Stroke)	76,123	8.3
4	Lower respiratory infection	37,688	4.1
5	HIV	30,457	3.3
6	Trachea, bronchus and lung cancer	28,640	3.1
7	Nephritis and nephrosis	21,974	2.4
8	Chronic obstructive pulmonary disease	17,698	1.9
9	Tuberculosis	16,806	1.8
10	Liver cancer	14,695	1.6

Table 5 : Top 10 causes of YLL, females

		YLL	%
1	Ischaemic heart disease	85,192	14.3
2	Cerebrovascular disease (Stroke)	69,571	11.7
3	Breast cancer	33,029	5.6
4	Lower respiratory infection	25,698	4.3
5	Road traffic injury	20,847	3.5
6	Nephritis and nephrosis	18,940	3.2
7	Trachea, bronchus and lung cancer	16,739	2.8
8	Diabetes Mellitus	15,582	2.6
9	Colon and rectum cancer	11,763	2.0
10	Leukaemia	8,915	1.5

b) 0 – 4 years old

The top two causes of YLL among 0 to 4 years old Malaysians were low birth weight (19.8%) and congenital heart anomalies (8.6%) (Table 6). The top ten leading causes of YLL among boys and girls of these ages are consistent, with only slight differences in the ranking (Table 7 & 8).

Table 6 : Top 10 causes of YLL, 0-4 years old, overall

		YLL	%
1	Low birth weight	22,772	19.8
2	Congenital heart anomalies	9,915	8.6
3	Neonatal infection	6,843	6.0
4	Lower respiratory infection	6,811	5.9
5	Birth trauma & asphyxia	6,322	5.5
6	Neural tube defects	3,312	2.9
7	Meningitis & Encephalitis	2,776	2.4
8	Road traffic injury	2,145	1.9
9	Diarrhoeal disease	2,099	1.8
10	Drowning	2,012	1.8

Table 7 : Top 10 causes of YLL, 0-4 years old, boy

		YLL	%
1	Low birth weight	13,975	21.7
2	Congenital heart anomalies	5,177	8.0
3	Lower respiratory infection	4,064	6.3
4	Neonatal infection	3,969	6.2
5	Birth trauma & asphyxia	3,346	5.2
6	Neural tube defect	1,874	2.9
7	Meningitis & encephalitis	1,350	2.1
8	Road traffic injury	1,349	2.1
9	Drowning	1,255	1.9
10	Diarrhoeal disease	933	1.4

Table 8 : Top 10 causes of YLL, 0-4 years old, girl

		YLL	%
1	Low birth weight	8,797	17.4
2	Congenital heart anomalies	4,738	9.4
3	Birth trauma & asphyxia	2,976	5.9
4	Neonatal infections	2,873	5.7
5	Lower respiratory infections	2,747	5.4
6	Neural tube defects	1,438	2.8
7	Meningitis & encephalitis	1,427	2.8
8	Diarrhoeal diseases	1,166	2.3
9	Leukaemia	829	1.6
10	Road traffic injury	797	1.6

c) 5 – 14 years old

The top three causes of overall YLL among 5 – 14 years old children were road traffic injuries (15.7%), drowning (12.4%) and leukaemia (8.2%) (Table 9), which was consistent with the top three ranking in males (Table 10). On the other hand, road traffic injury (14.5%), leukaemia (9.6%) and lower respiratory infection (5.8%) were the top three causes of YLL for females (Table 11).

Table 9 : Top 10 causes of YLL, 5-14 years old, overall

		YLL	%
1	Road traffic injury	6,282	15.7
2	Drowning	4,973	12.4
3	Leukaemia	3,278	8.2
4	Lower respiratory infection	2,289	5.7
5	Meningitis & encephalitis	2,086	5.2
6	Congenital heart anomalies	1,529	3.8
7	Brain & other CNS cancer	1,240	3.1
8	Benign neoplasm	1,168	2.9
9	Cerebrovascular disease	1,149	2.9
10	Endocrine, nutritional, blood and immune	1,086	2.7

Table 10 : Top 10 causes of YLL, 5-14 years old, male

		YLL	%
1	Road traffic injury	3,941	16.5
2	Drowning	3,795	15.9
3	Leukaemia	1,720	7.2
4	Lower respiratory infection	1,388	5.8
5	Meningitis & encephalitis	1,281	5.4
6	Congenital heart anomalies	883	3.7
7	Endocrine, nutritional, blood and immune disorder	657	2.8
8	Brain & other CNS cancer	650	2.7
9	Benign neoplasm	579	2.4
10	Inflammatory heart disease	558	2.3

Table 11 : Top 10 causes of YLL, 5-14 years old, female

		YLL	%
1	Road traffic injury	2,341	14.5
2	Leukaemia	1,558	9.6
3	Lower respiratory infection	902	5.6
4	Drowning	1,178	7.3
5	Meningitis & encephalitis	805	5.0
6	Cerebrovascular disease	698	4.3
7	Congenital heart anomalies	646	4.0
8	Brain & other CNS cancer	590	3.6
9	Benign neoplasm	589	3.6
10	Endocrine, nutritional, blood and immune	429	2.6

d) 15 – 29 years old

The commonest cause of YLL among Malaysian aged 15-29 years was road traffic injury which was responsible for 40.1% of YLL in Malaysia (Table 12), almost 47% of YLL in males (Table 13) and 20.6% in females (Table 14).

Table 12 : Top 10 causes of YLL, 15-29 years old, overall

		YLL	%
1	Road traffic injury	67,598	40.1
2	Lower respiratory infection	6,624	3.9
3	Cerebrovascular diseases	5,411	3.2
4	HIV	4,482	2.7
5	Drowning	4,478	2.7
6	Leukaemia	4,248	2.5
7	Meningitis & encephalitis	3,950	2.3
8	Ischaemic heart disease	3,605	2.1
9	Endocrine, nutritional, blood and immune	3,473	2.1
10	Tuberculosis	2,946	1.7

Table 13 : Top 10 causes of YLL, 15-29 years old, male

		YLL	%
1	Road traffic injury	58,635	46.9
2	Lower respiratory infection	3,996	3.2
3	Drowning	3,970	3.2
4	HIV	3,928	3.1
5	Cerebrovascular disease	3,745	3.0
6	Ischaemic heart disease	3,015	2.4
7	Leukaemia	2,871	2.3
8	Meningitis & encephalitis	2,462	2.0
9	Endocrine, nutritional, blood and immune	2,279	1.8
10	Interpersonal violence /homicide	2,100	1.7

Table 14 : Top 10 causes of YLL, 15-29 years old, female

		YLL	%
1	Road traffic injury	8,963	20.6
2	Lower respiratory infection	2,627	6.0
3	Cerebrovascular disease	1,666	3.8
4	Meningitis & encephalitis	1,488	3.4
5	Leukaemia	1,377	3.2
6	Endocrine, nutritional, blood and immune	1,194	2.7
7	Tuberculosis	1,115	2.6
8	Nephritis and nephrosis	941	2.2
9	Congenital heart anomalies	906	2.1
10	Asthma	896	2.1

e) 30-44 years old

Ischaemic heart disease, road traffic injuriesand HIV were the three commonest causes of overall YLL as well as YLL in males aged 30-44 years (Table 15 & Table 16). In females, the commonest causes of YLL were breast cancer (13%), ischaemic heart disease (6.6%) and cerebrovascular diseases (5.8%) (Table 17).

Table 15 : Top 10 causes of YLL, 30-44 years old, overall

		YLL	%
1	Ischaemic heart disease	29207	12.3
2	Road traffic injury	23837	10.0
3	HIV	22139	9.3
4	Cerebrovascular disease (stroke)	13266	5.6
5	Lower respiratory infection	11263	4.7
6	Breast cancer	9061	3.8
7	Endocrine, nutritional, blood and immune disorder	7872	3.3
8	Tuberculosis	5676	2.4
9	Meningitis & Encephalitis	4630	1.9
10	Nephritis and nephrosis	4485	1.9

Table 16 : Top 10 causes of YLL, 30-44 years old, male

		YLL	%
1	Ischaemic heart disease	24602	14.7
2	HIV	20482	12.2
3	Road traffic injury	20236	12.1
4	Cerebrovascular diseases (Stroke)	9212	5.5
5	Lower respiratory infection	7704	4.6
6	Endocrine, nutritional, blood and immune disorder	6609	3.9
7	Tuberculosis	5980	3.6
8	Meningitis & Encephalitis	2866	1.7
9	Nephritis and nephrosis	2797	1.7
10	Drowning	2741	1.6

Table 17 : Top 10 causes of YLL, 30-44 years old, female

		YLL	%
1	Breast cancer	9061	13.0
2	Ischaemic heart diseases	4605	6.6
3	Cerebrovascular diseases (Stroke)	4054	5.8
4	Road traffic injuries	3602	5.2
5	Lower respiratory infections	3559	5.1
6	Tuberculosis	1859	2.7
7	Meningitis and Encephalitis	1764	2.5
8	Asthma	1748	2.5
9	Leukaemia	1709	2.4
10	Nephritis and nephrosis	1688	2.4

f) 45 – 59 years old

The top two causes of YLL among 45-59 years old adults were ischaemic heart disease(22.9%) and cerebrovascular disease (10.7%) (Table 18). Similar ranking was observed in both males and females (Table 19 & 20).

Table 18 : Top 10 causes of YLL, 45-59 years old, overall

		YLL	%
1	Ischaemic heart disease	92207	22.9
2	Cerebrovascular disease (Stroke)	43019	10.7
3	Road traffic injury	17177	4.3
4	Trachea, bronchus and lung cancer	16712	4.2
5	Lower respiratory infections	16691	4.2
6	Breast cancer	15555	3.9
7	Nephritis and nephrosis	14228	3.5
8	Diabetes mellitus	11582	2.9
9	Colon and rectum cancer	8674	2.2
10	Liver cancer	7892	1.9

Table 19 : Top 10 causes of YLL, 45-59 years old, male

		YLL	%
1	Ischaemic heart disease	71641	28.1
2	Cerebrovascular disease (Stroke)	25571	10.0
3	Road traffic injury	13646	5.4
4	Trachea, bronchus and lung cancer	11068	4.3
5	Lower respiratory infection	10268	4.0
6	Nephritis and nephrosis	8376	3.3
7	Liver cancer	6274	2.5
8	Diabetes mellitus	5806	2.3
9	HIV	5116	2.0
10	Mouth & oropharynx cancer	5064	2.0

Table 20 : Top 10 causes of YLL, 45-59 years old, female

		YLL	%
1	Ischaemic heart disease	20566	13.9
2	Cerebrovascular disease (Stroke)	17449	11.8
3	Breast cancer	15522	10.5
4	Lower respiratory infections	6423	4.3
5	Nephritis and Nephrosis	5852	4.0
6	Diabetes mellitus	5776	3.9
7	Trachea, bronchus and lung cancer	5644	3.8
8	Ovary cancer	4034	2.7
9	Colon and rectum cancer	3965	2.7
10	Road traffic injury	3531	2.4

g) 60 – 69 years old

The top three leading causes of YLL among elderly aged 60-69 years were ischaemic heart disease (24.2%), cerebrovascular disease (13.8%) and trachea, bronchus and lung cancer (4.8%) (Table 21). Similar ranking was seen in males, but breast cancer has replaced trachea, bronchus and lung cancer and ranked as the third cause of YLL in females (Table 22 and Table 23).

Table 21 : Top 10 causes of YLL, 60-69 years old, overall

		YLL	%
1	Ischaemic heart disease	67783	24.2
2	Cerebrovascular disease (Stroke)	38702	13.8
3	Trachea, bronchus and lung cancer	13534	4.8
4	Lower respiratory infection	10908	3.9
5	Nephritis and nephrosis	10577	3.8
6	Diabetes mellitus	8449	3.0
7	Chronic obstructive pulmonary disease	8070	2.9
8	Colon and rectum cancer	6146	2.2
9	Breast cancer	5749	2.1
10	Liver cancer	5547	1.9

Table 22 : Top 10 causes of YLL, 60-69 years old, male

		YLL	%
1	Ischaemic heart disease	44267	26.9
2	Cerebrovascular disease (Stroke)	20694	12.6
3	Trachea, bronchus and lung cancers	8763	5.3
4	Chronic obstructive pulmonary disease	6402	3.9
5	Lower respiratory infection	5979	3.6
6	Nephritis and nephrosis	5652	3.4
7	Diabetes mellitus	4399	2.7
8	Liver cancer	4373	2.7
9	Road traffic injury	4324	2.6
10	Colon and rectum cancer	3676	2.2

Table 23 : Top 10 causes of YLL, 60-69 years old, female

		YLL	%
1	Ischaemic heart disease	23516	20.4
2	Cerebrovascular disease (Stroke)	18008	15.6
3	Breast cancer	5693	4.9
4	Lower respiratory infections	4929	4.3
5	Nephritis and nephrosis	4925	4.3
6	Trachea, bronchus and lung cancers	4771	4.1
7	Diabetes mellitus	4051	3.5
8	Colon and rectum cancer	2470	2.1
9	Ovary cancer	1720	1.5
10	Chronic obstructive pulmonary disease	1669	1.4

h) 70 – 79 years old

The top three leading causes of YLL among 70-79 years old elderly were ischaemic heart disease(25.1%), cerebrovascular disease (15.4%) and chronic obstructive pulmonary disease (4.6%) (Table 24). The ranking remained the same in males, but in females, the third rank was nephritis and nephrosis (Table 25 and Table 26).

Table 24 : Top 10 causes of YLL, 70-79 years old, overall

		YLL	%
1	Ischaemic heart disease	52245	25.1
2	Cerebrovascular disease (Stroke)	31951	15.4
3	Chronic obstructive pulmonary disease	9563	4.6
4	Trachea, bronchus and lung cancer	8953	4.3
5	Lower respiratory infection	6914	3.3
6	Nephritis and nephrosis	6707	3.2
7	Colon and rectum cancers	4355	2.1
8	Diabetes mellitus	4319	2.1
9	Liver cancer	2982	1.4
10	Road traffic injury	2383	1.1

Table 25 : Top 10 causes of YLL, 70-79 years old, male

		YLL	%
1	Ischaemic heart disease	25618	25.4
2	Cerebrovascular disease (Stroke)	13111	13.0
3	Chronic obstructive pulmonary disease	6758	6.7
4	Trachea, bronchus and lung cancer	5612	5.6
5	Lower respiratory infection	3658	3.6
6	Nephritis and nephrosis	2886	2.9
7	Road traffic injury	1997	1.9
8	Colon and rectum cancer	1693	1.7
9	Liver cancer	1653	1.6
10	Tuberculosis	1628	1.6

Table 26 : Top 10 causes of YLL, 70-79 years old, female

		YLL	%
1	Ischaemic heart disease	26628	24.9
2	Cerebrovascular disease (Stroke)	18841	17.6
3	Nephritis and nephrosis	3821	3.6
4	Trachea, bronchus and lung cancer	3341	3.1
5	Lower respiratory infection	3256	3.0
6	Chronic obstructive pulmonary disease	2805	2.6
7	Diabetes mellitus	2795	2.6
8	Colon and rectum cancer	2657	2.5
9	Breast cancer	1926	1.8
10	Liver cancer	1328	1.2

i) 80 years old & above

The top three leading causes of YLL (ischaemic heart disease, cerebrovascular disease and chronic obstructive pulmonary disease) among elderly aged 80 years and above (Table 27) were consistent with those aged 70-79 years. Similar ranking was observed in males (Table 28). However in females, the third rank was nephritis and nephrosis (Table 29).

Table 27 : Top 10 causes of YLL, 80 years old & above, overall

		YLL	%
1	Ischaemic heart disease	12663	20.5
2	Cerebrovascular disease (Stroke)	10849	17.5
3	Chronic obstructive pulmonary disease	2509	4.1
4	Nephritis and nephrosis	1980	3.2
5	Lower respiratory infection	1886	3.0
6	Trachea, bronchus and lung cancer	1530	2.5
7	Colon and rectum cancers	1369	2.2
8	Diabetes mellitus	1176	1.9
9	Liver cancer	591	0.9
10	Stomach cancer	519	0.8

Table 28 : Top 10 causes of YLL, 80 years old & above, male

		YLL	%
1	Ischaemic heart disease	3586	21.1
2	Cerebrovascular disease (Stroke)	2554	15.0
3	Chronic obstructive pulmonary disease	1360	8.0
4	Lower respiratory infection	631	3.7
5	Trachea, bronchus and lung cancer	578	3.4
6	Nephritis and nephrosis	565	3.3
7	Colon and rectum cancers	327	1.9
8	Diabetes mellitus	244	1.4
9	Tuberculosis	225	1.3
10	Prostate cancer	167	1.0

Table 29 : Top 10 causes of YLL, 80 years old & above, female

		YLL	%
1	Ischaemic heart disease	9077	20.2
2	Cerebrovascular disease (Stroke)	8295	18.5
3	Nephritis and nephrosis	1415	3.2
4	Lower respiratory infection	1255	2.8
5	Chronic obstructive pulmonary disease	1149	2.6
6	Colon and rectum cancer	1042	2.3
7	Trachea, bronchus and lung cancer	952	2.1
8	Diabetes mellitus	932	2.1
9	Liver cancer	431	1.0
10	Endocrine, nutritional, blood and immune disorder	416	0.9

7. DISCUSSION

Results from the analyses of leading causes of death and premature death are important evidence-based information to guide the decision-making process pertaining to health. The rank order and magnitude of diseases and injuries in population will provide accurate and useful information to health programmers and policy-makers in decision-making and policy-planning.

Overall, in year 2008, 57.6% of mortality were medically certified whilst 42.4% were non-medically certified. This indicates that there was undoubtedly substantial uncertainty in determining causes of death pattern. Nonetheless, the GBD 2005 framework provides a set of techniques and methods to estimate cause-specific mortality pattern at population level from incomplete and miss-specified data. In the present study, we applied those approaches to estimate the pattern of causes of death in Malaysia and thus filled up the gap of causes of death among the non-medically certified deaths. There is currently no evidence to confirm or refute these estimates. However, the use of structured verbal autopsy method can yield mortality data of better quality, and future surveys using this method are useful in the estimation of burden of disease in Malaysia in the near future[8].

These data manipulations enabled a plausible interpretation of the cause of death structure in Malaysia. However, improving the quality of reported causes of death is still an imperative milestone for the Ministry of Health and other relevant agencies. The attention given to the certification of cause of death data in this study has led to a pilot study on death certification in the state of Malacca, Malaysia with the aim to improve the certification process. Alternative data collection using verbal autopsy interview in the near future to verify the true causes of death which are currently being categorised as ill-defined cause.

The present findings demonstrated that the epidemiology of diseases in Malaysia is more of the epidemiological pattern of developing countries, as reported in the international comparative assessments study[9]. It showed that mortality due to ischaemic heart disease [25503, (20.4%)] and cerebrovascular disease [15577, (12.5%)] are the leading causes of death in both sexes. Besides, infectious disease is still the major cause of death in Malaysia [(ranked third; 11104, (8.9%)). The death rate was higher in Malaysian males [72202, (57.8%)] than females [52655, (42.2%)].

The total years of life lost (YLLs) for Malaysian population in 2008 was 1.5 million. Premature mortality was responsible for 918,110 YLLs in men, and 594,797 in women. Almost three quarters (68%) of the burden of premature deaths resulted from non-communicable disease and communicable disease contributed to about one fifth (20%) of this burden.

The major cause of YLL in both men and women was ischaemic heart disease, accounting for 18.8% and 14.3% of total YLL in men and women, respectively. In men, the other major contributors of YLL were road traffic injury (RTI), cerebrovascular disease, lower respiratory infection and HIV which constituted 43% of the total burden of premature deaths among Malaysian men. For women, cerebrovascular disease and breast cancer were the second and third contributors of YLL, followed by lower respiratory infection and road traffic injury. Together, these four diseases accounted for 36% of the burden of premature death among Malaysian women.

The calculation of mortality component of Burden of Disease, YLL is relatively straightforward, however the precision of these estimates is entirely dependent on the quality of information on underlying causes of death. Although Malaysia has good vital registration system, the system allows the death to be certified by lay person such as police officers and relatives of the deceased (ie : non-medically certified death).

In 2008, almost half of all registered deaths in Malaysia were non-medically certified. This continues to pose a challenge for the calculation of mortality or premature death's burden since a large portion of deaths were assigned with non-medically certified, ill-defined causes (eg : death due to old age and miss-specified vascular diseases, particularly cardiac arrest. This may indicate the miscoding of deaths due to the lack of knowledge on medical history, inadequate diagnosis by physicians or the families were unaware of the deceased's medical status which then resulted in incomplete information on the medical card. These issues strongly suggest the need for urgent measures to improve the cause of death certification and coding practice among the physicians at hospital level, through adequate training programs in death certification procedures and ICD coding[10].

The process of establishing and developing a death registration system which only encompasses medically certified cause of death would require considerable resources, and in many countries, they have taken more than a century to establish

such efficient registry[11]. Nonetheless, Malaysia has developed an established vital registry, and the focus now should be emphasised on the strengthening of the cause of death reporting mechanisms[12]. A complete review of medical certificates should be first considered by relevant authorities and ministries of the Government of Malaysia, in conjunction with studies to validate medically certified causes of death in hospitals[13,14]. Also, like other Asian countries, Malaysia should undertake pilot projects to improve cause of death attribution for deaths occurring outside health facilities, using verbal autopsy methods[15,16,17].

8. CONCLUSION

Mortality estimates are the key parameter in providing crucial and comprehensive information on the total burden of disease in the country. The information would enable relevant authorities to plan, implement and evaluate health activities and promotional programmes to prevent and reduce the burden of premature death. However, the accuracy of the mortality estimates depends on the quality of the reported cause of death. Therefore, it is critical and extremely important to have a standard scheme for medical certification of cause of death in Malaysia as well as encourage multi-agency collaboration in order to provide the best estimates of cause-specific mortality for health development.

9. REFERENCES

1. **Ruzicka, L. & Lopez, A.** The use of cause-of-death statistics for health situation assessment: National and international experiences. *World Health Statistics Quarterly. 43*: 249-57 (1990).

2. **Rao, C., Bradshaw, D. & D.Mathers, C.** Improving death registration and statistics in developing countries: Lessons from sub-Saharan Africa. *South African Medical Journal. 9(2)*: 79-97 (1997).

3. **Jabatan Perangkaan Malaysia [*Department of Statistics Malaysia*].** Siri Masa Perangkaan Penting *[Vital Statistics Time Series]* Malaysia 1963-1998. Kuala Lumpur, 2002.

4. **WHO.** Mortality: guidelines for certification and rules for coding. *International StatisticalClassification of Diseases and Health Related Problems - Tenth Revision. Volume 2: Instruction Manual.* Geneva, World Health Organization, 1993, pp. 30-65.

5. **Rao, C., Lopez, A.D., Yang, G., Begg, S. & Ma, J.** Evaluating national cause-of-death statistics: principles and application to the case of China. *Bull World Health Organ. 83* (8): 618-25 (2005).

6. **Global Burden of Disease Study**. GBD 2005 STUDY OPERATIONS MANUAL – FINAL JANUARY 2009. Available from : http://www.globalburden.org/GBD Study Operations Manual Jan 20 2009.pdf (Accessed 31 March 2011)

7. **Murray, C.J.L. & Lopez, A.D.** *The global burden of disease : a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020.* Cambridge, MA, Published by the Harvard School of Public Health on behalf of the World Health Organization and the World Bank ; Distributed by Harvard University Press, 1996.

8. **WHO.** Verbal autopsy standards: ascertaining and attributing causes of death. Geneva, World Health Organization, 2007.

9. **Mathers, C.D., Lopez, A. & Murray, C.J.L.** The Burden of Disease and Mortality by Condition: Data, Methods, and Results for 2001. In: Lopez, A.D., Mathers, C.D. et al., eds. *Global Burden of Disease and Risk Factors*. New York, World Bank and Oxford University Press, 2006.

10. **Aung, E., Rao, C. & Walker, S.** Teaching cause-of-death certification: lessons from international experience. *Postgrad Med J. 86* (1013): 143-52 (2010).

11. **Mahapatra, P., Shibuya, K., Lopez, A. et al.** Civil registration systems and vital statistics: successes and missed opportunities. *Lancet. 370* (9599): 1653-64 (2007).

12. **Ministry of Health Malaysia.** Malaysian National Burden of Disease *Malaysia's Health 2002-technical report of the Director-General of Health; MOH/K/JKA/02.03(TR)*, 2004, pp. pg182-183.

13. **Rao, C., Yang, G., Hu, J. et al.** Validation of cause-of-death statistics in urban China. *Int J Epidemiol. 36* (3): 642-51 (2007).

14. **Pattaraarchachai, J., Rao, C., Polprasert, W. et al.** Cause-specific mortality patterns among hospital deaths in Thailand: validating routine death certification. *Popul Health Metr. 8*: 12 (2010).

15. **Wang, L., Yang, G., Jiemin, M. et al.** Evaluation of the quality of cause of death statistics in rural China using verbal autopsies. *J Epidemiol Community Health. 61* (6): 519-26 (2007).

16. **Ngo, A.D., Rao, C., Hoa, N.P., Adair, T. & Chuc, N.T.** Mortality patterns in Vietnam, 2006: Findings from a national verbal autopsy survey. *BMC Res Notes. 3*: 78 (2010).

17. **Polprasert, W., Rao, C., Adair, T. et al.** Cause-of-death ascertainment for deaths that occur outside hospitals in Thailand: application of verbal autopsy methods. *Popul Health Metr. 8*: 13 (2010).

Deaths by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
OVERALL	124,857	72,202	52,655	2,203	843	4,804	7,562	15,319	14,835	15,985	10,651	1,696	559	1,619	3,014	8,291	9,224	14,421	13,831
GROUP I	22,597	13,007	9,591	1,112	134	750	2,239	2,237	1,798	2,433	2,303	811	119	396	644	1,126	1,229	2,178	3,087
GROUP II	93,592	52,130	41,461	929	399	1,302	3,863	11,853	12,439	13,141	8,205	788	295	797	2,096	6,856	7,837	12,103	10,690
GROUP III	8,668	7,065	1,603	162	309	2,752	1,460	1,230	598	411	143	97	146	426	274	309	158	140	53
INFECTIOUS DISEASES	16,167	9,325	6,842	126	85	595	1,889	1,624	1,246	1,859	1,899	136	87	262	420	677	830	1,740	2,690
RESPIRATORY INFECTIONS	4,771	2,824	1,947	139	49	155	347	609	552	573	399	92	31	98	152	358	397	431	387
MATERNAL CONDITIONS	199	0	199	0	0	0	0	0	0	0	0	0	0	37	72	91	0	0	0
NEONATAL CONDITIONS	1,414	840	573	840	0	0	0	0	0	0	0	573	0	0	0	0	0	0	0
NUTRITIONAL DEFICIENCY	47	18	29	7	0	0	3	4	0	0	4	10	0	0	0	0	2	7	10
MALIGNANT NEOPLASMS	20,171	10,369	9,802	56	140	331	757	2,524	2,762	2,565	1,235	52	109	221	930	2,628	2,081	2,255	1,524
BENIGN NEOPLASMS	1,064	531	532	14	21	59	49	114	138	101	35	16	20	23	45	115	107	110	94
DIABETES MELLITUS	2,634	1,241	1,392	0	0	24	76	357	393	240	153	0	0	21	64	320	322	377	288
ENDOCRINE, NUTRITIONAL, BLOOD AND IMMUNE DISORDERS	1,255	767	488	21	23	89	293	151	62	80	48	18	15	44	53	101	53	75	128
MENTAL AND BEHAVIOURAL DISORDER	47	38	9	0	0	6	12	18	2	0	0	0	0	2	4	4	0	0	0
NEUROLOGICAL CONDITIONS	991	568	423	70	28	69	72	127	84	85	32	53	18	23	53	57	91	61	67
SENSE ORGANS DISEASES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARDIOVASCULAR AND CIRCULATORY DISEASES	44,420	25,459	18,960	48	61	402	1,806	6,300	6,248	6,506	4,087	65	56	150	511	2,339	3,540	6,562	5,738
RESPIRATORY DISEASES	9,091	5,613	3,478	95	38	135	242	604	1,111	1,890	1,499	56	9	75	147	361	507	1,049	1,274
DIGESTIVE DISEASES	6,197	3,776	2,421	33	23	54	338	928	836	982	583	26	15	39	60	332	405	722	822
GENITO URINARY DISEASE	5,501	2,671	2,829	13	17	43	158	609	691	649	490	6	7	58	105	473	644	832	704
SKIN DISEASES	88	26	62	2	0	2	0	2	7	5	8	0	2	7	2	15	20	12	5
MUSCULOSKELETAL DISEASES	753	329	424	1	2	29	34	100	90	37	36	0	11	94	92	93	56	37	41
CONGENITAL ANOMALIES	1,361	733	628	574	46	59	25	18	11	0	0	495	31	37	30	18	5	6	5
ORAL CONDITIONS	20	8	12	0	0	0	2	2	5	0	0	0	0	3	0	0	5	4	0
UNINTENTIONAL DISEASES	8,096	6,627	1,469	158	305	2,621	1,317	1,141	550	400	135	93	143	391	238	285	144	126	49
INTENTIONAL INJURIES	572	438	134	4	4	131	143	89	48	11	8	4	3	35	36	24	14	14	4

Deaths by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
A. INFECTIOUS DISEASES																			
1. Tuberculosis	1,633	1,225	408	4	2	72	268	291	188	260	141	0	7	42	80	99	90	55	36
2. STDs Excluding HIV																			
a. Syphilis	4	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0
b. Chlamydia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c. Gonorrhoea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. HIV	1,580	1,421	159	5	10	156	911	291	37	11	0	4	11	21	69	33	10	6	5
4. Diarrhoeal Diseases	379	185	193	32	3	13	22	34	22	19	40	39	6	14	11	26	19	37	41
5. EPI-Cluster																			
a. Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Pertussis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c. Tetanus	12	6	6	0	0	0	0	0	0	6	0	0	0	0	2	2	2	0	0
d. Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
e. Measles	5	2	3	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
6. Meningitis & Encephalitis	825	489	336	46	45	95	126	91	31	26	28	48	28	55	75	53	30	28	21
7. Hepatitis																			
a. Hepatitis A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Hepatitis B	266	178	88	0	0	2	30	63	62	13	8	2	0	0	5	22	34	19	5
c. Other Hepatitis	92	74	18	0	0	2	22	32	11	8	0	0	0	0	0	6	9	3	0
8. Malaria	32	26	5	0	0	2	7	5	6	6	0	0	0	0	0	2	0	4	0
9. Dengue	235	127	108	1	9	44	24	23	11	11	4	9	6	26	23	26	12	6	0
10. Other infections diseases	11,104	5,592	5,512	36	16	209	480	792	879	1,501	1,678	29	30	104	156	409	624	1,579	2,582
B. RESPIRATORY INFECTIONS																			
1. Lower respiratory infections	4,762	2,816	1,947	139	49	155	347	609	548	573	395	92	31	98	152	358	397	431	387
2. Upper respiratory infections	8	8	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0
3. Otitis media	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. MATERNAL CONDITIONS																			
1. Maternal Haemorrhage	47	0	47	0	0	0	0	0	0	0	0	0	0	10	25	12	0	0	0
2. Maternal sepsis	14	0	14	0	0	0	0	0	0	0	0	0	0	4	0	10	0	0	0
3. Hypertensive disorders of pregnancy	45	0	45	0	0	0	0	0	0	0	0	0	0	7	12	26	0	0	0
4. Obstructed labour	21	0	21	0	0	0	0	0	0	0	0	0	0	0	5	15	0	0	0
5. Abortion	11	0	11	0	0	0	0	0	0	0	0	0	0	3	7	0	0	0	0
6. Other maternal conditions	61	0	61	0	0	0	0	0	0	0	0	0	0	12	22	27	0	0	0
D. NEONATAL CONDITIONS																			
1. Low birth weight	773	477	295	477	0	0	0	0	0	0	0	295	0	0	0	0	0	0	0
2. Birth trauma & asphyxia	214	114	100	114	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0
3. Neonatal infections	232	136	96	136	0	0	0	0	0	0	0	96	0	0	0	0	0	0	0
4. Other neonatal	195	113	82	113	0	0	0	0	0	0	0	82	0	0	0	0	0	0	0
E. NUTRITIONAL DEFICIENCY																			
1. Protein-energy malnutrition	34	7	27	6	0	0	2	0	0	0	0	10	0	0	0	0	0	7	10
2. Nutritional anaemia	2	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
3. Other nutritional disorders	11	9	2	1	0	0	0	4	0	0	4	0	0	0	0	0	2	0	0

Deaths by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
F. NEOPLASMS																			
1. Mouth & oropharynx cancer	1,156	810	346	0	0	28	122	303	211	128	17	0	0	15	45	105	68	58	55
2. Oesophagus cancer	381	227	154	0	0	0	7	57	69	59	35	0	0	0	4	22	32	40	55
3. Stomach cancer	1,078	574	505	0	0	8	33	100	147	184	100	0	0	6	30	98	101	160	111
4. Colon and rectum cancers	2,366	1,206	1,160	0	0	10	93	289	329	280	205	0	2	18	47	217	200	354	321
5. Liver cancers	1,746	1,227	520	2	0	8	91	385	386	254	100	3	0	5	15	92	94	177	133
6. Pancreas cancer	771	435	337	0	0	0	24	93	139	118	61	0	0	2	15	57	83	119	61
7. Trachea, bronchus and lung cancers	4,323	2,816	1,507	0	0	13	106	667	782	885	362	0	0	17	70	314	375	437	294
8. Breast cancer	2,086	9	2,077	0	0	0	0	2	5	3	0	0	0	18	397	852	448	252	111
9. Cervix cancer	487	0	487	0	0	0	0	0	0	0	0	0	0	0	59	182	106	96	44
10. Ovary cancer	552	0	552	0	0	0	0	0	0	0	0	0	0	11	53	222	134	88	44
11. Prostate cancer	399	399	0	0	0	0	0	32	96	167	105	0	0	0	0	0	0	0	0
12. Bladder cancer	269	227	42	0	0	2	6	30	54	84	52	0	0	0	0	8	12	10	11
13. Brain & other CNS cancer	345	217	128	5	23	29	22	72	35	17	13	5	20	9	21	31	35	7	0
14. Lymphoma	1,040	621	420	3	18	39	63	143	174	119	61	2	4	32	27	68	110	118	61
15. Leukaemia	1,101	598	504	32	61	110	82	108	103	76	26	28	54	51	74	109	47	97	44
16. Other malignant neoplasms	2,068	1,005	1,063	14	38	84	107	245	230	192	96	14	30	39	74	252	236	241	177
G. BENIGN NEOPLASM																			
Benign neoplasms	1,064	531	532	14	21	59	49	114	138	101	35	16	20	23	45	115	107	110	94
H. DIABETES MELLITUS																			
Diabetes Mellitus	2,634	1,241	1,392	0	0	24	76	357	393	240	153	0	0	21	64	320	322	377	288
I. ENDOCRINE, NUTRITIONAL, BLOOD AND IMMUNE DISORDERS																			
Endocrine, nutritional, blood and immune disorders	1,255	767	488	21	23	89	293	151	62	80	48	18	15	44	53	101	53	75	128
J. MENTAL AND BEHAVIOURAL DISORDER	0	0	0																
1. Unipolar dispressive disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Bipolar affective disorder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Schizophernia	7	4	4	0	0	0	0	2	2	0	0	0	0	0	2	2	0	0	0
4. Alcohol use disorders	12	12	0	0	0	0	2	11	0	0	0	0	0	0	0	0	0	0	0
5. Drug use disorders	14	14	0	0	0	2	8	4	0	0	0	0	0	0	0	0	0	0	0
6. Anxiety disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Other mental and behavioral disorders	13	8	5	0	0	4	2	2	0	0	0	0	0	2	2	2	0	0	0
K. NEUROLOGICAL CONDITIONS																			
1. Alzheimer's disease and other dementias	49	13	36	0	0	0	0	7	0	3	4	0	0	0	0	0	2	13	21
2. Parkinson's diseases	111	66	45	0	0	0	3	11	16	24	12	0	0	0	0	11	12	6	15
3. Epilepsy	185	128	57	15	12	27	35	27	4	3	4	9	9	11	11	13	4	0	0
4. Other neurological conditions	645	361	285	54	16	42	33	83	64	56	12	44	9	12	43	32	72	42	31
L. SENSE ORGANS DISEASES																			
1. Glaucoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Cataract	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Hearing loss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Other sense organ disorder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M. CARDIOVASCULAR AND CIRCULATORY DISEASES																			
1. Rheumatic heart disease	238	90	148	0	0	14	14	21	23	14	4	3	7	14	36	25	14	37	11
2. Hypertensive heart disease	243	161	82	0	0	4	16	55	35	23	29	0	0	0	2	13	12	28	27
3. Ischaemic heart disease	25,503	15,836	9,667	4	7	118	1,131	4,336	3,993	4,000	2,246	5	2	22	203	1,155	1,900	3,579	2,801
4. Cerebrovascular diseases (Stroke)	15,577	7,725	7,852	27	16	144	423	1,552	1,871	2,092	1,600	19	24	62	177	980	1,456	2,575	2,559
5. Pericarditis, endocarditis and myocarditis	426	283	142	3	20	48	96	58	35	19	4	6	6	20	23	26	24	27	11
6. Other circulatory diseases	2,433	1,364	1,069	15	18	74	126	277	292	359	203	32	17	31	70	141	133	316	330

Deaths by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
N. RESPIRATORY DISEASES																			
1. Chronic obstructive pulmonary disease	3,635	2,732	903	3	4	2	12	166	595	1,099	852	3	0	2	7	19	135	383	354
2. Asthma	1,109	634	476	10	10	39	101	149	139	125	60	9	6	34	75	137	87	83	46
3. Other respiratory diseases	4,347	2,248	2,099	82	24	94	129	290	377	666	587	44	4	39	66	205	285	583	873
O. DIGESTIVE DISEASES																			
1. Peptic ulcer disease	717	425	292	2	2	13	35	80	68	137	88	3	2	2	5	17	62	87	113
2. Appendicitis	43	20	22	0	6	0	3	2	0	5	4	0	2	2	2	6	2	4	5
3. Cirrhosis of the liver	843	619	224	1	4	6	89	253	156	95	16	2	2	7	7	59	75	63	10
4. Other digestive diseases	4,594	2,711	1,883	30	12	36	210	594	612	744	474	21	9	28	46	251	265	569	694
P. GENITO URINARY DISEASE																			
1. Nephritis and nephrosis	3,810	2,020	1,790	7	16	41	128	512	511	452	354	6	4	35	73	332	390	514	437
2. Benign prostatic hypertrophy	16	16	0	0	0	0	3	0	5	0	8	0	0	0	0	0	0	0	0
3. Other urinary diseases	1,675	636	1,039	7	2	2	27	97	176	197	129	0	4	23	32	141	254	319	267
Q. SKIN DISEASES																			
Skin and subcutaneous diseases	88	26	62	2	0	2	0	2	7	5	8	0	2	7	2	15	20	12	5
R. MUSCULOSKELETAL DISEASES																			
1. Rheumatoid arthritis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Back pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Gout	4	4	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
4. Other musculoskeletal disorders	749	325	424	1	2	29	34	98	88	37	36	0	11	94	92	93	56	37	41
S. CONGENITAL ANOMALIES																			
1. Neural tube defects	112	64	48	64	0	0	0	0	0	0	0	48	0	0	0	0	0	0	0
2. Congenital heart anomalies	574	306	269	177	31	51	24	14	9	0	0	159	22	33	27	15	5	3	5
3. Cleft palate & lip	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Down's syndrome	47	20	27	13	3	2	0	2	0	0	0	18	4	2	4	0	0	0	0
5. Other chromosomal abnormalities	188	94	95	92	2	0	0	0	0	0	0	95	0	0	0	0	0	0	0
6. Other congenital anomalies	439	249	190	227	10	6	2	2	2	0	0	175	6	2	0	4	0	4	0
T. ORAL CONDITIONS																			
1. Dental caries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Periodontitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Edentulism	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Other oral diseases	20	8	12	0	0	0	2	2	5	0	0	0	0	3	0	0	5	4	0
U. UNINTENTIONAL DISEASES																			
1. Road traffic injuries	5,835	4,895	940	46	140	2,235	897	798	390	307	82	27	81	331	154	192	94	50	11
2. Poisonings	99	64	35	1	0	10	24	16	6	3	2	2	0	9	9	7	5	1	1
3. Falls	412	322	90	6	9	75	72	71	47	22	21	4	5	11	23	19	5	17	7
4. Fires, heat and hot substances	75	51	24	3	4	7	12	9	2	8	7	0	5	1	3	2	3	4	6
5. Drowning	692	556	136	43	134	151	121	70	14	17	5	25	41	19	11	23	0	11	7
6. Other unintentional injuries	983	739	244	58	19	142	190	177	91	42	18	36	12	20	38	42	36	43	17
V. INTENTIONAL INJURIES																			
1. Self-inflicted injuries	167	145	22	0	0	49	58	27	8	2	2	0	2	4	6	6	3	1	0
2. Interpersonal violence /homicide	405	293	111	4	4	82	85	62	40	9	7	4	2	31	30	18	11	12	4

YEARS OF LIFE LOST (YLL) by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
OVERALL	1,512,907	918,110	594,797	64,460	23,832	125,147	167,697	254,505	164,444	101,021	17,003	50,524	16,184	43,605	69,906	147,674	115,205	106,874	44,824
GROUP I	295,695	182,069	113,626	32,543	3,811	19,310	50,043	37,707	19,866	15,113	3,676	24,175	3,430	10,638	15,079	18,929	15,289	16,082	10,006
GROUP II	1,034,230	587,003	447,227	27,181	11,291	33,789	84,786	195,751	137,880	83,225	13,099	23,462	8,530	21,433	48,422	123,079	97,918	89,737	34,646
GROUP III	182,982	149,038	33,944	4,736	8,730	72,047	32,868	21,047	6,698	2,683	228	2,887	4,225	11,535	6,405	5,666	1,999	1,055	172
INFECTIOUS DISEASES	186,818	119,396	67,422	3,684	2,423	15,314	42,269	27,381	13,837	11,455	3,032	4,047	2,528	7,031	9,835	12,150	10,330	12,783	8,718
RESPIRATORY INFECTIONS	63,441	37,743	25,698	4,064	1,388	3,996	7,704	10,268	6,028	3,658	637	2,747	902	2,627	3,559	6,423	4,929	3,256	1,255
MATERNAL CONDITIONS	3,019	0	3,019	0	0	0	0	0	0	0	0	0	0	979	1,685	355	0	0	0
NEONATAL CONDITIONS	41,684	24,596	17,088	24,596	0	0	0	0	0	0	0	17,088	0	0	0	0	0	0	0
NUTRITIONAL DEFICIENCY	733	333	399	199	0	0	70	58	0	0	6	293	0	0	0	0	30	43	33
MALIGNANT NEOPLASMS	249,249	121,583	127,666	1,635	3,955	8,642	16,558	41,639	30,895	16,287	1,971	1,560	3,167	5,936	21,391	47,503	26,238	16,932	4,939
BENIGN NEOPLASMS	15,041	7,716	7,325	423	579	1,548	1,082	1,874	1,492	663	56	474	589	631	1,056	2,078	1,368	824	305
DIABETES MELLITUS	29,822	14,239	15,582	0	0	611	1,657	5,806	4,399	1,524	244	0	0	564	1,465	5,776	4,051	2,795	932
ENDOCRINE, NUTRITIONAL, BLOOD AND IMMUNE DISORDERS	20,924	14,009	6,915	628	657	2,279	6,609	2,562	678	519	77	541	429	1,194	1,263	1,827	664	581	416
MENTAL AND BEHAVIOURAL DISORDER	941	746	196	0	0	152	261	306	26	0	0	0	0	49	77	69	0	0	0
NEUROLOGICAL CONDITIONS	16,711	9,914	6,797	2,033	797	1,812	1,617	2,135	907	562	51	1,579	538	606	1,253	994	1,164	446	216
SENSE ORGANS DISEASES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARDIOVASCULAR AND CIRCULATORY DISEASES	446,109	274,225	171,885	1,408	1,732	10,369	39,456	104,139	69,255	41,342	6,524	1,943	1,605	4,011	11,727	41,695	43,843	48,463	18,597
RESPIRATORY DISEASES	80,747	48,704	32,044	2,791	1,062	3,501	5,329	9,862	12,018	11,748	2,393	1,666	269	2,015	3,443	6,521	6,322	7,678	4,129
DIGESTIVE DISEASES	64,954	42,295	22,659	968	651	1,404	7,412	15,472	9,298	6,160	930	770	428	1,052	1,393	5,943	5,051	5,358	2,664
GENITO URINARY DISEASE	57,301	27,959	29,343	394	491	1,108	3,454	9,946	7,659	4,124	783	190	215	1,555	2,437	8,363	8,105	6,196	2,281
SKIN DISEASES	1,210	273	936	71	0	52	0	28	72	38	13	0	53	187	42	270	265	102	17
MUSCULOSKELETAL DISEASES	12,448	4,566	7,882	35	53	757	751	1,641	1,013	258	58	0	320	2,534	2,179	1,688	733	294	133
CONGENITAL ANOMALIES	38,482	20,656	17,826	16,794	1,315	1,555	559	309	124	0	0	14,739	915	1,005	696	350	56	47	17
ORAL CONDITIONS	291	119	172	0	0	0	41	33	45	0	0	0	0	93	0	0	58	22	0
UNINTENTIONAL DISEASES	171,260	140,068	31,192	4,605	8,631	68,678	29,651	19,536	6,142	2,610	215	2,782	4,135	10,583	5,552	5,213	1,825	944	158
INTENTIONAL INJURIES	11,722	8,970	2,752	131	99	3,369	3,217	1,511	556	74	13	105	89	953	854	453	173	110	14

YEARS OF LIFE LOST (YLL) by cause, age and sex, Malaysia 2008

	TOTAL PERSON	MALES	FEMALES	MALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	FEMALES 0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
A. INFECTIOUS DISEASES																			
1. Tuberculosis	23,449	16,806	6,642	109	53	1,831	5,980	4,937	2,044	1,628	225	0	215	1,115	1,859	1,810	1,129	398	117
2. STDs Excluding HIV																			
a. Syphilis	61	0	61	0	0	0	0	0	0	0	0	35	0	0	0	0	0	26	0
b. Chlamydia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c. Gonorrhoea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. HIV	33,926	30,457	3,469	144	286	3,928	20,482	5,116	430	71	0	122	322	554	1,656	635	112	51	17
4. Diarrhoeal Diseases	5,923	2,856	3,067	933	93	348	472	577	245	124	64	1,166	160	378	245	468	228	290	133
5. EPI-Cluster																			
a. Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Pertussis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c. Tetanus	130	28	101	0	0	0	0	0	0	28	0	0	0	0	39	35	28	0	0
d. Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
e. Measles	157	54	103	54	0	0	0	0	0	0	0	103	0	0	0	0	0	0	0
6. Meningitis & Encephalitis	17,184	10,094	7,090	1,350	1,281	2,462	2,866	1,561	347	181	45	1,427	805	1,488	1,764	946	377	218	67
7. Hepatitis																			
a. Hepatitis A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Hepatitis B	3,713	2,540	1,173	0	0	44	659	1,052	682	91	13	51	0	0	125	402	436	141	17
c. Other Hepatitis	1,516	1,276	240	0	0	44	484	562	128	57	0	0	0	0	0	99	116	26	0
8. Malaria	449	392	56	0	0	44	152	88	79	28	0	0	0	0	0	35	0	22	0
9. Dengue	4,923	2,563	2,361	35	246	1,158	530	391	124	71	6	280	162	701	553	470	144	51	0
10. Other infections diseases	95,387	52,330	43,057	1,058	464	5,454	10,644	13,097	9,759	9,174	2,679	862	865	2,795	3,594	7,251	7,761	11,560	8,368
B. RESPIRATORY INFECTIONS																			
1. Lower respiratory infections	63,386	37,688	25,698	4,064	1,388	3,996	7,704	10,268	5,979	3,658	631	2,747	902	2,627	3,559	6,423	4,929	3,256	1,255
2. Upper respiratory infections	55	55	0	0	0	0	0	0	49	0	6	0	0	0	0	0	0	0	0
3. Otitis media	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. MATERNAL CONDITIONS																			
1. Maternal Haemorrhage	941	0	941	0	0	0	0	0	0	0	0	0	0	277	594	69	0	0	0
2. Maternal sepsis	134	0	134	0	0	0	0	0	0	0	0	0	0	101	0	33	0	0	0
3. Hypertensive disorders of pregnancy	566	0	566	0	0	0	0	0	0	0	0	0	0	194	289	83	0	0	0
4. Obstructed labour	175	0	175	0	0	0	0	0	0	0	0	0	0	0	125	50	0	0	0
5. Abortion	262	0	262	0	0	0	0	0	0	0	0	0	0	88	173	0	0	0	0
6. Other maternal conditions	942	0	942	0	0	0	0	0	0	0	0	0	0	320	503	119	0	0	0
D. NEONATAL CONDITIONS																			
1. Low birth weight	22,772	13,975	8,797	13,975	0	0	0	0	0	0	0	8,797	0	0	0	0	0	0	0
2. Birth trauma & asphyxia	6,322	3,346	2,976	3,346	0	0	0	0	0	0	0	2,976	0	0	0	0	0	0	0
3. Neonatal infections	6,843	3,969	2,873	3,969	0	0	0	0	0	0	0	2,873	0	0	0	0	0	0	0
4. Other neonatal	5,748	3,305	2,442	3,305	0	0	0	0	0	0	0	2,442	0	0	0	0	0	0	0
E. NUTRITIONAL DEFICIENCY																			
1. Protein-energy malnutrition	568	199	369	163	0	0	35	0	0	0	0	293	0	0	0	0	0	43	33
2. Nutritional anaemia	35	35	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0
3. Other nutritional disorders	130	100	30	35	0	0	0	58	0	0	6	0	0	0	0	0	30	0	0

YEARS OF LIFE LOST (YLL) by cause, age and sex, Malaysia 2008

	TOTAL			MALES								FEMALES							
	PERSON	MALES	FEMALES	0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
F. NEOPLASMS																			
1. Mouth & oropharynx cancer	16,494	11,676	4,818	0	0	734	2,663	5,064	2,378	809	28	0	0	405	1,046	1,909	857	421	180
2. Oesophagus cancer	3,655	2,282	1,373	0	0	0	160	920	754	392	56	0	0	0	86	406	414	288	180
3. Stomach cancer	10,876	5,515	5,362	0	0	206	731	1,644	1,593	1,181	160	0	0	146	691	1,741	1,270	1,155	359
4. Colon and rectum cancers	24,444	12,681	11,763	0	0	243	2,028	4,708	3,676	1,698	327	0	53	474	1,102	3,965	2,470	2,657	1,042
5. Liver cancers	19,836	14,695	5,140	56	0	208	1,971	6,274	4,373	1,653	160	103	0	144	341	1,618	1,175	1,328	431
6. Pancreas cancer	7,973	4,445	3,528	0	0	0	525	1,496	1,552	774	98	0	0	47	347	1,018	1,048	870	198
7. Trachea, bronchus and lung cancers	45,379	28,640	16,739	0	0	333	2,286	11,068	8,763	5,612	578	0	0	437	1,594	5,644	4,771	3,341	952
8. Breast cancer	33,139	109	33,029	0	0	0	0	33	56	20	0	0	0	469	9,061	15,522	5,693	1,926	359
9. Cervix cancer	6,853	0	6,853	0	0	0	0	0	0	0	0	0	0	0	1,368	3,293	1,334	715	144
10. Ovary cancer	8,122	0	8,122	0	0	0	0	0	0	0	0	0	0	301	1,217	4,034	1,720	706	144
11. Prostate cancer	2,770	2,770	0	0	0	0	0	502	1,076	1,025	167	0	0	0	0	0	0	0	0
12. Bladder cancer	2,262	1,839	423	0	0	46	126	475	601	507	84	0	0	0	0	147	159	81	36
13. Brain & other CNS cancer	6,329	3,810	2,519	148	650	768	495	1,226	391	111	21	154	590	241	493	542	445	53	0
14. Lymphoma	13,461	8,214	5,246	92	515	1,033	1,388	2,373	1,947	769	98	51	107	843	623	1,188	1,363	873	198
15. Leukaemia	19,748	10,834	8,915	930	1,720	2,871	1,823	1,794	1,157	497	42	829	1,558	1,377	1,709	1,980	605	712	144
16. Other malignant neoplasms	27,910	14,074	13,836	409	1,070	2,199	2,361	4,062	2,580	1,239	153	422	859	1,054	1,711	4,496	2,913	1,805	575
G. BENIGN NEOPLASM																			
Benign neoplasms	15,041	7,716	7,325	423	579	1,548	1,082	1,874	1,492	663	56	474	589	631	1,056	2,078	1,368	824	305
H. DIABETES MELLITUS																			
Diabetes Mellitus	29,822	14,239	15,582	0	0	611	1,657	5,806	4,399	1,524	244	0	0	564	1,465	5,776	4,051	2,795	932
I. ENDOCRINE, NUTRITIONAL, BLOOD AND IMMUNE DISORDERS																			
Endocrine, nutritional, blood and immune disorders	20,924	14,009	6,915	628	657	2,279	6,609	2,562	678	519	77	541	429	1,194	1,263	1,827	664	581	416
J. MENTAL AND BEHAVIOURAL DISORDER	0	0	0																
1. Unipolar dispressive disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Bipolar affective disorder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Schizophernia	133	59	73	0	0	0	0	33	26	0	0	0	0	0	39	35	0	0	0
4. Alcohol use disorders	222	222	0	0	0	0	35	187	0	0	0	0	0	0	0	0	0	0	0
5. Drug use disorders	291	291	0	0	0	44	189	58	0	0	0	0	0	0	0	0	0	0	0
6. Anxiety disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Other mental and behavioral disorders	295	172	122	0	0	108	37	28	0	0	0	0	0	49	39	35	0	0	0
K. NEUROLOGICAL CONDITIONS																			
1. Alzheimer's disease and other dementias	319	132	187	0	0	0	0	106	0	19	6	0	0	0	0	0	30	90	67
2. Parkinson's diseases	1,035	600	435	0	0	0	78	180	166	157	19	0	0	0	0	196	142	47	50
3. Epilepsy	4,207	2,830	1,377	449	339	713	803	453	49	19	6	277	269	282	254	236	60	0	0
4. Other neurological conditions	11,150	6,352	4,798	1,584	458	1,099	737	1,396	692	367	19	1,302	269	324	999	563	933	308	100
L. SENSE ORGANS DISEASES																			
1. Glaucoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Cataract	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Hearing loss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Other sense organ disorder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M. CARDIOVASCULAR AND CIRCULATORY DISEASES																			
1. Rheumatic heart disease	3,860	1,356	2,503	0	0	356	307	346	256	84	7	103	214	376	846	452	181	298	34
2. Hypertensive heart disease	2,639	1,930	709	0	0	93	348	922	382	138	46	0	0	3	46	229	156	187	88
3. Ischaemic heart disease	258,232	173,040	85,192	106	206	3,015	24,602	71,641	44,267	25,618	3,586	158	53	589	4,605	20,566	23,516	26,628	9,077
4. Cerebrovascular diseases (Stroke)	145,694	76,123	69,571	786	451	3,745	9,212	25,571	20,694	13,111	2,554	561	698	1,666	4,054	17,449	18,008	18,841	8,295
5. Pericarditis, endocarditis and myocarditis	7,986	5,595	2,391	90	558	1,239	2,185	1,002	382	133	7	174	160	540	548	445	300	190	34
6. Other circulatory diseases	27,698	16,180	11,519	427	518	1,921	2,802	4,657	3,274	2,258	324	947	480	836	1,629	2,555	1,683	2,320	1,069

YEARS OF LIFE LOST (YLL) by cause, age and sex, Malaysia 2008

	TOTAL			MALES								FEMALES							
	PERSON	MALES	FEMALES	0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+	0-4	5-14	15-29	30-44	45-59	60-69	70-79	80+
N. RESPIRATORY DISEASES																			
1. Chronic obstructive pulmonary disease	23,957	17,698	6,259	90	106	44	250	2,688	6,402	6,758	1,360	87	0	49	173	328	1,669	2,805	1,149
2. Asthma	16,218	8,753	7,465	305	292	1,014	2,220	2,456	1,540	829	96	261	161	896	1,748	2,531	1,103	616	150
3. Other respiratory diseases	40,573	22,253	18,319	2,396	664	2,443	2,859	4,718	4,076	4,161	937	1,318	108	1,071	1,522	3,662	3,551	4,257	2,830
O. DIGESTIVE DISEASES																			
1. Peptic ulcer disease	6,735	4,328	2,408	54	53	334	789	1,317	757	881	141	103	53	44	119	308	780	634	366
2. Appendicitis	609	303	306	0	159	0	76	28	0	33	6	0	53	50	39	97	28	22	17
3. Cirrhosis of the liver	11,815	8,846	2,969	35	100	144	1,932	4,220	1,751	639	26	51	53	192	173	1,022	961	483	33
4. Other digestive diseases	45,795	28,819	16,976	879	339	926	4,614	9,907	6,789	4,607	757	616	268	765	1,062	4,516	3,283	4,220	2,248
P. GENITO URINARY DISEASE																			
1. Nephritis and nephrosis	40,915	21,974	18,940	199	445	1,055	2,797	8,376	5,652	2,886	565	190	108	941	1,688	5,852	4,925	3,821	1,415
2. Benign prostatic hypertrophy	128	128	0	0	0	0	70	0	45	0	13	0	0	0	0	0	0	0	0
3. Other urinary diseases	16,258	5,856	10,402	196	47	52	587	1,570	1,962	1,238	205	0	107	614	749	2,512	3,179	2,375	866
Q. SKIN DISEASES																			
Skin and subcutaneous diseases	1,210	273	936	71	0	52	0	28	72	38	13	0	53	187	42	270	265	102	17
R. MUSCULOSKELETAL DISEASES																			
1. Rheumatoid arthritis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Back pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Gout	59	59	0	0	0	0	0	33	26	0	0	0	0	0	0	0	0	0	0
4. Other musculoskeletal disorders	12,389	4,506	7,882	35	53	757	751	1,608	987	258	58	0	320	2,534	2,179	1,688	733	294	133
S. CONGENITAL ANOMALIES																			
1. Neural tube defects	3,312	1,874	1,438	1,874	0	0	0	0	0	0	0	1,438	0	0	0	0	0	0	0
2. Congenital heart anomalies	15,555	8,273	7,282	5,177	883	1,339	524	251	98	0	0	4,738	646	906	612	281	56	26	17
3. Cleft palate & lip	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Down's syndrome	1,329	564	765	388	93	52	0	30	0	0	0	525	107	49	84	0	0	0	0
5. Other chromosomal abnormalities	5,566	2,748	2,818	2,701	47	0	0	0	0	0	0	2,818	0	0	0	0	0	0	0
6. Other congenital anomalies	12,720	7,198	5,522	6,653	292	163	35	28	26	0	0	5,220	161	50	0	69	0	22	0
T. ORAL CONDITIONS																			
1. Dental caries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Periodontitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Edentulism	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Other oral diseases	291	119	172	0	0	0	41	33	45	0	0	0	0	93	0	0	58	22	0
U. UNINTENTIONAL DISEASES																			
1. Road traffic injuries	125,106	104,259	20,847	1,349	3,941	58,635	20,236	13,646	4,324	1,997	132	797	2,341	8,963	3,602	3,531	1,194	386	35
2. Poisonings	1,959	1,241	718	44	0	269	542	293	72	19	3	55	0	234	216	132	68	8	5
3. Falls	7,497	5,876	1,621	174	251	1,930	1,595	1,223	521	147	34	105	134	301	535	337	62	124	23
4. Fires, heat and hot substances	1,258	887	371	87	99	191	277	151	16	54	10	0	144	41	65	30	43	29	18
5. Drowning	16,462	13,268	3,194	1,255	3,795	3,970	2,741	1,221	167	113	8	758	1,178	508	237	407	0	83	23
6. Other unintentional injuries	18,979	14,537	4,442	1,696	544	3,685	4,260	3,002	1,042	279	29	1,068	338	535	897	777	458	314	55
V. INTENTIONAL INJURIES																			
1. Self-inflicted injuries	3,593	3,127	466	0	0	1,269	1,303	446	95	12	3	0	45	116	130	117	46	12	0
2. Interpersonal violence /homicide	8,128	5,843	2,286	131	99	2,100	1,914	1,064	461	62	10	105	45	837	724	335	128	98	14

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