

ISLAND OF MAURITIUS

AN ANALYSIS OF THE HEALTH SITUATION

This analysis of the health situation includes discussion on population and related vital events, on health delivery system, services and personnel, and on activities carried out in public and private health institutions. The morbidity patterns and mortality trends have also been discussed.

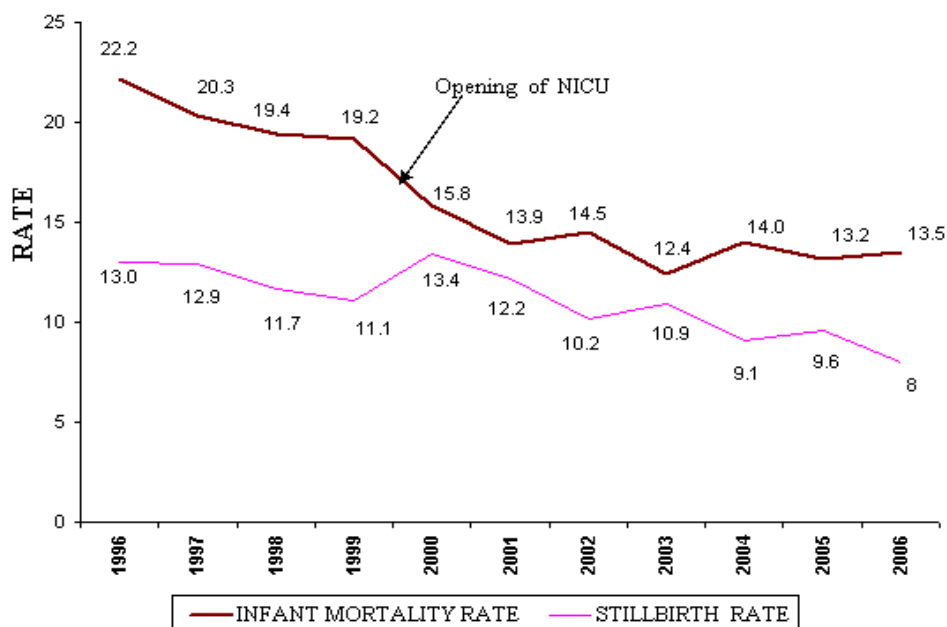
POPULATION AND VITAL STATISTICS

The estimated resident population of the Island of Mauritius at the end of 2006 was 1,219,208 (602,688 males and 616,520 females) as compared to 1,211,302 in 2005, growing at a rate of 0.65%.

During the year 2006, 16,723 live births were registered, giving a crude birth rate of 13.8 per thousand mid-year resident population. In 1996, the crude birth rate was 18.2. Life Expectancy at birth, 66.5 for males and 74.2 for females in 1996, was estimated to be 68.9 and 75.7 respectively in 2006.

The number of deaths registered in 2006 was 8,917, corresponding to a crude death rate of 7.3 per thousand mid-year resident population as compared to 6.8 in 2000 and 7.0 in 2005 when there was 7,806 and 8,422 deaths respectively. The highest number of deaths was recorded in the months of March and April 2006 with a total of 1,916 as compared to 1,380 deaths in the corresponding months of 2005, that is an increase of 38.8%.

The number of infant deaths, that is deaths among children aged under one year, registered in 2006 was 225, corresponding to an infant mortality rate (IMR) of 13.5 per thousand live births as compared to 13.2 in 2005. The IMR which was 19.6 in 1995 increased to 22.2 in 1996, the highest rate in the last decade. Following the opening of the Neonatal Intensive Care Service at Victoria Hospital in May 1999, the IMR drastically fell from 19.2 in 1999 to 15.8 in 2000. The lowest IMR (12.4) was recorded in 2003. As shown in the chart below, during the same period, a decreasing trend has been noted in stillbirth rate from 13.0 per 1,000 total births in 1996 to 8.0 in 2006, the lowest recorded.



The number of maternal deaths registered in 2006 was 3. The maternal mortality rate per 1,000 livebirths was then 0.18 as compared to 0.30 in 1996. The lowest rate with only one death due to complication following childbirth was 0.05 in 2002.

HEALTH DELIVERY SYSTEM

In the Island of Mauritius, as at the end of 2006, there were five regional hospitals with a total of 2,409 beds and two district hospitals namely Souillac Hospital with 30 beds and Mahebourg Hospital with 63 beds. There were also a psychiatric hospital with a bed complement of 811, and other specialised hospitals for chest diseases (62 beds), eye diseases (57 beds), ear, nose, and throat (E.N.T.) diseases (63 beds) and heart diseases (63 beds), as well as a skin diseases infirmary (3 beds). This brought the total number of beds in government institutions to 3,561 as compared to 3,819 in 2000.

In the private sector there were, as at the end of 2006, thirteen nursing homes (private clinics) with a total of 562 beds. The total number of beds in the public and private sectors as at the end of 2006 was thus 4,123, that is, 3.4 beds for 1,000 inhabitants. In 1996, the corresponding ratio was 3.3 beds.

All regional and district hospitals as well as the Psychiatric, Eye, E.N.T and Cardiac hospitals have an out-patient department. Out-patient services were also delivered in two community hospitals, two medi-clinics, 21 Area Health Centres (AHC) and 112 Community Health Centres (CHC). The basic services delivered at CHC include the treatment of common diseases and injuries, maternal and child care, and family planning. In addition to these services, AHC also provide dental care. However, in 2006, one AHC did not have facilities for dental care. This service was also delivered in six CHC's. Out-patient care was also provided in the private sector, including several clinics and 13 dispensaries on the sugar estates.

There were also 13 health offices, a chest clinic, a social hygiene clinic, and a National Centre for the Immuno-suppressed in operation as at the end of 2006.

HEALTH PERSONNEL

At the end of 2006, there were 1,400 doctors in the Republic of Mauritius, that is one for every 898 inhabitants. Of those doctors, 856 (61.1%) were employed in the public sector. In 1996, there were 1,008 doctors, that is, one for an average of 1,133 inhabitants.

There were 173 dentists, of whom 56 in the public sector, at the end of 2006. The corresponding number of pharmacists was 291 and 22 respectively. The number of qualified nurses and midwives in the public & private sectors were 3,070.

INPATIENT SERVICE

The number of admissions (including re-admissions) to government hospitals in the Island of Mauritius, in 2006, was 194,022 of which 175,303 (90.4%) were in general hospitals. The number of admissions represented an increase of 1.8% over the figure for 2005 when it was 190,674.

The total number of births (live births and stillbirths) occurring in the maternity sections of government general (regional and district) hospitals in 2006 was 13,845, that is 83.4% of births occurred in the Island.

OUT-PATIENT SERVICE

The total number of attendances at out-patient departments of public hospitals (sorted, unsorted and casualty) was 2,963,075 in 2006 as compared to 2,680,003 in 2000. An average of 4,100 patients were seen daily at the Accidents and Emergency Departments of government hospitals in 2006.

In 2006, attendances for the treatment of common diseases and injuries at the community hospitals, mediclinics, area & community health centres were 3,895,605, as compared to 2,825,135 in 2000 and 3,574,000 in 2005. An increase of 9% has been noted in the attendances from 2005 to 2006 as compared to an average annual increase of 5% from 2000 to 2005.

MATERNAL AND CHILD HEALTH

The number of first attendances for antenatal examinations by the staff of M.C.H. static clinics was 15,963 in 2000 and 12,869 in 2006. The total number of first and subsequent attendances (by staff and doctors) for antenatal and postnatal examinations and children under 5 years seen by midwife and examined by doctor at M.C.H. static clinics was 292,253 in 2006.

The percentage of low birth weight (less than 2,500 grammes) among live births in the public sector, which increased from 14.3% in 2000 to 17.2% in 2005, was 15.7% in 2006. The percentage of caesarian section on total births occurring in government hospitals increased from 20.5 in 1996 to 27.2 in 2000 and to 35.8 in 2006, that is, one for every three births.

The number of babies immunized against *tuberculosis* (B.C.G.) by M.C.H. staff in 2006 was 14,700. The number of children immunized against *diphtheria, whooping cough, tetanus* (D.P.T.), *hepatitis B and HIB* (3rd dose) was 14,756. Those immunized against *poliomyelitis* (3rd dose) was 14,780 and against *measles/mumps/rubella* (MMR) was 15,176. The figures refer to the activities of M.C.H. staff at government vaccination centres. Vaccinations done in the private sector, estimated to be around 8%, are therefore not included in the figures given below.

Immunisation Coverage Rate as a percentage of live births:

	1995	2000	2005	2006
BCG	86.0	87.2	90.1	89.3
D.P.T (3 rd dose)	92.5	87.3 *	87.4*	89.6 [#]
Polio (3 rd dose)	93.0	87.4	87.9	89.8
MMR	89.1 @	84.3	87.9	92.2

* with hepatitis

@ measles only

with hepatitis and HIB (as from March 2006)

SCHOOL HEALTH

During the year 2006, the nursing staff responsible for school health visited 476 pre-primary schools and screened 17,512 children. 5.8% of these children were reported to have nits and lice.

The nursing staff visited 266 primary schools and screened 73,721 pupils. 32,636 pupils of Standards III, V and VI were submitted to vision tests and 1,192 of the 1,324 children with defective vision were referred to specialists. 14,905 new entrants were immunized against *diphtheria*, *tetanus (D.T.)* and *poliomyelitis*. 15,053 new entrants were also immunized against MMR and 15,922 school leavers were immunized against *tetanus*.

DENTAL HEALTH

The total number of attendances at government dental clinics (static and mobile) in 2006 was 295,805, out of which 59,057, that is 20.0%, were of primary schoolchildren, 9,842 (3.3%) were of expectant women and nursing mothers, and 7,228 (2.4%) were of pre-primary school children. The number of cases treated for paradontal diseases was 29,393 and the number of surgical operations on jaws, including surgical extractions of roots and impacted teeth, was 7,615. Fluoride was distributed to 12,795 children and 24,590 children and adults were exposed to oral health education.

NURSING HOMES (PRIVATE CLINICS WITH IN-PATIENT SERVICE)

The total number of cases seen, including admissions, at the 13 nursing homes in 2006 was 77,732. 30,066 of these cases were seen for treatment (including operations) and 47,666 for examinations, investigations or observations. The total figure also includes 2,800 livebirths and stillbirths, of which 1,282 (45.8%) were by caesarean section.

In 2006, births occurred in the 13 private clinics represented 16.9% of births occurred in the whole island. 7.3% of livebirths had low birth weight (less than 2,500 grammes); the corresponding figure was 4.7% in 2000. The percentage of caesarian section on total births, which increased from 35.3 in 2000 to 48.4 in 2005, was 45.8 in 2006.

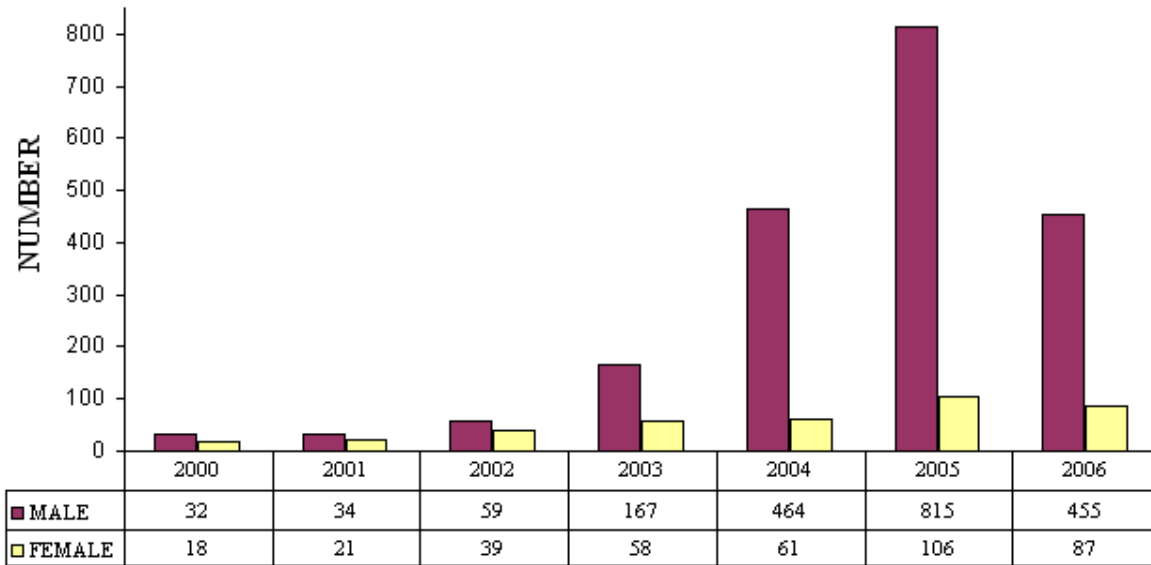
MORBIDITY

The first case of AIDS was notified in October 1987. As at the end of 2006, a total of 2,716 cases of HIV/AIDS were detected, of whom 2,587 (2,139 males, 448 females) were Mauritians. 184 of these Mauritians were known to have passed away by the end of 2006.

In 2006, a total of 87,487 persons were tested for HIV and 555 positive cases were detected. The annual number of new cases among Mauritians drastically increased from 50 in 2000 to 225 in 2003, 525 in 2004 and 921 in 2005. However, a decrease of 41% has been noted between 2005 and 2006.

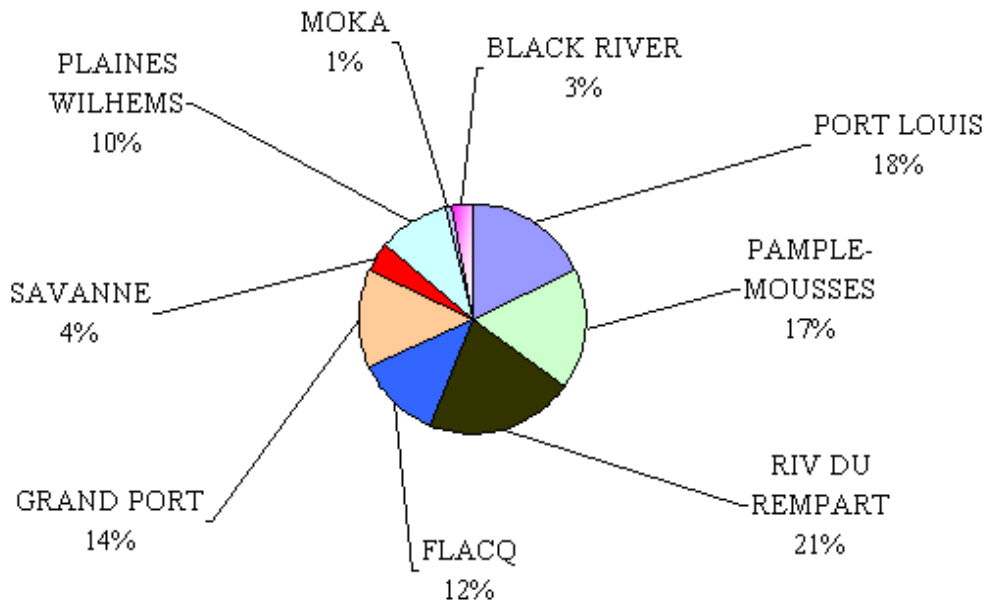
As shown on the chart that follows, from 2000 to 2005, the increase in the number of new cases has been more significant among the male than among the female. Three of every four Mauritians infected from 1987 to 2006 were reported to be among intravenous drug users.

NEW HIV/AIDS CASES AMONG MAURITIANS BY SEX



In 2006, there were a total of 11,165 reported cases of chikungunya with high frequencies in February and March. As from April, the figure decreased considerably with no cases from September to December. The northern part of the island was mostly affected with 6,193 cases in the districts of Port Louis, Pamplemousses and Riviere du Rempart, summing up to 56% of all reported cases (see pie chart). The first time this disease was reported in 2005 with 1,381 cases mostly in the district of Port Louis and in the month of May.

REPORTED CASES OF CHIKUNGUNYA BY DISTRICT - YEAR 2006



Deliveries constituted 7.1% of all cases treated as in-patients in government general hospitals in 2006. Among other principal causes of discharges, there were *Diarrhea and gastroenteritis* with 4.7%, *Diabetes Mellitus* with 4.1%, *Acute Myocardial Infarction and other Ischaemic Heart Diseases* with 4.1%, *Abdominal and Pelvic Pain* with 2.9%, and *Fever of unknown origin* with 2.7%. The distribution by ICD-10 chapters indicates that 14.2% of all cases treated were due to “*Pregnancy, childbirth and the puerperium*”, 10.5% due to “*Disease of the Circulatory System*”, 9.2% due to “*Injury and Poisoning*” and 7.3% due to “*Certain infectious and parasitic diseases*”.

In 2006, of the 15,532 cases (9,948 males and 5,584 females) treated as in-patients in government general hospitals due to consequences of external causes, 6,848 (44.1%) were following “*Falls*”, 1,579 (10.2%) following “*Transport Accidents*” and 1,554 (10.0 %) following “*Assaults*”. Of the 1,033 (6.7%) of cases treated as in-patients following “*Attempted suicides*”, 564 (54.6%) were females.

In 2006, of the 2,685 cases treated as in-patient at the Cardiac Centre, 851 (31.7%) were for “*Ischaemic heart diseases (chronic)*”, followed by 792 (29.5%) for “*Angina pectoris*” and 421 (15.7%) for “*Acute myocardial infarction*”. A total of 689 operations were performed at the centre, of which 393 (57.0%) were cardiac surgery.

Cataract was responsible for 2,752 of the 4,404 cases treated as in-patients at S.Bharati (Eye) Hospital in 2006 (that is 62.5%). Among the cataract cases, 2,525 (91.8%) were operated upon.

During the year 2006, 468 in-patients were treated at the Poudre d’Or (Chest) Hospital. Twenty-five patients died at the Hospital, giving a fatality rate of 5.3%. Of the 468 patients, 332 (70.9%) were males. *Pulmonary tuberculosis* was the morbid condition for 124 patients (88 males, 36 females), that is 26.5% of the total.

The number of new cases diagnosed at the out-patient specialist clinics in chest diseases during the year 2006 was 1,071 excluding the 46 cases for which there was no definite diagnosis. The number of new cases of *tuberculosis* diagnosed was 45, of which 37 was *pulmonary*. Among the non-tuberculous diseases, *asthma* was in first place with 585 (54.6%) new cases.

Of the 4,639 in-patients treated at Brown Sequard Hospital in 2006, *mental and behavioural disorders due to the use of alcohol* accounted for 2,080 cases (1,913 males, 167 females), that is 44.8%. *Schizophrenia* was responsible for 1,482 (31.9%) cases.

Of the 447 cases (0-3 months) treated as in-patients in 2006 at the Neonatal Intensive Care Unit, located in the complex of Victoria Hospital and SSRN Hospital, 223 (49.9%) were for *disorders related to length of gestation and fetal growth*, 130 (29.1%) for *respiratory and cardiovascular disorders specific to the perinatal period* and 15 (3.6%) for *infections specific to the perinatal period*. There were 108 deaths among those 447 cases, giving a fatality rate of 24.1%; this rate was 26% in 2005.

The number of new cases diagnosed at the specialist clinics in dermatology in 2006 were 13,398 of which 3,920 (29.3%) were *skin infections* (1,749 of fungal origin and 1,115 of viral origin). 22.2% of new cases were treated for *eczema*, 9.3% for *psoriasis and similar disorders*, and 5.5% for *acne*.

Of the 5,277 cases treated as in-patients at the E.N.T Hospital in 2006, 888 (16.8%) were for “*acute pharyngitis*” and 694 (13.2%) for “*acute tonsillitis*”. Another 5.4% of the in-

patients were treated for “*otalgia and effusion of ear*” and 6.8% for “*foreign body in the nostril, pharynx and other respiratory tract*”. A total of 1,750 operations were performed on in-patients at the centre, of which 515 (29.4%) were “*excision on tonsils and adenoids*”.

The number of new cases diagnosed by specialists at the out-patient clinics of the E.N.T. Centre in 2006 was 4,506. *Diseases and conditions of ear* accounted for 1,703 new cases (37.8% of the total new cases diagnosed), *diseases and conditions of nose* for 1,579 (35.0%) and *diseases and conditions of throat* for 1,204 (26.7%). *Tonsillitis (acute or chronic)*, *allergic rhinitis*, *sinusitis (acute or chronic)*, *sensorineural deafness* and *tinnitus* were the most common diseases diagnosed at the centre.

The number of cases treated at the Social Hygiene Clinic in 2006 was 218 (170 males and 48 females). The main venereal diseases treated were *venereal warts* with 64 cases, *gonococcal infections* with 41, *syphilis* with 35 and *herpes simplex* with 4 cases. The total attendances at the National Day Care Centre for the Immuno-suppressed were 1,682 (1,277 males, 405 females), of which 1093 were for voluntary counselling and 390 for the treatment of HIV/AIDS.

The disease responsible for the greatest number of first attendances at the community hospitals, mediclinics, area and community health centres for the treatment of common diseases and injuries in 2006 was *fever/pain all over*; in fact, first attendances for that disease represented 9.9% of the total number of first attendances. Other most common causes of first attendances were *tonsillitis*, *laryngitis*, *nasopharyngitis*, *sore throat*, *URTI* with 8.9%, *influenza* with 7.7% and *cough, pain in throat, chest pain, wheezing, hiccough, sneezing* with 6.2%. The distribution by ICD chapters shows that 20.3% of first attendances were due to “*Diseases of Respiratory System*” and 12.5% due to “*Diseases of the musculoskeletal system and connective tissue*”. They were followed by the “*Diseases of the digestive system*” with 6.1% and “*Injury and Poisoning*” with 6.0%.

The total number of first attendances at the above mentioned dispensary service points was 1,626,519 in 2005 as compared to 1,853,374 in 2006, that is an increase of 13.9%. Chapterwise, the highest increase in that period was recorded in first attendances due to “*Diseases of the musculoskeletal system and connective tissue*” from 150,522 to 230,902, representing a rise of 53.4%.

Of all new cases of cancer registered by the National Cancer Register during the period 2003-2004, the most common types among males were that of *prostate gland* with 10.8% followed by that of *trachea, bronchus and lung* with 8.7%. The two main types of cancer among females were that of *breast* (33.7%) followed by that of *cervix uteri* (13.8%).

CAUSE OF DEATH

Heart diseases and *diabetes mellitus* were the first two principal causes of mortality in 2006, with 1,934 (21.7%) and 2,018 (22.6%) deaths respectively; *cerebrovascular diseases* was in the third position with 832 (9.3%) deaths. However, *Cancer (Malignant Neoplasm)* of all sites taken together accounted for 875 (9.8%) deaths.

The distribution of deaths by Chapter of the International Classification of Diseases (10th Revision) showed that *Diseases of the Circulatory System* (Chapter IX) were responsible for 35.9% of the deaths. *Endocrine nutritional and metabolic diseases* (Chapter IV) with 23.1% of the deaths were in second place followed by *Neoplasms* (Chapter II) with 10.3%.

Of the 914 deaths due to *Neoplasms* in 2006, the most common types of cancer were that of *trachea, bronchus and lung* with 13.3%, *female breast* with 10.6%, *stomach* with 9.4% and *colon* with 6.5%. 40 persons died due to *leukaemia* (4.4%)

Of the 514 deaths due to external causes in 2006, 27.8% were due to *transport accidents*, 23.0% due to *suicides*, 12.3% due to *assaults*, 6.8% due to *accidental drowning and submersion* and 4.5% due to *exposure to smoke, fire and flames*.

Slow fetal growth, fetal malnutrition and disorders related to short gestation and low birth weight, with 52 deaths, that is 23.1% of the total (225), were the principal killers of children under the age of one year in 2006. The other principal causes of infant deaths were *congenital anomalies* responsible for 40 (17.8%) of the deaths, and *septicaemia and infections specific to the perinatal period* with 29 (12.9%) deaths.

Three maternal deaths were registered in 2006; one death (aged 35) was due to *disease of circulatory system complication puerperium*, one (aged 22) due to *postpartum haemorrhage* and one (aged 26) due to *cardiomyopathy in the puerperium*.

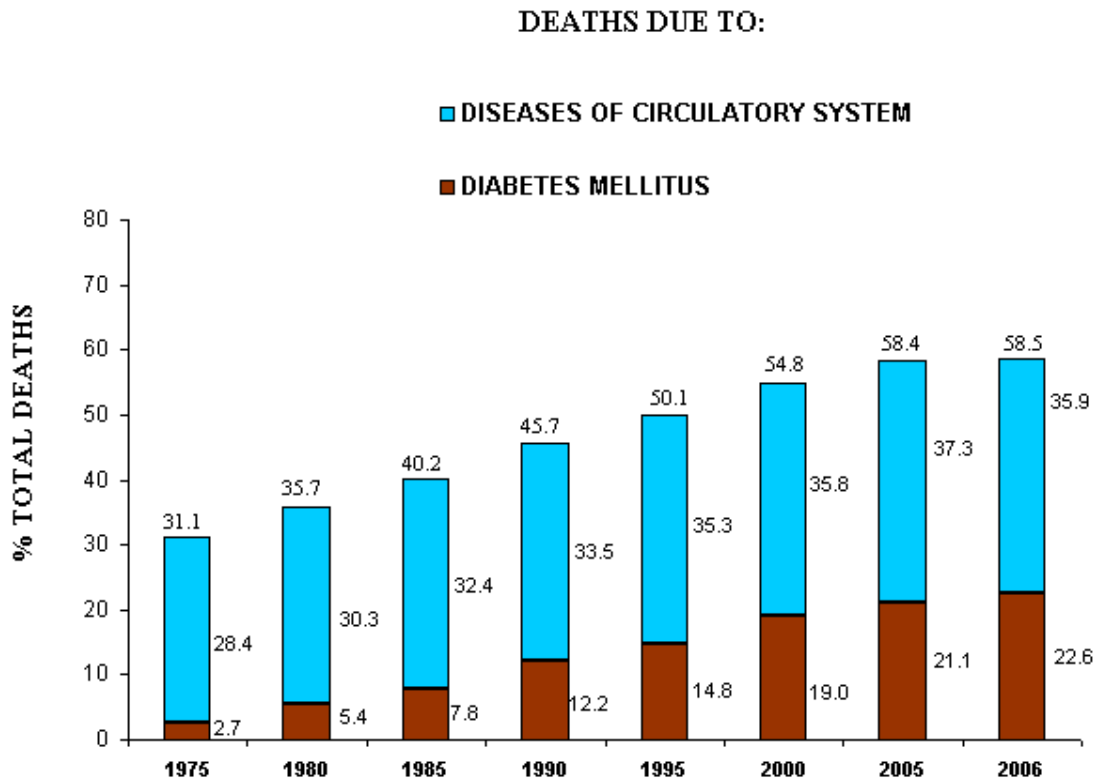
TRENDS IN CAUSE-SPECIFIC MORTALITY

In 2005, Mauritius adopted the 10th Revision of the International Classification of Diseases (ICD-10) for mortality coding. This shift and other improvements in the coding process have resulted into discontinuities in trends in a few specific causes of death. The percentages of deaths due to the main causes of deaths pertaining to the year 2000 and before given in the table below have been adjusted in light of the 2005 figures.

Year	<i>% underlying cause of death over total death registered</i>							
	ICD – 8		ICD – 9				ICD - 10	
	1975	1980	1985	1990	1995	2000	2005	2006
Total Deaths:	6,967	6,685	6,691	6,854	7,298	7,806	8,422	8,917
CAUSE:								
<i>Heart Diseases(%):</i>	17.2	18.4	19.7	20.4	21.5	21.8	22.8	21.7
<i>Cerebrovascular Diseases(%):</i>	8.4	8.7	9.1	9.3	9.6	9.8	10.8	9.3
<i>Other Diseases of Circulatory system(%):</i>	2.8	3.2	3.6	3.8	4.2	4.2	3.7	4.8
<i>All Circulatory(%) :</i>	<u>28.4</u>	<u>30.3</u>	<u>32.4</u>	<u>33.5</u>	<u>35.3</u>	<u>35.8</u>	<u>37.3</u>	<u>35.9</u>
<i>Diabetes Mellitus(%):</i>	2.7	5.4	7.8	12.2	14.8	19.0	21.1	22.6
<i>Total Circulatory and D.M.(%):</i>	<u>31.1</u>	<u>35.7</u>	<u>40.2</u>	<u>45.7</u>	<u>50.1</u>	<u>54.8</u>	<u>58.4</u>	<u>58.5</u>

Out of the 8,917 deaths registered in 2006, 35.9% were due to “*Diseases of the Circulatory System*” and 22.6% due to “*Diabetes Mellitus*”. “*Heart diseases*” represented 21.7% of all deaths. Of all persons for whom “*Diabetes Mellitus*” was assigned as the underlying cause of death, around 40% ultimately died with “*Heart diseases*” and around 30% with “*Cerebrovascular diseases*” as their direct cause of death.

The cause-specific mortality trends indicate a slow and almost constant increase in the percentages of death due to “*Heart diseases*”. However, a more rapid increase has been noted in regards to “*Diabetes mellitus*” over the last three decades, as shown in the chart below.



Taken together, “*Diseases of the Circulatory System*” and “*Diabetes Mellitus*” accounted for 58.5% of all deaths in 2006 as compared to 31.1% in 1975 and 45.7% in 1990.
