

**Singapore Cancer Registry
Interim Report
Trends In Cancer Incidence In Singapore
2002-2006**

**National Registry of Diseases Office
(NRDO)**

Acknowledgement

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CANCER REGISTRY INTERIM REPORT FOR THE PERIOD 2002 – 2006

1 INTRODUCTION

Comprehensive population-based cancer registration in Singapore began in January 1968. The Registry was founded primarily to provide information on cancer patterns and trends in Singapore. In April 2001, the Cancer Registry came under the auspices of the National Disease Registries Office (NDRO). NDRO was renamed National Registry of Diseases Office (NRDO) in Dec 2007.

The figures reported in this interim report are the 2002-2006 statistics as they stood on 9th March 2008. The next definitive report will cover the period 2003-2007, in line with the practice of Cancer Incidence in Five Continents (IARC publication).

2 SOURCE OF DATA AND DATA PROCESSING

Sources of data

Comprehensive cancer registration was achieved through data obtained from a combination of sources, namely, (a) notifications by the medical profession, (b) pathology records, (c) hospital records, and (d) death certificates.

Data Processing

Data were captured both manually (from case notes) and through electronic transfer of data from relevant institutions. All relevant information of new cases would be entered into an integrated computerized system and checked for possible duplication against a master index.

There is no personal contact with patients by the Registry. Information on diagnosis and survival is obtained through hospital, pathology and death records.

From 1993 to 2002, the Cancer Registry adopted the International Classification of Diseases for Oncology, 2nd Edition (ICD-O-2) for the classification of primary sites and morphology. Cases of cancer diagnosed from 2003 were classified using the International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3)

Cases of carcinoma-in-situ were registered but not included in the derivation of incidence rates. Those which became invasive at a later stage would be re-registered in the year that they became invasive carcinomas.

This report is based primarily on cancers registered in Singapore with the date of diagnosis falling within the period 2002-2006.

All the results refer only to the resident population of Singapore (citizens and permanent residents) only. Population denominators were derived by using 2000 census¹. Crude rates were computed using these denominators. The age-standardized rates given in this report are derived by direct method using the UICC 'World' population.

3 FINDINGS

3.1 Incidence of cancers by year of diagnosis, 2002-2006

For the period 2002 to 2006, the number of incident cancers by year of diagnosis showed an upward trend except in 2003 when it showed an un-sustained drop. In

¹ Singapore Cancer Registry Report No. 6, 'Trends in cancer incidence in Singapore 1968-2002', Appendix A1 showed the technique used to construct population denominators.

total, there were 43,424 incident cancers diagnosed among the resident population during the period 2002-2006 (Table 1).

3.2 Incidence of cancers for the period, 2002-2006

Of the total number of incident cases diagnosed during the period 2002-2006, 21,086 (48.6%) cases were reported in males and 22,338 (51.4%) cases in females (Table 2).

Crude incidence rates for total male and female cancer patients for the period 2002-2006 were 236.6 and 248.1 per 100,000 Singapore resident population respectively. The corresponding age standardized incidence rates were 224.7 and 200.1 per 100,000 population.

Among the males, the crude and age standardized rates were highest in Chinese males followed by Malay and Indian males. Likewise crude and age standardized rates were highest in Chinese females followed by Malay and Indian females (Table 3).

3.3 Ten most frequent cancers by gender, 2002-2006

For the period 2002-2006, colo-rectal and lung cancers were the most common and the second most common cancers respectively among the male resident population. This was followed by cancer of the prostate, the third most common carcinoma. (Table 4, Figure 1).

Breast and colorectal cancers were the most common and second most common cancers respectively among female residents for the period 2002-2006 (Table 5, Figure 2). Lung cancer ranked third among the females for the same period.

3.4 Highest ranking cancers by ethnic groups, 2002-2006

During the period 2002-2006, colo-rectal cancer, lung cancer and cancer of the prostate were the three most common cancers among the three ethnic groups (Tables 6, 7 and 8). Age standardized rates were highest among Chinese males, followed by Malay and Indian males for these three most frequent cancers.

Among the three ethnic groups, breast and colo-rectal cancers were the most common and second most common cancers respectively among the females. The age standardized rates were highest among Chinese female, followed by Malay and Indian females for these two most frequent cancers. Lung cancer was the third most common among Chinese female, fifth among Malay females and ninth among Indian females.

3.5 Mortality rates for highest ranking cancers by gender, 2002-2006

Though colorectal cancer and breast cancer were the most common cancers respectively in the male and female resident population, lung cancer and breast cancer had the highest mortality rates in males and females respectively, for the period 2002-2006 (Tables 9 & 10).

Appendix:**Table 1: NUMBER OF INCIDENT CANCERS BY YEAR OF DIAGNOSIS, 2002 - 2006**

Year of diagnosis	2002	2003	2004	2005	2006	2002-2006
No. of notifications	8345	8117	8931	8926	9105	43,424

Table 2: INCIDENCE OF CANCERS BY GENDER, 2002 - 2006

Gender	Number	%	CR*	ASR**
Male	21,086	48.6	236.6	224.7
Female	22,338	51.4	248.1	200.1

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population"

Table 3: INCIDENCE OF CANCERS BY GENDER AND ETHNIC GROUP, 2002-2006

Variables		No	CR*	ASR**
<i>Males:</i>	Chinese	18099	266.7	250.4
	Malays	1713	135.5	165.2
	Indians	918	119.2	112.9
<i>Females:</i>	Chinese	19026	275.7	209.2
	Malays	2094	166.4	176.9
	Indians	925	127.9	127.9

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 4: TEN MOST FREQUENT CANCERS IN MALES, 2002-2006

Rank	Site	No.	%	CR*	ASR**
1	Colo-rectum	3790	18.0	42.5	40.2
2	Lung	3719	17.6	41.7	40.4
3	Prostate	1953	9.3	21.9	22.0
4	Liver	1671	7.9	18.8	17.9
5	Stomach	1340	6.4	15.0	14.4
6	Nasopharynx	1178	5.6	13.2	10.4
7	Skin (Incl melanoma)	928	4.4	10.4	9.8
8	Lymphoma	895	4.2	10.0	9.5
9	Bladder	662	3.1	7.4	7.1
10	Leukaemia	621	3.0	7.0	7.1
	Other sites	4329	20.5		
	All Sites	21086	100	236.6	224.7

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 5: TEN MOST FREQUENT CANCERS IN FEMALES, 2002-2006

Rank	Site	No.	%	CR*	ASR**
1	Breast	6626	29.7	73.6	57.1
2	Colo-rectum	3206	14.4	35.6	28.8
3	Lung	1778	8.0	19.8	15.8
4	Ovary	1287	5.8	14.3	11.8
5	Corpus uteri	1262	5.7	14.0	11.3
6	Cervix uteri	1007	4.5	11.2	8.8
7	Stomach	863	3.9	9.6	7.6
8	Skin (Incl melanoma)	778	3.5	8.6	6.8
9	Lymphoma	677	3.0	7.5	6.7
10	Thyroid	618	2.8	6.9	5.6
	Other sites	4236	19.0		
	All Sites	22338	100	248.1	200.1

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 6: HIGHEST RANKING CANCERS AMONG CHINESE RESIDENTS, 2002-2006

Males	Site	Number	%	CR*	ASR**
1	Colo-Rectum	3384	18.7	49.9	46.4
2	Lung	3234	17.9	47.6	46.1
3	Prostate	1647	9.1	24.3	24.3
4	Liver	1463	8.1	21.6	20.2
5	Stomach	1200	6.6	17.7	17.0
6	Nasopharynx	1080	6.0	15.9	11.9
7	Skin (Incl. Melanoma)	770	4.3	11.4	10.6
8	Lymphoma	716	4.0	10.6	9.8
9	Bladder	546	3.0	8.0	7.7
10	Leukaemia	485	2.7	7.2	7.3
	Other sites	3574	19.7		
	All Sites	18099	100.0	266.7	250.4
Females	Site	Number	%	CR*	ASR**
1	Breast	5487	28.8	79.5	58.7
2	Colo-rectum	2888	15.2	41.9	31.3
3	Lung	1609	8.5	23.3	17.3
4	Corpus Uteri	1043	5.5	15.1	11.5
5	Ovary	1040	5.5	15.1	11.9
6	Cervix Uteri	878	4.6	12.7	9.6
7	Stomach	798	4.2	11.6	8.5
8	Skin (inc. melanoma)	695	3.7	10.1	7.3
9	Lymphoma	514	2.7	7.4	6.3
10	Thyroid	483	2.5	7.0	5.5
	Other sites	3591	18.9		
	All Sites	19026	100.0	275.7	209.2

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 7: HIGHEST RANKING CANCERS AMONG MALAY RESIDENTS, 2002-2006

Males	Site	Number	%	CR*	ASR**
1	Lung	332	19.4	26.3	32.3
2	Colo-rectum	250	14.6	19.8	24.5
3	Prostate	163	9.5	12.9	16.9
4	Liver	139	8.1	11.0	13.9
5	Lymphoma	121	7.1	9.6	11.1
6	Leukaemia	84	4.9	6.6	7.6
7	Nasopharynx	81	4.7	6.4	6.6
8	Bladder	59	3.4	4.7	5.7
9	Stomach	56	3.3	4.4	5.7
10	Pancreas	45	2.6	3.6	4.4
	Other sites	383	22.3		
	All Sites	1713	100.0	135.5	165.2

Females	Site	Number	%	CR*	ASR**
1	Breast	686	32.8	54.5	52.4
2	Colo-rectum	223	10.7	17.7	21.5
3	Ovary	156	7.5	12.4	13.3
4	Corpus-Uteri	139	6.6	11.0	11.9
5	Lung	134	6.4	10.6	12.0
6	Lymphoma	114	5.4	9.1	9.9
7	Cervix-Uteri	91	4.4	7.2	7.4
8	Thyroid	86	4.1	6.8	7.2
9	Leukaemia	73	3.5	5.8	6.5
10	Liver	45	2.2	3.6	3.9
	Other sites	347	16.6		
	All Sites	2094	100.0	166.4	176.9

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 8: HIGHEST RANKING CANCERS AMONG INDIAN RESIDENTS, 2002-2006

Males	Site	Number	%	CR*	ASR**
1	Lung	121	13.2	15.7	14.6
2	Colo-rectum	114	12.4	14.8	13.9
3	Prostate	104	11.3	13.5	11.0
4	Stomach	72	7.8	9.4	7.7
5	Liver	57	6.2	7.4	7.1
6	Lymphoma	48	5.2	6.2	6.4
7	Leukaemia	39	4.3	5.1	5.5
8	Bladder	36	3.9	4.7	4.2
9	Pancreas	33	3.6	4.3	4.1
10	Skin (inc. melanoma)	28	3.1	3.6	3.8
	Other sites	266	29.0		
	All Sites	918	100.0	119.2	112.9

Females	Site	Number	%	CR*	ASR**
1	Breast	344	37.2	47.6	44.4
2	Colo-Rectum	77	8.3	10.6	11.1
3	Ovary	75	8.1	10.4	9.7
4	Corpus-Uteri	68	7.4	9.4	9.5
5	Lymphoma	37	4.0	5.1	5.8
6	Thyroid	37	4.0	5.1	4.3
7	Stomach	27	2.9	3.7	4.0
8	Cervix Uteri	25	2.7	3.5	3.6
9	Lung	24	2.6	3.3	3.5
10	Leukaemia	20	2.2	2.8	3.2
	Other sites	191	20.6		
	All Sites	925	100.0	127.9	127.9

*CR Crude rate per 100,000 per year

** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 9: CRUDE AND AGE STANDARDIZED MORTALITY RATES FOR HIGHEST RANKING CANCERS IN MALES, 2002-2006 *

S. No.	Site	CR**	ASR***
1	Lung	37.5	36.5
2	Colo-rectum	18.8	18.1
3	Liver	17.0	16.3
4	Stomach	10.3	9.9
5	Nasopharynx	5.9	4.9
6	Prostate	4.7	4.7
7	Lymphoma	3.7	3.5
8	Leukaemia	3.0	2.9
9	Bladder	1.9	1.9
10	Skin (incl. melanoma)	0.4	0.4

*Derived from data provided by the Registry of Births and Deaths, Ministry of Home Affairs

**CR Crude rate per 100,000 per year

*** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Table 10: CRUDE AND AGE STANDARDIZED MORTALITY RATES FOR HIGHEST RANKING CANCERS IN FEMALES, 2002-2006 *

S. No.	Site	CR**	ASR***
1	Breast	17.1	13.7
2	Lung	16.9	13.3
3	Colo-rectum	16.0	12.5
4	Stomach	6.9	5.3
5	Ovary	5.2	4.2
6	Cervix Uteri	4.3	3.6
7	Lymphoma	2.4	2.0
8	Corpus Uteri	1.3	1.1
9	Thyroid	0.8	0.6
10	Skin (incl. Melanoma)	0.5	0.3

* Derived from data provided by the Registry of Births and Deaths, Ministry of Home Affairs

**CR Crude rate per 100,000 per year

*** ASR Age-standardized rate per 100,000 per year. ASR derived by the direct method using the "World Population".

Figure 1: TEN MOST FREQUENT CANCERS IN MALES, 2002 -2006

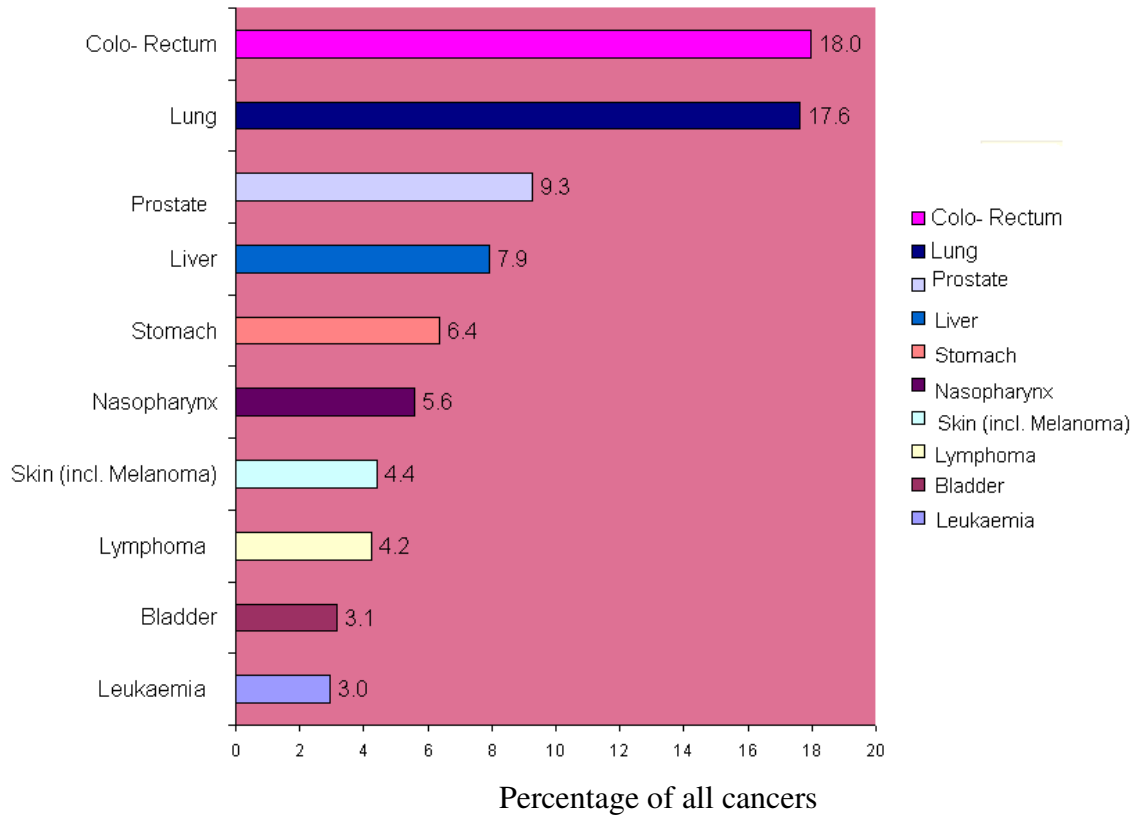


Figure 2: TEN MOST FREQUENT CANCERS IN FEMALES, 2002 – 2006

