Overview of Hong Kong Cancer Statistics of 2017

Purpose

1. This report provides an overview of population-based statistics and trends for common cancer types in 2017. More cancer statistics are available on the website of Hong Kong Cancer Registry.

Background

Cancer Registration in Hong Kong

2. The Hong Kong Cancer Registry ("HKCaR") is a population-based cancer registry responsible for overseeing cancer surveillance and proving a framework for accessing the impact of cancer on the community. Its main mission is to collect and report the local cancer incidence and mortality rates, by collecting, consolidating and validating basic demographic data, information of the cancer site and histology of all cancers diagnosed in Hong Kong, according to the standards depicted by the International Agency for Research on Cancer (IARC) of the World Health Organization ("WHO"). Analyses of these information demonstrate variations in cancer pattern over time, thus providing a basis for comparative geographical, epidemiological and clinical research, as well as supporting cancer control services in planning, monitoring and service evaluation.

3. Vast amount of cancer-related data is collated and uploaded each year into a huge database. The raw data will be validated by various crosschecking procedures including the locally-designed Cancer Case Audit System, and scrutinized by multiple quality control processes commensurate with the recommendations by the IARC of WHO. Queries and "unusual cases" are referred to clinical oncologists for revalidation. Once all these necessary procedures are completed, statistics describing the numbers and incidence rates of all types of cancers diagnosed within a calendar year according to age groups and gender will be published on the web on an annual basis.

4. With the zealous support of healthcare professionals and medical institutions, we have managed to collect high quality cancer data from both the private and public hospitals and laboratories. Although reporting of cancer cases by the medical profession is not mandatory, the completeness of registration by the HKCaR is reckoned to be 95% or higher. As close to 90% of the cases can be morphologically verified and the proportion of cancer cases based solely on information from death certificates has constituted less than 0.5% in recent years, the quality of data reported by the HKCaR has been rated to be of the highest standard according to the IARC's review.

Cancer Statistics for 2017

New cancer cases in 2017:

5. A total of 33,075 new cancer cases were diagnosed in Hong Kong in 2017, hitting a record high with 1,607 more cases or a rise of 5.1% compared with 2016.

6. Of these new cancer cases, 16,876 were diagnosed in males, and 16,199 in females. The numbers have increased by 841 (or 5.2%) for males and 766 (or 5.0%) for females compared to 2016. The crude annual incidence rates of cancer per 100,000 were 497.5 for males and 405.1 for females in 2017.

Most common cancers:

7. The five most commonly diagnosed cancers in 2017 were colorectal cancer (17.0%), lung cancer (15.7%), breast cancer (13.3%), prostate cancer (6.8%) and liver cancer (5.5%) - contributed about 58% of new cancer cases diagnosed in Hong Kong in 2017. Compared with the preceding year, colorectal cancer rose by 3.6% to a historical high of 5,635 new cases, lung cancer increased by 4.9% to 5,178 cases and female breast cancer increased by 6.5% to 4,373 cases.

8. In 2017, most of the increase in new cancer cases was attributed to the growing numbers of prostate and kidney (and other urinary organs except bladder) cancers in men, breast and stomach cancers in women, as well as colorectal and lung cancers in both genders.

9. For males, the top five cancers comprised about 65% of new cancer cases. They were cancers of the colorectum (19.6%), lung (19.2%), prostate (13.3%), liver (8.3%) and stomach (4.5%). More alarmingly, the number of newly diagnosed prostate cancer has recorded an increase of 17.2% to 2,240 cases as compared to 2016.

10. For females, the five leading cancers were cancers of breast (27.0%), colorectum (14.4%), lung (11.9%), corpus uteri (6.6%) and thyroid (4.3%), accounting for around 64% of new cancer cases in women.

11. Another observation worth noting is the number of newly diagnosed invasive breast cancer cases in women, which jumped to 4,373 cases in 2017. This marked an increase of 6.5% from 2016. In addition, 636 cases of in-situ breast cancer (i.e. stage 0 breast cancer or called pre-cancer) were diagnosed, which together recorded a historic high of over 5,000 new cases of invasive and in-situ breast cancer during 2017.

12. The annual number of new lung cancer cases in men has remained stable in recent years but went up again to 3,247 cases (or increased by 5.2%) in 2017. Also, an increase of 4.4% was observed for women newly diagnosed with lung cancer in 2017. Most of these increases occurred in adenocarcinoma.

13. Compared to a decade earlier, new cancer cases have jumped by about 36% or at an annual rate of 3.1%. During the same period, the whole population grew slowly at an annual rate of 0.7% but the population aged 65 and older increased at 3.4% per year.

14. As cancer rates increase sharply with age, the overall increasing burden of cancer is largely contributed by an ageing and growing population, along with changes in cancer risks as well as the improvements in diagnostic practices.

15. The type and order of five leading cancers have remained more or less the same over the years. The biggest increases were in prostate cancer among men and breast cancer with the vast majority diagnosed in women, with about 86% and 61% increases in the number of new cases in the past decade, respectively. The annual number of new cases of liver cancer has remained relatively stable in recent years (Table 1).

Table 1. Leading cancer types (both genders combined)

Rank in 2017	Cancer type	No. of new cases in 2007 *(rank)*	No. of new cases in 2017	*Overall change*
	All cancers	24,342	33,075	*+35.9%*
1	Colorectum	4,084 *(2)*	5,635	*+38.0%*
2	Lung	4,261 *(1)*	5,178	*+21.5%*
3	Breast	2,723 *(3)*	4,391	*+61.3%*
4	Prostate	1,205 *(5)*	2,240	*+85.9%*
5	Liver	1,690 *(4)*	1,834	*+8.5%*

Most common causes of cancer deaths:

16. Deaths from cancer accounted for more than 31% of all deaths in Hong Kong. Over the past decade, the number of cancer deaths rose at an annual rate of 1.5%.

17. In 2017, the cancers causing most cancer deaths were lung cancer (27.1%), colorectal cancer (14.9%) and liver cancer (10.8%), which accounted for over half of all cancer deaths.

18. For males, cancers of the lung (30.6%), colorectum (15.0%) and liver (13.3%) accounted for nearly 60% of cancer deaths.

19. The cancers causing most deaths in females were lung cancer (22.1%), colorectal cancer (14.7%) and breast cancer (12.3%), accounting for nearly half of cancer deaths in females.

20. Over the past decade, the ranking of the top five deadliest cancers has almost unchanged. There were marked increases in the number of deaths from pancreatic cancer (59%) and breast cancer (36.9%). The increases were much less pronounced in liver (7.1%) and lung cancers (6.6%) (Table 2).

Table 2. Leading cancer deaths (both genders combined)

Rank in 2017	Cancer type	No. of deaths in 2007 *(rank)*	No. of deaths in 2017	*Overall change*
	All cancers	12,316	14,354	*+16.5%*
1	Lung	3,648 *(1)*	3,890	*+6.6%*
2	Colorectum	1,690 *(2)*	2,138	*+26.5%*
3	Liver	1,449 *(3)*	1,552	*+7.1%*
4	Breast	529 *(5)*	724	*+36.9%*
5	Pancreas	434 *(6)*	690	*+59.0%*

21. The increase in the number of new cancer cases and cancer deaths was primarily attributed to an ageing and growing population. As long as the demographic trends of an ageing and growing population continue, we shall be witnessing a corresponding increase in the burden of cancer in the upcoming years.

Appendix 1 displays the ten cancers with the largest number of new cases diagnosed and cancer deaths by gender in 2017.

Cancer and gender:

22. More men developed cancer than women. There were 104 men for every 100 women newly diagnosed of cancer in 2017, but this male to female ratio has narrowed gradually since the mid-1990s. With the prevailing trends in incidence and population structure, it will not be surprising the gender ratio will be reversed in the coming few years.

23. Cancers with the highest male to female ratio were cancers of the larynx (male to female ratio = 22:1), oesophagus (4.9:1) and liver (3.3:1).

24. The only two cancers that were more common in women than men were thyroid cancer (female to male ratio = 3.9:1), and breast cancer which just a mere 0.4% developed in men.

25. More men died from cancer (8,487) than women (5,867), with a male to female ratio of 1.4 to 1.

Cancer and age:

26. Cancer is primarily a disease of older people. Half of cancers occurred in people over the age of 65, whereas only a mere 0.5% of cancers being diagnosed in children and adolescents (i.e. aged 0-19 years).

27. Women are more prone to cancer than men among adults between the ages of 20 and 59 years, mainly due to the relatively high incidence of gender-specific cancers of the breast, cervix, corpus uteri and ovary. The age-specific female preponderance was most apparent in the age group of 20-44 years, in which the number of cancers in women was more than twice of that in men.

28. The median age of patients at diagnosis of cancer was 68 years in men and 62 years in women and the median age at death was 72 years in men and 73 years in women.

29. Among the common cancers in males, the median age at diagnosis was 68 years for colorectal cancer, 70 years for lung cancer, 71 years for prostate cancer, 65 years for liver cancer, and 70 years for stomach cancer.

30. Among the common cancers in females, the median age at diagnosis was 57 years for breast cancer, 68 years for colorectal cancer, 68 years for lung cancer, 55 years for cancer of the corpus uteri, and 50 years for thyroid cancer.

31. There were 180 cancers in children and adolescents, 105 in males and 75 in females, diagnosed in 2017. The more common children and adolescent cancers were leukaemia (29.4%), malignant brain tumors (17.2%) and lymphoma (16.7%). Top three cancers constituted 63.3% of all cancers in children and adolescents.

32. In young adults aged 20-44 years, the most common cancer was nasopharyngeal cancer for males and breast cancer for females. Colorectal cancer retained second place in men.

33. In adults aged 45-64 years, the most common cancer was colorectal cancer for males and breast cancer for females.

34. In elderly people aged 65-74 years, colorectal cancer surpassed lung cancer to become the most common cancer for males. The most common cancer was breast cancer for females.

35. In very elderly people aged 75 or older, the most common cancer was lung cancer for males and colorectal cancer for females.

Appendix 2 displays the relative frequency of the five most common cancers by gender and age groups in 2017.

Risk of developing or dying from cancer before age 75

36. A person's risk of developing or dying from cancer is age-dependent. Based on the cancer statistics in 2017,
    - about 1 in 4 men and 1 in 5 women will develop cancer by the age of 75.
    - about 1 in 9 men and 1 in 15 women will die from cancer by the age of 75.

Trends in incidence and mortality in the last decade (2008 to 2017):

37. Age-standardized rate (ASR) is a statistical measure of the risk of cancer after accounting for the influence of age, which is widely used to measure trends over time or between two different populations. Average Annual Percent Change (AAPC) of ASR was estimated using cancer registry data from 1991-2017 to summarize the trends over the past decades. A p-value of less than 0.05 ($p<0.05$) was considered statistically significant.

38. In the most recent decade (2008-2017), the age-standardized incidence rate (ASI) for all cancers in males declined in the early years but seemed to be levelling off, while a significant trend of increasing ASI in females observed at an annual rate of 1.2% (*p<0.05*) in the last decade.

39. The age-standardized mortality rates (ASM) are decreasing for both genders, at -2.2% per year (*p<0.05*) among males and -0.9% per year among females (*p<0.05*) during the recent 10-year period.

40. Among the common cancers, a significant trend of decreasing incidence (ASI) over the past decade was most apparent in cancers of the nasopharynx *(AAPC: -2.0% in males; -4.4% in females)* and liver *(AAPC: -2.3% in males; -3.6% in females)* in both genders, as well as the stomach *(AAPC: -1.5%)* and lung *(AAPC: -2.3%)* in males.

41. A significant trend of rising incidence (ASI) was observed for cancers of the thyroid *(AAPC: +2.5% in males; +3.8% in females)*, pancreas *(AAPC: +1.5% in males; +1.5% in females)* and non-Hodgkin lymphoma *(AAPC: +2.8% in males; +1.4% in females)* in both genders, breast *(AAPC: +2.5%)*, corpus uteri *(AAPC: +3.4%)* and ovary *(AAPC: +1.4%)* in females, as well as the prostate *(AAPC: +3.4%)* and colorectum *(AAPC: +0.6%)* in males.

42. In terms of mortality (ASM), a significant decreasing trend was observed in most cancers, with the exception of pancreatic cancer *(AAPC: +2.1% in males; +1.0% in females)* in both genders, prostate cancer *(AAPC: +1.2%)* in males and cancers of the breast *(AAPC: +0.5%)* and corpus uteri *(AAPC: +3.2%)* in females. No significant changes were observed in cancers of the cervix and ovary in females.

43. Due to an ageing population, cancer burden will continue to increase even if age-specific rates remain constant.

Appendix 3 displays the Average Annual Percent Change (AAPC) of age-standardized incidence and mortality rates for common cancers during 2008-2017.

Key Messages

- New cancer cases jumped by 5.1% in a year, reaching 33,075 in 2017, with new colorectal cancer cases increasing by 3.6% and new breast cancer cases increasing by 6.5%.
- Colorectal cancer remains the most common cancer in men, while breast cancer is still the leading cancer in women.
- In men, the number of prostate cancer cases has been growing with the fastest pace in recent years.
- Age-standardized cancer incidence rates for men appeared to be leveling off, with a reversal of decreasing trend for women observed in the past decade. Both age-standardized mortality rates for men and women had a downward trend during the same period.
- Age-standardized incidence rates have increased over the past decade in the following cancer sites, indicating the increasing numbers of these cancers in the local population could only be partially attributable to the aging population:
  - Male : prostate, colorectal, non-Hodgkin lymphoma, pancreas and kidney
  - Female: breast, corpus, ovary, non-Hodgkin lymphoma, pancreas and thyroid

Note on the use of data

The numbers of new cases and deaths are important measures of cancer burden on local healthcare system. One should keep in mind that the figures are subject to random fluctuations from year to year. Experience tells us that a more reliable comment of the trend of incidence and mortality can only be made after observing over a longer period of preferably at least 5 years or more.

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October 2019

Appendix 1: Leading Cancer Sites in 2017

10 Most Common Cancers

Male

Rank	Site	No. of new cases	Relative frequency	Crude incidence rate*
1	Colorectum	3,303	19.6%	97.4
2	Lung	3,247	19.2%	95.7
3	Prostate	2,240	13.3%	66.0
4	Liver	1,408	8.3%	41.5
5	Stomach	762	4.5%	22.5
6	Nasopharynx	616	3.7%	18.2
7	Non-melanoma skin	569	3.4%	16.8
8	Non-Hodgkin lymphoma	564	3.3%	16.6
9	Kidney and other urinary organs except bladder	485	2.9%	14.3
10	Lip, oral cavity and pharynx except nasopharynx	463	2.7%	13.6
	All sites	**16,876**	**100.0%**	**497.5**

Female

Rank	Site	No. of new cases	Relative frequency	Crude incidence rate*
1	Breast	4,373	27.0%	109.3
2	Colorectum	2,332	14.4%	58.3
3	Lung	1,931	11.9%	48.3
4	Corpus uteri	1,076	6.6%	26.9
5	Thyroid	703	4.3%	17.6
6	Ovary etc.	651	4.0%	16.3
7	Stomach	552	3.4%	13.8
8	Non-melanoma skin	532	3.3%	13.3
9	Cervix	516	3.2%	12.9
10	Non-Hodgkin lymphoma	438	2.7%	11.0
	All sites	**16,199**	**100.0%**	**405.1**

Both Sexes

Rank	Site	No. of new cases	Relative frequency	Crude incidence rate*
1	Colorectum	5,635	17.0%	76.2
2	Lung	5,178	15.7%	70.1
3	Breast	4,391	13.3%	59.4
4	Prostate	2,240	6.8%	66.0
5	Liver	1,834	5.5%	24.8
6	Stomach	1,314	4.0%	17.8
7	Non-melanoma skin	1,101	3.3%	14.9
8	Corpus uteri	1,076	3.3%	26.9
9	Non-Hodgkin lymphoma	1,002	3.0%	13.6
10	Thyroid	884	2.7%	12.0
	All sites	**33,075**	**100.0%**	**447.5**

10 Major Causes of Cancer Deaths

Male

Rank	Site	No. of deaths	Relative frequency	Crude mortality rate*
1	Lung	2,596	30.6%	76.5
2	Colorectum	1,274	15.0%	37.6
3	Liver	1,126	13.3%	33.2
4	Prostate	443	5.2%	13.1
5	Stomach	420	4.9%	12.4
6	Pancreas	387	4.6%	11.4
7	Oesophagus	241	2.8%	7.1
8	Non-Hodgkin lymphoma	231	2.7%	6.8
9	Nasopharynx	224	2.6%	6.6
10	Leukaemia	185	2.2%	5.5
	All sites	**8,487**	**100.0%**	**250.2**

Female

Rank	Site	No. of deaths	Relative frequency	Crude mortality rate*
1	Lung	1,294	22.1%	32.4
2	Colorectum	864	14.7%	21.6
3	Breast	721	12.3%	18.0
4	Liver	426	7.3%	10.7
5	Pancreas	303	5.2%	7.6
6	Stomach	262	4.5%	6.6
7	Ovary etc.	219	3.7%	5.5
8	Non-Hodgkin lymphoma	164	2.8%	4.1
9	Cervix	150	2.6%	3.8
10	Leukaemia	129	2.2%	3.2
	All sites	**5,867**	**100.0%**	**146.7**

Both Sexes

Rank	Site	No. of deaths	Relative frequency	Crude mortality rate*
1	Lung	3,890	27.1%	52.6
2	Colorectum	2,138	14.9%	28.9
3	Liver	1,552	10.8%	21.0
4	Breast	724	5.0%	9.8
5	Pancreas	690	4.8%	9.3
6	Stomach	682	4.8%	9.2
7	Prostate	443	3.1%	13.1
8	Non-Hodgkin lymphoma	395	2.8%	5.3
9	Leukaemia	314	2.2%	4.2
10	Oesophagus	297	2.1%	4.0
	All sites	**14,354**	**100.0%**	**194.2**

* All rates are expressed per 100,000. Rates for gender-specific sites are per 100,000 male or female population.

Statistics on the number of deaths are provided by the Census and Statistics Department and Department of Health of HKSAR.

Appendix 2: Relative Frequency of the Five Most Common Cancers by Gender and Age Group in 2017

Male

Age 0-19*

Site	No. of cases	% of all sites
Leukaemia	34	32.4%
Brain and spinal tumors	22	21.0%
Lymphoma	21	20.0%
Germ-cell and gonadal tumors	10	9.5%
Malignant bone tumor	5	4.8%
All sites	**105**	**100.0%**

Age 20-44

Site	No. of cases	% of all sites
Nasopharynx	135	15.9%
Colorectum	96	11.3%
Testis	74	8.7%
Liver	71	8.4%
Lung	58	6.8%
All sites	**850**	**100.0%**

Age 45-64

Site	No. of cases	% of all sites
Colorectum	1,061	18.6%
Lung	974	17.1%
Liver	618	10.9%
Prostate	529	9.3%
Nasopharynx	358	6.3%
All sites	**5,691**	**100.0%**

Age 65-74

Site	No. of cases	% of all sites
Colorectum	1,107	21.5%
Lung	1,020	19.8%
Prostate	927	18.0%
Liver	410	8.0%
Stomach	235	4.6%
All sites	**5,146**	**100.0%**

Age 75 and Over

Site	No. of cases	% of all sites
Lung	1,195	23.5%
Colorectum	1,039	20.4%
Prostate	784	15.4%
Liver	306	6.0%
Stomach	279	5.5%
All sites	**5,084**	**100.0%**

Female

Age 0-19*

Site	No. of cases	% of all sites
Leukaemia	19	25.3%
Carcinomas and epithelial neoplasms	13	17.3%
Germ-cell and gonadal tumors	12	16.0%
Lymphoma	9	12.0%
Brain and spinal tumors	9	12.0%
All sites	**75**	**100.0%**

Age 20-44

Site	No. of cases	% of all sites
Breast	731	36.8%
Thyroid	234	11.8%
Ovary etc.	165	8.3%
Cervix	140	7.0%
Corpus uteri	109	5.5%
All sites	**1,988**	**100.0%**

Age 45-64

Site	No. of cases	% of all sites
Breast	2,390	34.2%
Colorectum	759	10.9%
Corpus uteri	740	10.6%
Lung	681	9.8%
Ovary etc.	346	5.0%
All sites	**6,983**	**100.0%**

Age 65-74

Site	No. of cases	% of all sites
Breast	711	22.4%
Colorectum	642	20.2%
Lung	510	16.1%
Corpus uteri	156	4.9%
Liver	101	3.2%
All sites	**3,172**	**100.0%**

Age 75 and Over

Site	No. of cases	% of all sites
Colorectum	824	20.7%
Lung	658	16.5%
Breast	541	13.6%
Non-melanoma skin	286	7.2%
Stomach	222	5.6%
All sites	**3,981**	**100.0%**

* The classification of cancers in children and adolescents (0-19 years) is based on the morphology according to the "International Classification for Childhood Cancer 1996, IARC Technical Report No. 29: Lyon, 1996.", rather than the site of tumor.

Appendix 3: Average Annual Percent Change (AAPC)[1] of Age-standardized Rates[2] of Common Cancers over the Period 2008-2017

Cancer site	Incidence		Mortality	
	Male	Female	Male	Female
Breast	-	***+2.5%****	-	***+0.5%****
Cervix	-	+1.5%	-	-0.5%
Colorectum	***+0.6%****	*-0.3%**	*-0.6%**	*-1.2%**
Corpus uteri	-	***+3.4%****	-	***+3.2%****
Kidney	***+3.1%****	***+1.5%****	+0.4%	-0.4%
Liver	*-2.3%**	-3.6%*	*-2.8%**	*-2.0%**
Lung	*-2.3%**	+0.2%	*-2.9%**	*-1.9%**
Nasopharynx	*-2.0%**	*-4.4%**	*-3.7%**	*-4.7%**
Non-Hodgkin lymphoma	***+2.8%****	***+1.4%****	-1.2%*	-1.0%*
Ovary etc.	-	***+1.4%****	-	-0.2%
Pancreas	***+1.5%****	***+1.5%****	***+2.1%****	***+1.0%****
Prostate	***+3.4%****	-	***+1.2%****	-
Stomach	*-1.5%**	+0.7%	*-3.1%**	*-2.8%**
Thyroid	***+2.5%****	***+3.8%****	-0.2%	-3.2%*
All sites	*-0.1%*	***+1.2%****	-2.2%*	*-0.9%**

Notes:

1. Average Annual Percent Change (AAPC) of age-standardized rates over the past ten years is estimated from joinpoint regression (Reference: Clegg LX, Hankey BF, Tiwari R, Feuer EJ, Edwards BK. Estimating average annual percent change in trend analysis. *Statistics in Medicine* 2009; 28(29): 3670-82.), based on the available data from 1991 to 2017. An asterisk (*) represents the AAPC is statistically significant from zero at 5% level *($p<0.05$)*.

2. Rates are standardized to the age distribution of the World Standard Population of Segi (1960).