

Skin Cancer: The Facts

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Types of skin Cancer

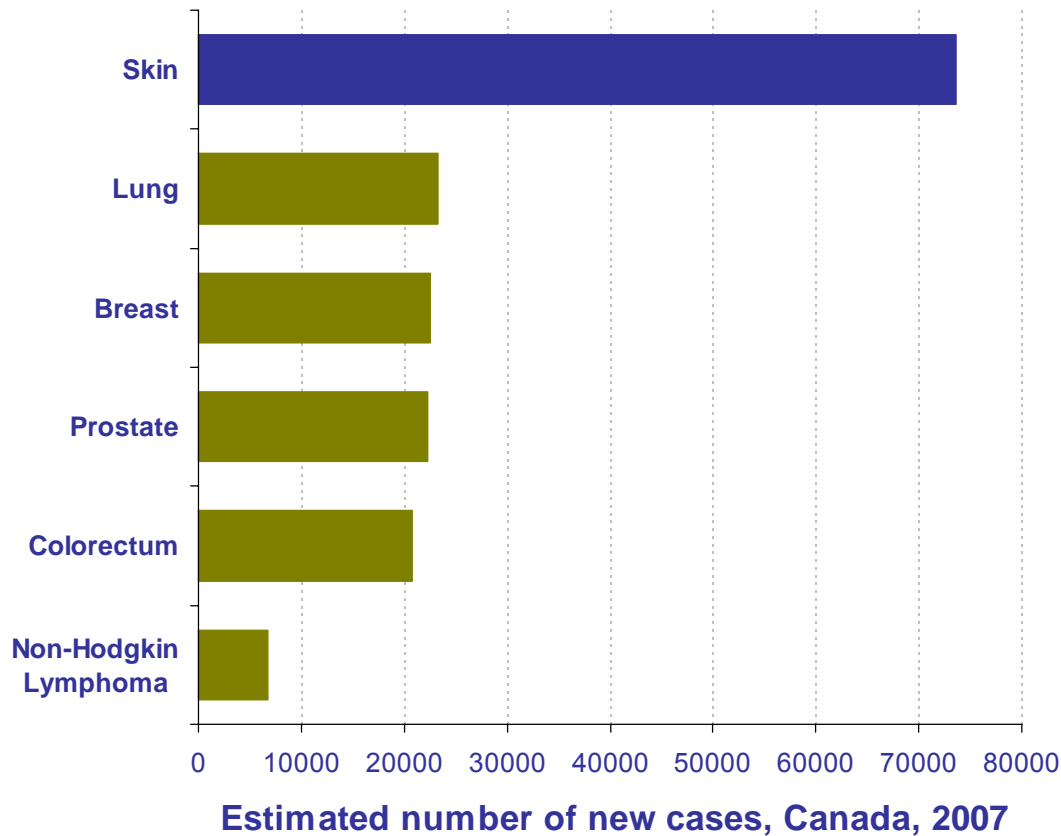
- Basal cell carcinoma (BCC)
 - most common (3-4 times more common than SCC; of 69,000* NMSCs in Canada in 2007, 52,000-55,000 are likely BCC and remainder SCC))
 - rarely metastasizes or causes death
 - ~ 2:1 male to female ratio
- Squamous cell carcinoma (SCC)
 - less common than BCC but common
 - can metastasize/cause death but not commonly (220/yr*)
 - ~ 2:1 male to female ratio
- Melanoma
 - least common (4,600/yr *)
 - most common skin cancer cause of death (900/yr *)
 - 5 yr relative survival 89% *
 - ~ 1:1 male to female ratio *
 - also occurs in eye and, rarely, other tissues

Skin cancer quick facts: Stats 1

- Skin cancer (including basal and squamous cell carcinomas – collectively referred to as “nonmelanoma skin cancer (NMSC)” and melanoma) is the most common cancer, by far, in Canada:
 - In 2007, 73,600* Canadians diagnosed with skin cancer (Canadian Cancer Statistics (CCS) 2007)
 - 1 in 7 Canadians will develop some form of skin cancer during their lifetime
 - Skin cancers represent 1/3 of all new cases of cancer each year [*see separate slide*] (CCS2007)
 - Because survival is excellent for those diagnosed with NMSC and good for melanoma, skin cancer is also the most prevalent form of cancer*
 - Many with skin cancer develop recurrences and/or second primary skin cancers
 - Deaths due to NMSC are rare – about 220 in 2007 (CCS2007) - but are more common for melanoma - 900 in 2007 (CCS2007)

* Comprehensive statistics on NMSC are not available because the majority of cancer registries do not try to capture (because they are so frequent and so often diagnosed and/or treated in facilities requiring special data collection efforts). Incidence stats are based on 3 Canadian registries that have some data – BC, MN and NB)

Most common cancers, Canada, 2007*



Source: Canadian Cancer Statistics 2007

- 73,600 Canadians will be diagnosed with skin cancer in 2007
 - 1/3 of all new cancers
 - 4,600 are melanoma
- > 1 in 7 will develop skin cancer during their lifetimes
- Skin cancer rare in Asians, blacks, Aboriginals

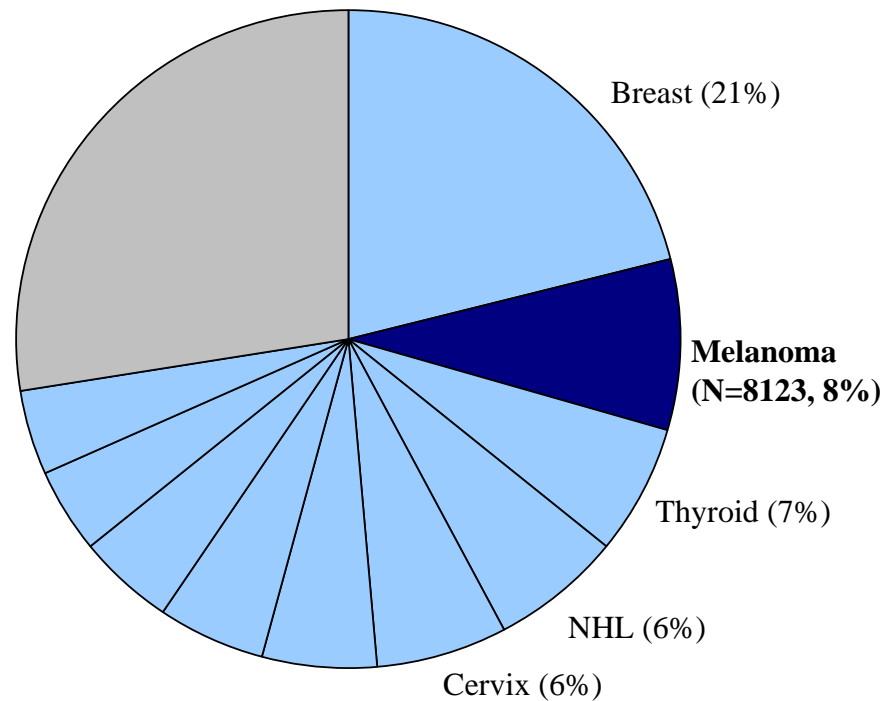
Skin cancer quick facts: Stats 2

- Melanoma (CMM) is the second most common cancer in young adults (ages 15-34) BCC is also common in this age group.
- Incidence rates of melanoma are increasing, including in young adults
 - 2.0% ↑ per year in incidence rates for males and 1.1% for females between 1994 and 2003 (CCS2007)
 - In Ontario's young adults, incidence was ↓ or stable in the late 1980s/early 1990s; now ↑
 - Melanoma mortality rates increasing until recently; may now have stabilized
- NMSC incidence also increasing although limited data available* (Hayes et al. 2007, New Brunswick; Demers et al. 2005, Manitoba)

* Comprehensive statistics on NMSC are not available because the majority of cancer registries do not try to capture (because they are so frequent and so often diagnosed and/or treated in facilities requiring special data collection efforts). Incidence stats are based on 3 Canadian registries that have some data – BC, MB and NB)

Melanoma is common in young adults

- >8,000 new diagnoses of melanoma in 20-44 year olds in Canada in the 1990s
- Ranks second after breast cancer

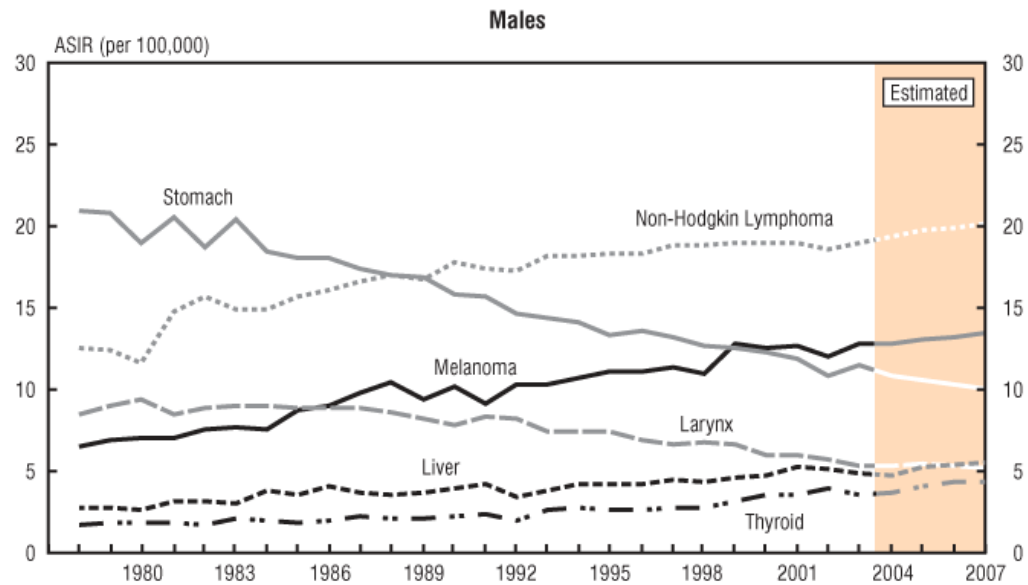


**% distribution of incident cancers,
ages 20-44, 1990-1999, Canada**

Source: Cancer Care Ontario: Cancer in Young Adults in Canada (2006)

Figure 5.1

Age-Standardized Incidence Rates (ASIR) for Selected Cancers, Males, Canada, 1978-2007



Note: Rates are standardized to the age distribution of the 1991 Canadian population. See Table 7.1 for data points. Actual incidence data are available to 2004 except for Newfoundland and Labrador, Quebec and Ontario where 2004 incidence is estimated. Please note that each graph has a different scale for the y-axis because of the wide range. Please refer to *Appendix II: Methods* for further details.

Source: Surveillance Division, CCDPC, Public Health Agency of Canada

Skin cancer quick facts: Causes 1

- Over-exposure to UVR major cause in Canada (Armstrong BK, Kricger A, 1993)
 - UVR is a known carcinogen *[see separate slide]*
- Over-exposure early in life (childhood and adolescence) particularly increases risk of melanoma (Armstrong BK 1997) and possibly BCC *[see separate slide]*
- UVB (short wavelength) appears to be most important for SCC; UVA may be relatively more important for melanoma
- Most important aspect of sun exposure varies
 - lifetime cumulative exposure is most important for SCC and for some types of melanoma, especially those that develop later in life
 - intermittent exposure* is most important for melanoma, especially for those developing earlier
 - BCC is probably somewhere in between
 - NOTE: total dose is also important for melanoma and BCC

* Intermittent exposure is characterized by relatively short, intense exposure episodes, the type that is more likely to result in sunburn. Thus, sunburn is considered to be one indicator of this type of exposure. It is not clear whether sunburn has an independent effect on skin cancer risk.

Ultraviolet radiation (UVR) is carcinogenic

Solar radiation is a human carcinogen causing all forms of skin cancer

UVA and UVB are carcinogenic in animals and probably in humans

(Source: International Agency for Research on Cancer, 1992)

Solar radiation is known to be a human carcinogen

Broad-spectrum UVR is known to be a human carcinogen

UVA and UVB are reasonably anticipated to be a human carcinogen

Exposure to sunlamps or sunbeds is known to be a human carcinogen

(Source: National Toxicology Program, Report on Carcinogens, 2005)

Evidence that intense sun exposure in youth may be especially harmful

- Melanoma occurs at relatively young ages
- Young age at migration to Australia increases risk
- Most nevi (moles) arise prior to age 20
 - nevi are related to sun exposure
 - many nevi increases the risk of melanoma
- Melanoma body site distribution in young adults favours sites not usually exposed (trunk & limbs vs. head & neck)
- Some epidemiologic studies show stronger associations with early age at exposure - not consistent or convincing

Skin cancer quick facts: Causes 2

- Tanning equipment is an important source of UVR, both UVA and UVB
 - Doses delivered by tanning equipment are often very high
 - Youth and young adults are the main users of tanning equipment
 - Availability of tanning equipment is increasing
 - Use of TE increases the risk of skin cancer
- UVR is also a potential workplace hazard (mostly for outdoor workers, who may have very large but not usually intermittent doses, but also welders, and others who work with specialized lights that emit UVR)

Melanoma & use of tanning equipment

- Meta-analysis #1¹ (10 studies to April 2004)
 - Ever vs. never use: RR = **1.25** (95% CI: 1.05-1.49)
 - First use as young adult vs. never: **1.69** (95% CI: 1.32-2.18)
 - Later studies have results similar to earlier studies (when > UVB)
- Meta-analysis #2² (19 studies to March 2006)
 - Ever vs. never use: RR = **1.15** (95% CI: 1.00-1.31)
 - First use before age 35: **1.75** (95% CI: 1.35-2.26)

Sources: 1. Gallagher et al. Cancer Epidemiol Biomarkers Prev 2005

2. IARC Working Group on artificial UV light and skin cancer. Int J Cancer 2006

Non-melanoma skin cancer & use of tanning equipment

Squamous cell carcinoma

- Meta-analysis #2¹ (3 studies to March 2006)
 - Ever vs. never use: RR = **2.25** (95% CI: 1.08-4.70)
 - 1 study² found odds ratio increased by 20% for each decade younger at first use

Basal cell carcinoma

- Meta-analysis #2¹ (4 studies to March 2006)
 - Ever vs. never use: RR = **1.03** (0.56-1.90)
 - 1 study² found odds ratio increased by 10% for each decade younger at first use

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