The changing face of cancer in adolescents and young adults (AYAs) in Canada

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Canadian Cancer Statistics: Special topic – Cancer in Adolescents & Young Adults (AYAs)

- Cancer in AYAs (special topic for 2009) inspired by:
  - Cancer Care Ontario. Cancer in Young Adults in Canada (2006)
  - US NCI. Report of the Adolescent and Young Adult Oncology Progress Review Group (2006)
  - US NCI. Cancer epidemiology in older adolescents and young adults 15 to 29 years of age, including SEER incidence and survival: 1975-2000. (2006)

Available at: www.cancer.ca/statistics
Why should we care?

- Cancer has a substantial impact on AYAs and on their families
  - e.g. many will still be completing their education, starting careers and thinking about starting a family

- Social impacts:
  - Self-image
  - Social relationships
  - Future quality of life
Outline of presentation

1. Epidemiology of cancer in Canadian AYAs
2. Other health care issues
3. Improving care for AYAs with cancer
Data sources and analyses

Data sources:

- **Canadian Cancer Registry**
  - Includes provincial and territorial cancer data
  - 10 major diagnostic groups defined by ICDO morphology codes

- **Canadian Vital Statistics database**
  - Using ICD-9 codes for mortality

Analyses:


- Observed survival (1997-2004 and 2001-2004) using the period method
1. Epidemiology of cancer in AYAs

- Age 15-29 years

- Cancers reflect transition between non-epithelial (common childhood tumors) and epithelial (common adult tumors)

- Classification system is blend of childhood (ICCC-3) and adult systems (ICD-O-3)\textsuperscript{1}

\textsuperscript{1}Barr RD et al. Cancer 2006
Snapshot of incidence of cancer in Canadian AYAs

Distribution of New Cancer Cases, 2005

- **Children (0-14y), 0.5% (n=848)**
- **AYA (15-29y), 1.2% (n=2075)**
- **Adults (>29y), 98.3% (n=168,077)**

- Incidence (1992-2005) = ~ 2075 per year
- Incidence rate = 347 per 1,000,000
- 1.2% of all new cancer diagnoses
- ↑ incidence rates in males and females

*based on estimates for 2009 for ‘Adults’
Leading types of cancer in AYAs (15-29 years), 1992-2005

Males, N=(14,006)
- Germ Cell Testis 24%
- Hodgkin Lymphoma 14%
- Leukemia 8%
- Other 17%
- Malignant Bone Tumors 4%
- Thyroid 5%
- Soft Tissue 6%
- Non-Hodgkin Lymphoma 7%
- Melanoma 7%
- Brain and Other Nervous system 8%

Females, N=(15,043)
- Hodgkin Lymphoma 13%
- Thyroid 19%
- Ovary 4%
- Non-Hodgkin Lymphoma 4%
- Soft Tissue 5%
- Brain and Other Nervous system 6%
- Leukemia 6%
- Breast 7%
- Cervix 9%
- Other 16%
- Melanoma 11%
Age-standardized incidence rates (ASIR) in AYAs (15-29 years), by sex, Canada, 1992-2005

ASIR (per 1,000,000)


APC = annual percent change

Females, All Cancers
APC=1.4%/yr (1996-2005)

Males, All Cancers
APC=0.8%/yr (1996-2005)

Females, All Cancers excluding sex-specific cancers

Males, All Cancers excluding sex-specific cancers
Age-standardized incidence rates for common cancers in young males (15-29 years), Canada, 1992-2005

- Testis
- Melanoma
- Non-Hodgkin Lymphoma and Unspecified Lymphomas
- Soft Tissue
- Thyroid
- Colorectal

Rate per 1,000,000
Age-standardized incidence rates for common cancers in young females (15-29 years), Canada, 1992-2005

- Thyroid
- Colorectal
- Soft Tissue
- Melanoma
- Non-Hodgkin Lymphoma and Unspecified Lymphomas
- Cervix
- Breast

Rate per 1,000,000
Snapshot of mortality from cancer in Canadian AYAs

Distribution of Deaths, 2004

- Mortality (1991-2004) = ~326 per year
- Mortality rate = 44 per 1,000,000
- 0.4% of all cancer deaths in 2004
- ↓ Mortality rates in males and females

*based on estimates for 2009 for ‘Adults’
Leading causes of cancer deaths in AYAs (15-29 Years), 1991-2004

Males (N=2,556)

- Leukemia: 21%
- Brain and other nervous system: 15%
- Non-Hodgkin Lymphoma: 11%
- Bone: 10%
- Soft Tissue: 6%
- Hodgkin Lymphoma: 6%
- Testis: 5%
- Skin: 4%
- Large Intestine and Rectum: 3%
- Other: 19%

Females (N=2,007)

- Leukemia: 17%
- Brain and other nervous system: 15%
- Non-Hodgkin Lymphoma: 8%
- Bone: 7%
- Soft Tissue: 6%
- Hodgkin Lymphoma: 6%
- Breast: 5%
- Cervix: 4%
- Ovary: 4%
- Other: 26%

Brain and Other Nervous System: 13%
Non-Hodgkin Lymphoma: 8%
Age-standardized mortality rates for common cancers in young males (15-29 years), Canada, 1991-2004

- Testis
- Colorectal
- Soft Tissue
- Melanoma
- Non-Hodgkin Lymphoma and Unspecified Lymphomas
Age-standardized mortality rates for common cancers in young females (15-29 years), Canada, 1991-2004
Snapshot of 5-year observed survival in Canadian AYAs

- observed survival (2001-2004) = ~85%
- ↑ compared to 1992-1995
- highest among all age groups

*relative survival for ‘All ages’
Estimated 5-year observed survival in AYAs (15-29 years), by cancer type and sex, Canada (excluding Quebec), 1997-2004

- **Leukemia**
  - Total: 61
  - Females: 60
  - Males: 63

- **Central Nervous System**
  - Total: 66
  - Females: 67
  - Males: 70

- **Soft Tissue and Other Extrasosseous Sarcoma**
  - Total: 62
  - Females: 67
  - Males: 72
  - Observed Survival Proportion (%): 77

- **Breast**
  - Total: 73
  - Females: 73
  - Males: 74

- **Non-Hodgkin Lymphoma**
  - Total: 69
  - Females: 81
  - Males: 86

- **Cervix**
  - Total: 86
  - Females: 92
  - Males: 96

- **Melanoma**
  - Total: 86
  - Females: 92
  - Males: 96

- **Hodgkin Lymphoma**
  - Total: 94
  - Females: 94
  - Males: 93

- **Testis**
  - Total: 96
  - Females: 96
  - Males: 96

- **Thyroid**
  - Total: 99
  - Females: 100
  - Males: 98

- **All Cancers**
  - Total: 80
  - Females: 83
  - Males: 86
Estimated 5-year observed survival in AYAs (15-29 Years), by age, Canada (excluding Quebec), 1997-2004.
Prevention

- Opportunities for prevention are limited - little is known about modifiable causes of the most common cancers

- Few known or suspected risk factors:
  - family history (e.g. breast)
  - infectious agents (e.g. cervical, Hodgkin lymphoma)
  - pre-natal exposures
  - childhood exposure to radiation or chemotherapy
  - UV radiation through tanning beds (e.g. melanoma)

- Prevention:
  - participate regularly in Pap test and HPV vaccination programs
  - practice sun safe behaviours
  - avoid smoking, avoid heavy alcohol use, engage in regular physical activity, maintain healthy weight, avoid risky sexual behaviour
2. Other health care issues

- Important diagnosis and treatment issues in AYAs\(^2\):
  - Delays in diagnosis
  - Low participation in clinical trials
  - Lack of age-appropriate care
  - Concerns around social support during therapy
  - Late effects of treatment
  - Second cancers
  - Long-term survivorship needs

- Changes to the way we address their unique medical and psychosocial needs are becoming increasingly important to address – at diagnosis, during treatment and afterwards

3. Improving care for AYAs

- International workshop in Toronto (March 2010) organized by Canadian AYA Cancer Task Force (supported by CPAC and C17):

<table>
<thead>
<tr>
<th>Delays in diagnosis</th>
<th>Lack of age appropriate care</th>
<th>Lack of age-specific treatment protocols</th>
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<tr>
<td>Little peer support</td>
<td>Low rates of participation in clinical trials</td>
<td>Reduced opportunity for prevention</td>
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<td>Long-term psychosocial and physical challenges (secondary effects) for survivors</td>
<td>Lack of communication and coordination in the system for AYA patients</td>
<td>Financial burden</td>
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- Provincial and territorial cancer registries

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Canadian Cancer Statistics available at: www.cancer.ca/statistics