

## Cancer in Adolescents & Young Adults

### EPIDEMIOLOGY

Nearly one in every 200 adolescents and young adults, ages 15-29, will develop cancer each year. It is the most common cause of death among females in this age group and is the second leading cause of death for males of this age group, next to heart disease.

Types of cancer common among this age group:

**Lymphoma**, the most prominent cancer, is cancer of the lymph nodes; the tiny, bean-shaped organs that help fight diseases

**Leukemia**, the second most prominent cancer, is cancer of the blood and bone marrow

**Melanoma**, cancer of the skin and deadliest form of cancer for this age group

**Thyroid cancer**, cancer that begins in the thyroid gland, which is located in the front of the neck

**Soft tissue sarcomas**, a cancer that develops in supportive and connective tissue such as fat, muscle, nerves, tendons, joints, blood vessels, and lymph nodes

*2000-2004 Age Specific Cancer Rates per 100,000 Populations*

15-29	2000-2004			2004	
	Total			Total	
	CASES	RATE		CASES	RATE
ORAL CAVITY	53	0.6		17	0.9
COLON/RECTUM	84	1.0		20	1.1
LARYNX	8	0.1		5	0.3
LUNG/BRONCHUS	20	0.2		6	0.3
BONE	88	1.0		19	1.1
SOFT TISSUE	91	1.0		22	1.2
MELANOMA (SKIN)	376	4.3		65	3.6
FEMALE BREAST	123	2.9		20	2.3
CERVIX UTERI	83	2.0		19	2.2
CORPUS UTERI	25	0.6		7	0.8
OVARY	81	1.9		9	1.0
TESTES	296	6.6		69	7.4
BLADDER	24	0.3		*	*
KIDNEY	45	0.5		7	0.4
ENDOCRINE	270	3.1		83	4.6
LEUKEMIA	192	2.2		35	1.9
BRAIN/OTHER CNS	190	2.2		38	2.1
HODGKINS DISEASE	327	3.8		66	3.7
NON-HODGKINS LYMPHOMA	161	1.8		33	1.8
OTHER CANCERS	168	1.9		40	2.2
<b>ALL CANCERS</b>	<b>2,741</b>	<b>31.5</b>		<b>594</b>	<b>33.0</b>

## **DEFICITS IN RESEARCH AND SURVIVORSHIP**

Adolescents and Young Adults (AYAs) with cancer face a different set of challenges than older and younger generations with cancer. The AYA population faces different types of cancers that are rarely related to environmental carcinogens, a recognizable inherited predisposition, or a family cancer syndrome. These issues can be categorized into:

**Personal/patient:** Independence/autonomy, underutilization of health care services, awareness, delay in diagnosis, health insurance, translational research

**Family/community:** Awareness, lack of education, inadequate community resources

**Health professionals:** Awareness, delay in diagnosis, education/training, reimbursement, lack of clinical trials

**Societal/cultural:** Awareness (by employers, school personnel, neighbors) health insurance

## **RISK FACTORS**

For the most part, there are no known risk factors for developing cancer as an AYA; although germline mutations (cancer family syndromes) represent less than 5% of the overall cancer incidences among AYAs.

## **PREVENTION**

Very little prevention research has been done for the AYA population. Of the research that has been conducted, it has been largely ineffective. Overall, the vast majority of cases of cancer diagnosed in the AYA population appear to be spontaneous and unrelated to either carcinogens in the environment or family cancer syndromes.

## **SCREENING/ EARLY DETECTION/ DIAGNOSIS**

A lack of standardized screening and primary care issues increase disparities in proper cancer care among adolescent and young adult cancer patients when compared to other populations of cancer patients.

Barriers in screening & early detection:

- Restricted or delayed access to care, because the AYA population is typically under or uninsured.
- Physicians' poorly trained or unwilling to care for AYAs.
- Under-recognition by medical professionals of cancer or its symptoms and signs in the age group.
- Greater lag time, interval between onset of first symptoms to the day of cancer diagnosis.
- "No man's land"- AYAs fall between the pediatric and adult oncology clinics, therefore receiving inconsistent treatment protocols, of which, many were not meant to treat AYAs.

## **TREATMENT**

There are many forms of treatment methods to treat cancer in AYAs, each depending on the type, location, stage and previous health of the patient. Various methods include:

**Surgery**, which is readily performed on AYAs as opposed to younger or older patients who have more coexisting morbidities and have a harder time dealing with anesthesia.

**Chemotherapy**, particularly oral chemotherapy, is often more problematic in AYA patients either because of the lack of parental oversight, feelings of invincibility, or impediments to compliance because of financial limitations, and/or conflicts with school or transportation.

**Stem cell transplantation**, particularly used in AYAs with leukemias and lymphomas.

**Radiation therapy**

**Immunotherapy**

## **RESOURCES**

National Cancer Institute (<http://www.cancer.gov/>)

The Lance Armstrong Foundation (<http://www.livestrong.org/site/c.khLXK1PxHmF/b.2660611/k.BCED/Home.htm>)

The Ulman Cancer Fund for Young Adults (<http://www.ulmanfund.org/>)

AYA Oncology Progress Review Group ([http://planning.cancer.gov/disease/AYAO\\_PRG\\_Report\\_2006\\_FINAL.pdf](http://planning.cancer.gov/disease/AYAO_PRG_Report_2006_FINAL.pdf))

American Society of Clinical Oncology (<http://www.asco.org/>)