

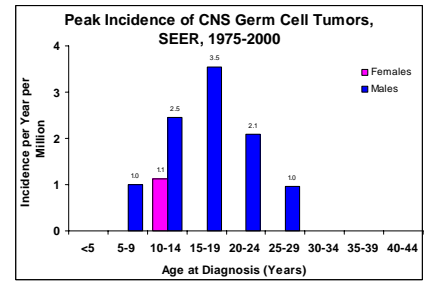
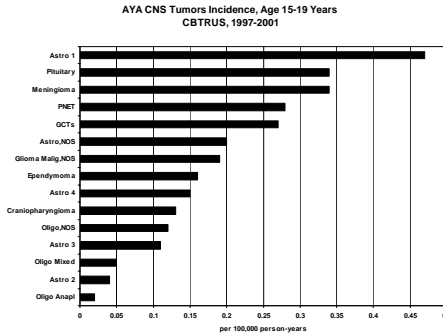
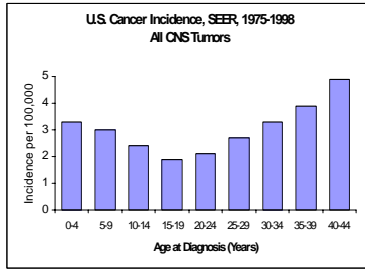
Age related patterns in CNS tumor incidence with a focus on the adolescent and young adult (AYA) population.

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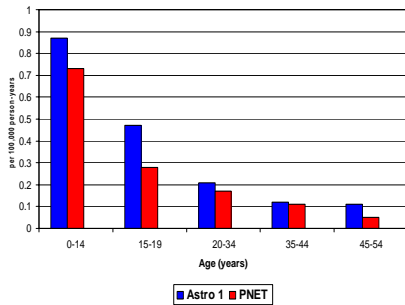
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Purpose and Methods

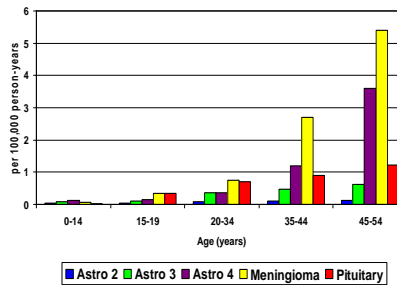
Age-incidence patterns for CNS tumors and their histology in the AYA populations were studied to look for clues to mechanisms of tumorigenesis. Incidence data were taken from Surveillance, Epidemiology, and End Results Program (SEER 1975-1998) and the Central Brain Tumor Registry of the United States (CBTRUS 1997-2001). Analysis of data is used to justify potential avenues of hypothesis driven research and clinical trial.



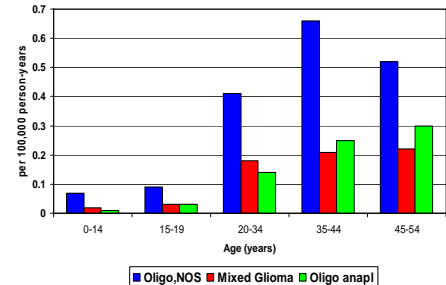
Falling Incidence: Astrocytoma Grade I and PNET, CBTRUS, 1997-2001



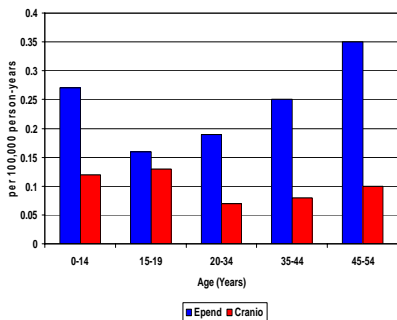
Rising Incidence: Astrocytoma Gr II, III, IV, Meningioma, Pituitary Tumors, CBTRUS, 1997-2001



Rising Incidence: Oligodendroglioma, NOS, Anaplastic Oligodendroglioma, Oligoastrocytoma, CBTRUS, 1997-2001



Varying Incidence Ependymoma and Craniopharyngioma, CBTRUS, 1997-2001



Hypothesis:

These patterns of age-incidence suggest that development of CNS tumors is driven by:

- ❑ **Peak incidence:** Factors linked to pubertal development, earlier yet less frequent in girls than boys. Germ Cell Tumors (GCTs)
- ❑ **Falling incidence:** Factors linked to the cessation of brain growth and development. Astrocytoma grade I, Primitive Neuro-Ectodermal Tumor (PNET)
- ❑ **Rising incidence:** Factors linked to onset of brain aging / degeneration. Astrocytic tumors grades 2-4, Pituitary Tumors, Meningioma, Oligodendroglioma and Oligoastrocytic tumors
- ❑ **Biphasic incidence:** Factors common to both early brain growth and aging / degeneration. Ependymoma.

Conclusion

AYA-hood is associated with a nadir in CNS tumor incidence derived from a) the falling incidence of tumors, characteristic of childhood, b) the slow early rise in incidence of tumors, characteristic of aging and degeneration and c) the biphasic or stable incidence pattern. These overlapping incidence patterns however mask the peak incidence of GCTs.

Proposal

- ❑ An international portfolio of AYA CNS tumor trials should be developed which account for these age-incidence patterns and investigate linked biological hypotheses.
- ❑ GCTs are selected as the first AYA CNS tumor for international trial development.
- ❑ Specific methods are employed to engage AYA patients with CNS tumors in the development of age-specific trials of novel therapies and associated research as well as prioritization of questions for future trials.