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### Diffuse intrinsic pontine glioma-current status and future strategies.

[Khatua S](#), [Moore KR](#), [Vats TS](#), [Kestle JR](#).

Pediatric Neurooncology, Children's Cancer Hospital, MD Anderson Cancer Center, 1515 Holcombe Boulevard, Unit 87, Houston, TX, 77030, USA, [skhatua@mdanderson.org](mailto:skhatua@mdanderson.org).

#### Abstract

**INTRODUCTION:** Diffuse intrinsic pontine gliomas which constitute 15% of all childhood brain tumors are inoperable and response to radiation and chemotherapy has not improved long-term survival. Due to lack of newer effective therapies, mean survival after diagnosis has remained less than 12 months. Trials investigating chemotherapy and/or radiation have proven disappointing. As biopsy of these tumors are rarely performed due to the high eloquence of the brain stem, information about the pathology and biology remains elusive hindering development of novel biologic agents. Poor access of most chemotherapeutic agents to these tumors due to the blood-brain barrier continues to undermine therapeutic efficacy. Thus, to date, we remain at a virtual standstill in our attempts to improve the prognosis of children with these tumors.

**METHODS:** An extensive review of the literature was performed concerning children with diffuse brain stem gliomas including clinical trials, evolving molecular biology, and newer therapeutic endeavors.

**CONCLUSION:** A pivotal approach in improving the prognosis of these tumors should include the initiation of biopsy and encouraging families to consider autopsy to study the molecular biology. This will help in redefining this tumor by its molecular signature and profiling targeted therapy. Continued advances should be pursued in neuroimaging technology including identifying surrogate markers of early disease progression. Defining strategies to enhance local delivery of drugs into tumors with the help of newer surgical techniques are important. Exhaustive research in all these aspects as a multidisciplinary approach could provide hope to children with these fatal tumors.

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