

Metronomic chemotherapy: a promising approach for pediatric neuroblastoma

GA, UNITED STATES, January 26, 2025 /EINPresswire.com/ -- [Metronomic](#) chemotherapy (MC) is emerging as a groundbreaking treatment for pediatric neuroblastoma, offering a more accessible and manageable option for children with high-risk and relapsed/refractory forms of the disease. This innovative approach could revolutionize care, particularly in low-resource settings where traditional treatments are often out of reach. A recent comprehensive review explores the evolution, clinical applications, and prospects of MC, shedding light on its potential to improve outcomes while reducing toxicity.

Neuroblastoma is the most common extracranial solid tumor in children, with nearly 50% of cases diagnosed at an advanced stage, often with metastatic disease. Despite advances in treatment, survival rates for high-risk and relapsed/refractory neuroblastoma remain dismal, and options like autologous stem cell transplantation and immunotherapy are frequently unavailable in low- and middle-income countries. Given these stark realities, there is a critical need for alternative, more accessible therapies like metronomic chemotherapy (MC) to improve survival prospects for these children.

On December 10, 2024, a team of researchers from the Children's Hospital of Chongqing Medical University published a comprehensive review (DOI: 10.1002/pdi3.2512) in *Pediatric Discovery*, detailing the potential of MC in treating pediatric neuroblastoma. The study provides an in-depth examination of MC's efficacy, safety, and its potential role as a maintenance therapy and in relapsed/refractory settings, offering new hope for children in desperate need of effective treatments.

The review delves into the mechanics of MC as a therapeutic strategy, emphasizing its ability to maintain sustained drug levels over extended periods with reduced toxicity. Unlike conventional high-dose chemotherapy regimens, MC uses low-dose agents like cyclophosphamide and etoposide, often in combination with non-chemotherapeutic agents such as celecoxib and thalidomide. Early studies have reported promising results, with disease control rates reaching up to 45%, particularly in high-risk patients. One of MC's most remarkable features is its efficacy in resource-limited regions, where access to advanced treatments such as autologous stem cell transplantation or immunotherapy is often unavailable. The review also highlights a growing trend in combining MC with immunotherapy and targeted treatments like nivolumab and pazopanib to enhance its therapeutic effects. However, despite these encouraging findings, variability in drug combinations, dosages, and treatment schedules across studies has hindered

the establishment of standardized protocols. Identifying predictive biomarkers and optimizing treatment regimens remain essential to unlocking MC's full potential.

The authors underscores the importance of continued research to fine-tune MC protocols. "While MC has shown significant promise in improving survival and quality of life for pediatric neuroblastoma patients, further studies are necessary to identify the most effective drug combinations and biomarkers that predict response to treatment," the authors noted. They call for further investigation into MC's optimization reflects the need for a deeper understanding of how this innovative treatment can best serve young patients.

The application of MC in pediatric neuroblastoma holds immense promise, especially in resource-limited regions where access to advanced therapies is restricted. MC's low toxicity profile, ease of outpatient administration, and cost-effectiveness position it as a highly attractive alternative to traditional high-intensity treatments. As a maintenance therapy and in palliative care, it offers new hope for improved outcomes. By integrating MC with emerging immunotherapies and targeted treatments, there is an opportunity to further enhance its effectiveness. Moving forward, the development of standardized protocols and the identification of biomarkers to guide personalized treatment strategies will be crucial to optimizing MC's impact, making it a cornerstone in both newly diagnosed and relapsed/refractory neuroblastoma management worldwide.

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