

Children's Mercy Kansas City

## SHARE @ Children's Mercy

---

Research Days

GME Research Days 2022

---

May 6th, 11:30 AM - 1:30 PM

### Treatment of Recurrent Wilms Tumor with Irinotecan/ Temozolomide

Meagan Vacek

*Children's Mercy Hospital*

Follow this and additional works at: <https://scholarlyexchange.childrensmercy.org/researchdays>



Part of the [Higher Education and Teaching Commons](#), [Medical Education Commons](#), [Pediatrics Commons](#), and the [Science and Mathematics Education Commons](#)

---

Vacek, Meagan, "Treatment of Recurrent Wilms Tumor with Irinotecan/Temozolomide" (2022). *Research Days. 2.*

[https://scholarlyexchange.childrensmercy.org/researchdays/GME\\_Research\\_Days\\_2022/ResearchDay5/2](https://scholarlyexchange.childrensmercy.org/researchdays/GME_Research_Days_2022/ResearchDay5/2)

This Poster Presentation is brought to you for free and open access by the Conferences and Events at SHARE @ Children's Mercy. It has been accepted for inclusion in Research Days by an authorized administrator of SHARE @ Children's Mercy. For more information, please contact [hlsteel@cmh.edu](mailto:hlsteel@cmh.edu).

# Treatment of Recurrent Wilms Tumor with Irinotecan/Temozolomide

Meagan Vacek, DO; Terrie Flatt, DO

Children's Mercy Kansas City

## Background

Despite improvement in relapse free survival (RFS) in recurrent Wilms tumor (WT), the 4-year RFS rate for patients treated with vincristine/ dactinomycin/doxorubicin is approximately 40%. Ifosfamide, carboplatin and etoposide are commonly used in relapsed solid tumors but have significant toxicities and require hospital admission for administration. Our patient focused on quality of life, and this led to exploration of other treatment options.

## Results

The patient is an 11-year-old female diagnosed with WT at 6 years of age in Honduras who received approximately 6 months of chemotherapy and a nephrectomy. Staging in Honduras was unknown. Due to financial difficulties, she was unable to continue with treatment and family immigrated to the United States. One year after initial diagnosis, imaging revealed a large chest mass and intracardiac masses. Biopsy confirmed recurrent WT and she received modified NWST/AREN0534 regimen. She responded well to this regimen and underwent surgical resections and whole lung radiation. At 20 months off therapy, she was found to have a lung nodule confirmed to be recurrent WT. As this was her second recurrence, both patient and family chose a chemotherapy regimen allowing for the best quality of life.

## Results

She received Irinotecan 90mg/m<sup>2</sup>/dose PO on days 1-5 and Temozolomide (TMZ) 40mg/m<sup>2</sup>/dose PO on days 1-5, 8-12, 15-19. She received the 2-drug regimen for 10, 28-day cycles without myelosuppression, need for transfusions or hospitalizations for fever and neutropenia, allowing her to attend school. At the end of cycle 10, she had a third recurrence.

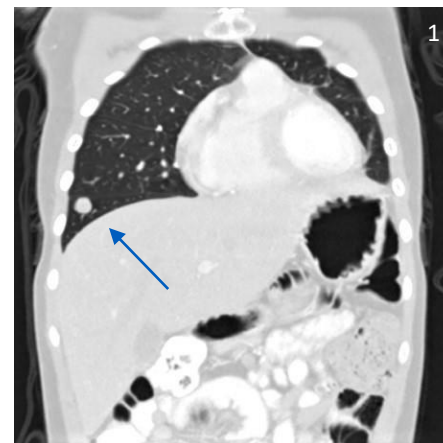
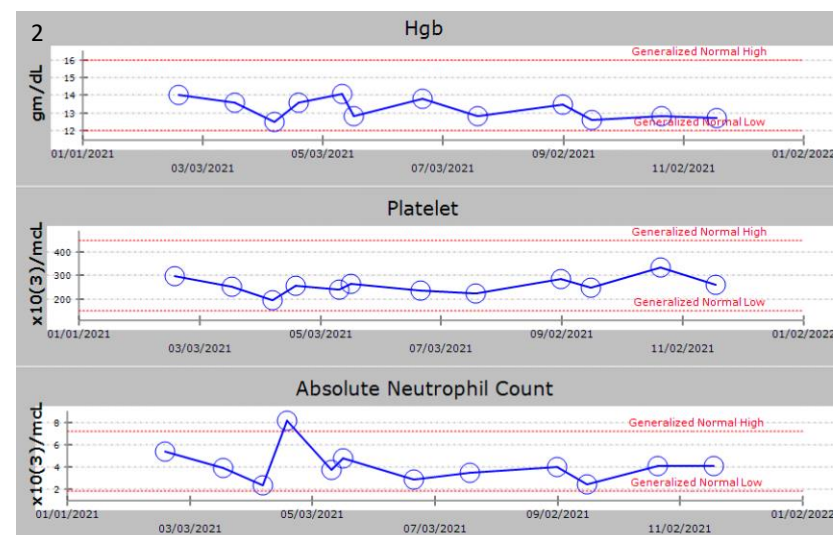


Figure 1 - Right pulmonary nodule measuring 1.2 cm; biopsy confirmed second recurrence.

Figure 2 - Hemoglobin (Hgb), platelet and absolute neutrophil count (ANC) trends while on Irinotecan/Temozolomide.

Ranges:  
Hgb - 12.6 - 14.1 gm/dL  
Platelet - 196 - 333 x 10<sup>3</sup>/mcl  
ANC - 2.35 - 8.19 x 10<sup>3</sup>/mcl



## Discussion

Irinotecan is a camptothecin prodrug shown to have activity against adult solid tumors. Topotecan of the same drug class also showed activity in children with favorable histology WT with a 48% response rate in heavily pretreated patients. TMZ has activity against adult solid tumors with promising results in xenograft models of pediatric solid tumors. O6-methylguanine-DNA-methyltransferase (MGMT) is a DNA repair enzyme which inhibits the anti-tumor effect of alkylating agents, like TMZ. Negative MGMT protein expression increases the sensitivity to alkylating agents and can predict the response to TMZ. Our patient was MGMT negative.

## Conclusion

Irinotecan/Temozolomide should continue to be explored as an option for relapsed/refractory solid tumors as it can achieve remission for a substantial period while allowing for improved quality of life.

### References:

- Metzger ML, Stewart CF, Freeman BB 3rd, Billups CA, Hoffer FA, Wu J, Coppes MJ, Grant R, Chintagumpala M, Mullen EA, Alvarado C, Daw NC, Dome JS. Topotecan is active against Wilms' tumor: results of a multi-institutional phase II study. *J Clin Oncol.* 2007 Jul 20;25(21):3130-6. doi: 10.1200/JCO.2007.10.9298. PMID: 17634492.
- Wagner LM, Crews KR, Iacono LC, Houghton PJ, Fuller CE, McCarville MB, Goldsby RE, Albritton K, Stewart CF, Santana VM. Phase I trial of temozolomide and protracted irinotecan in pediatric patients with refractory solid tumors. *Clin Cancer Res.* 2004 Feb 1;10(3):840-8. doi: 10.1158/1078-0432.ccr-03-0175. PMID: 14871959.
- Akazawa R, Umeda K, Saida S, Kato I, Hiramatsu H, Sakamoto A, Arakawa Y, Sumiyoshi S, Okamoto T, Moritake H, Adachi S, Takita J. Temozolomide and etoposide combination for the treatment of relapsed osteosarcoma. *Jpn J Clin Oncol.* 2020 Aug 4;50(8):948-952. doi: 10.1093/jjco/hyaa070. PMID: 32463097.
- Hegi ME, Diserens AC, Gorlia T, Hamou MF, de Tribolet N, Weller M, Kros JM, Hainfellner JA, Mason W, Mariani L, Bromberg JE, Hau P, Mirimanoff RO, Cairncross JG, Janzer RC, Stupp R. MGMT gene silencing and benefit from temozolomide in glioblastoma. *N Engl J Med.* 2005 Mar 10;352(10):997-1003. doi: 10.1056/NEJMoa043331. PMID: 15758010.