**KPCRTF State Funded Projects Reporting Template**

**University of Kentucky**
**Statewide Molecular Tumor Board for Pediatric Brain Tumors**
**Program Director: Dr. John Villano**

**Reporting Period:** April 1, 2021 through June 30, 2021

***Below please provide a brief summary of the status of the Project listed as well as for each Objective listed below. Include any barriers, how and if they were overcome, and successes achieved.***

The University of Kentucky and the University of Louisville have both received IRB approval for the proposed protocols. We continue to conduct regular monthly Molecular Tumor Board meetings via zoom, where we present and discuss pediatric brain tumor cases. To date, we have discussed a total of 15 cases (7 from UK, 8 from UL) to which recommendations have been made (example recommendation letter available at the end of this report).

**Primary Objective:**

**1) Obtain next generation sequencing and germline testing for central nervous system tumor patients treated in the state of Kentucky.**
Part 1 of this study is strictly observational. We have discussed 15 cases to date and we continue making note of whether or not the cases presented already have next generation sequencing and germline testing. This will be calculated at the completion of the study. Has not begun yet.

a. **Identify the percentage of patients with an actionable mutation.**
   This will be calculated at the completion of the study.

**2) Expand the state-wide population-based registry that contains clinical level information regarding molecular profiling to aid diagnosis and management.**
We have discussed 15 cases to date. As we continue to discuss more cases each month, we will gather more information and this registry will continue to be expanded and developed.

a. **To create a database for genomic data storage for future computational analysis and correlation with clinical data, as well as transfer to the Kentucky Cancer Registry.**
   Only 15 cases have been discussed by the MTB at this time. Available pathology and sequencing continue to be documented and ultimately will become part of this database for identification of novel mutations.

b. **To create a blood and tumor tissue bank for future study including circulating tumor DNA for next-generation sequencing.**
   This will be conducted in part 2 of the study and we will continue to add to the blood and tumor tissue banks as we collect specimens. Has not begun at this time.

**3) Develop, implement, and evaluate clinical outcomes of a statewide pediatric molecular tumor board.**

At this time, the Pediatric Molecular Tumor Board had been formed, cases (15 to date) have been discussed at standing monthly meetings, and clinical outcomes of the MTB will be evaluated at the completion of the study.

a. **Physician adherence to treatment recommendations of the MCC MTB.**
   We have only discussed 15 cases at this point and have not been working on this long enough to assess adherence to treatment recommendations of the MCC MTB by treating physicians.

b. **Approval rates for targeted agents by third party payers.**
   Has not begun yet. We will need final data before calculating.

*c.* **To estimate the OS of patients who undergo genomic testing and have their case reviewed by the MCC MTB.**
   N/A as of yet. Will begin this during part 2 of the study.

**4) Evaluate the ability of a pediatric statewide molecular tumor board to improve germline testing for cancer syndromes and pharmacogenetics.**

a. **Estimate the prevalence of actionable pharmacogenetic variations in the advanced cancer patient population.**
   This will be calculated at the completion of the study. Has not begun yet.

b. **Characterize potential pharmacogenetic-based therapeutic adjustments in the advanced cancer patient population.**
   Has not begun yet.

c. **Analyze drug interactions.**
   Drug interactions are discussed on a case by case basis. No information to report at this time.

**Deliverables**

| **Deliverables (check appropriate time period when each deliverable is completed)** | **Month 1-3** | **Month 4-6** | **Month 7-9** | **Month 10-12** | **Month 13-15** | **Month 16-18** | **Month 19-21** | **Month 22-24** | **√** |
|---|---|---|---|---|---|---|---|---|---|
| **Notify DPH when IRB approval is received or if not required**<br>• **UK**<br>• **UL** | √ | √ | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| **#1 Obtain next generation sequencing and germline testing for central nervous system tumor patients treated in the state of Kentucky.**<br>• **Identify the percentage of patients with an actionable mutation.** | | | √ | √ | | | | | |
| **#2 Expand the state-wide population-based registry that contains clinical level information regarding molecular profiling to aid diagnosis and management.**<br>• **To create a database for genomic data storage for future computational analysis and correlation with clinical data, as well as transfer to the Kentucky Cancer Registry.**<br>• **To create a blood and tumor tissue bank for future study including circulating tumor DNA for next-generation sequencing.** | | √ | √ | √ | | | | | |
| **#3 Develop, implement, and evaluate clinical outcomes of a statewide pediatric molecular tumor board.**<br>• **Physician adherence to treatment recommendations of the MCC MTB.**<br>• **Approval rates for targeted agents by third party payers.**<br>• **To estimate the OS of patients who undergo genomic testing and have their case reviewed by the MCC MTB.** | | √ | √ | √ | | | | | |
| **#4 Evaluate the ability of a pediatric statewide molecular** | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| **tumor board to improve germline testing for cancer syndromes and pharmacogenetics.** | | | | | | | | | |

**Cases Discussed to Date**

15 cases to date

- September 24, 2020
  - One case presented by Dr. Lightner (UK)
- October 15, 2020
  - Two cases presented by Dr. Lightner (UK)
- November 19, 2020
  - One case presented by Dr. Barbour (UL)
- December 17, 2020
  - One case presented by Dr. Barbour (UL)
  - One case presented by Dr. Hata (UL)
  - One case presented by Dr. Lightner (UK)
- January 21, 2021
  - No new cases, continued discussion about cases from the December meeting.
- February 18, 2021
  - One case presented by Dr. Huang (UL)
- March 18, 2021
  - Two cases presented by Dr. Barbour (UL)
- April 15, 2021
  - One case presented by Dr. Lightner (UK)
  - One case presented by Dr. (UL)
- May 20, 2021
  - Two cases presented by Dr. Lightner (UK)
- June 17, 2021
  - One case presented by Dr. Lightner (UK)

**Meeting Participant Logs**

Meeting participant logs are kept for every meeting of the Pediatric Molecular Tumor Board. These logs are available upon request.

**Pediatric Tumor Board Recommendation Letter Example**

Below is an example of a letter written with the formal recommendation of the Pediatric Molecular Tumor Board on the case presented by Dr. Donita Lightner on December 17th, 2020.

HealthCare
MARKEY CANCER CENTER

NCI Cancer Center
A Cancer Center Designated by the National Cancer Institute

**John Villano, MD, Ph.D.**
Medical Oncologist
Co-Director, Pediatric Molecular Tumor Board
University of Kentucky

**Mustafa Barbour, MD**
Medical Oncologist
Co-Director, Pediatric Molecular Tumor Board
University of Louisville

**Jill M. Kolesar, PharmD, MS**
Clinical Pharmacologist
Co-Director, Pediatric Molecular Tumor Board
University of Kentucky

**Justine Pickarski, MS**
Genetics Counselor
University of Kentucky

**Pediatric Molecular Tumor Board Recommendation**

**December 17, 2020**

Dear Dr. Lightner:

The Markey Cancer Center Pediatric Molecular Tumor Board met on December 17, 2020 and reviewed your patient, [redacted]. After reviewing the genomic report and clinical characteristics of the case, the MTB recommends consideration of the following:

1. Consider the following clinical trial to target the BRAF duplication:
   a. ACNS1833: A Phase 3 Randomized Non-Inferiority Study of Carboplatin and Vincristine versus Selumetinib (NSC# 748727) in Newly Diagnosed or Previously Untreated Low-Grade Glioma (LGG) not associated with BRAFV600E Mutations or Systemic Neurofibromatosis Type 1 (NF1), Cincinnati Children's Hospital Medical Center.
2. Consider genetic counseling and germline genetic testing based on age and tumor type. This is a category 1 evidence level recommendation.

For questions concerning germline testing, please contact Terra Lucas at Terra.Lucas@uky.edu.

Thank-you for submitting this case to the Markey Cancer Center MTB.

Signature: Jill Kolesar Digitally signed by Jill Kolesar Date: 2020.12.21 08:43:28 -05'00' Date:

Signature: John Villano Digitally signed by John Villano Date: 2021.01.06 10:43:28 -05'00' Date:

Signature: Terra Lucas, CGC Digitally signed by Terra Lucas, CGC Date: 2020.12.29 14:42:27 -05'00' Date:

University of Kentucky Germline Testing Evidence Scale

| Recommendation (based on color) | Evidence Level |
|---|---|
| Guideline recommended standard of care testing | Level 1 |
| Clinically and analytically valid. Expert consensus for testing | Level 2 |
| Clinically and analytically valid. Consider testing if clinical situation warrants. | Level 3 |

Quarterly Reports are due:

- October 15, 2020
- January 15, 2021
- April 15, 2021
- July 15, 2021
- October 15, 2021
- January 15, 2022
- April 15, 2022
- July 15, 2022

Reports should be returned to:

Janet.luttrell@ky.gov
Pediatric Cancer Program Manager
CHFS/DPH/Chronic Disease Prevention Branch
275 East Main Street, HS2WE
Frankfort, KY 40621