Real-World Pediatric Oncologist Utilization and Perceptions of Next-Generation Sequencing

Poster #HSDS31

Marné A. Garretson, Kristin M. Zimmerman Savill, Yolaine Jeune-Smith, Andrew J. Klink, Bruce A. Feinberg
Cardinal Health, Dublin, Ohio

Introduction

- Genetic profiling has the potential to enhance diagnostic accuracy while also providing rationale to inform the selection of therapeutic treatments when incorporated into routine clinical practice.[1]
- Additionally, many pediatric CNS tumors have poor prognoses with few effective treatment options where only a few genetic variants have been elucidated and have an approved targeted therapy.[1]
- The identification of genetic variants can define subsets of tumors that have distinctive biological features and clinical characteristics which then inform prognosis.[1]
- As such, this allows for increased specificity in pathologic diagnosis and leads to changes in patient management.[1]
- While integration of next-generation sequencing (NGS) techniques has the potential to improve care and outcomes for certain pediatric oncology patients[2], data are sparse assessing utilization in routine clinical practice.

Research Objective

- This survey-based study aimed to examine physician perceptions of NGS-based testing utilization among practicing pediatric oncologists in the U.S.

Methods

- Pediatric oncologists responded to questions related to NGS-based approaches for pediatric patients in the U.S. during a virtual meeting held in October 2021.
  - *NB: not all physicians responded to each question*
- Descriptive statistics were used to analyze the results.

Results

- Fifty-three U.S. pediatric oncologists participated.
- Nearly all (90%; 48/53) use NGS techniques to determine the ideal therapy across any cancer indication for at least some of their patients.
- Most physicians (n=49) stated they order genetic testing for central nervous system tumors (76%), acute lymphoblastic leukemia (73%), neuroblastoma (47%), and acute myeloid leukemia (35%) (**Figure 1**).
- The most commonly used genetic testing techniques are NGS panels (98%; 50/51), whole-exome sequencing (73%; 37/51), and RNA sequencing (51%; 26/51) (**Figure 2**).
- Almost half (47%; 22/47) order NGS-based testing prior to first-line treatment in the relapsed/metastatic setting.
- Among this group of pediatric oncologists, the most perceived advantage to NGS testing was information generation resulting from screening multiple genes (57%; 29/51) (**Figure 3**).
- The most commonly perceived barriers to NGS testing were pre-authorizations and reimbursement issues, 45% each (23/51) (**Figure 4**).
- Most common challenge faced with NGS testing was receiving complex or unactionable results (67%; 34/51) (**Table 2**).
- Over two-thirds of respondents reported that more clinical evidence demonstrating improved patient outcomes and financial support for patients would increase their use of genomic testing.

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Results

Figure 1. Genetic testing by cancer type (n=49)

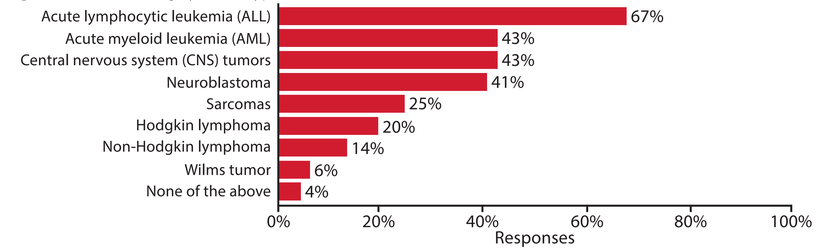


Figure 2. Most commonly used NGS-based testing technique (N=51)

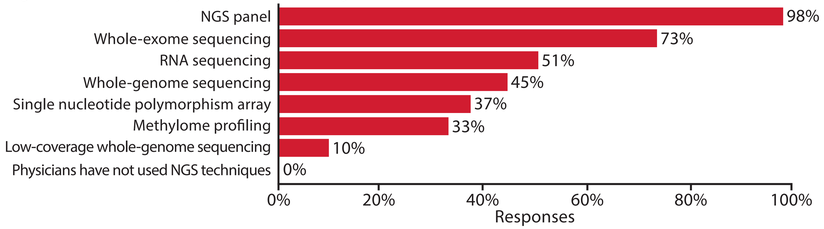


Figure 3. Perceived advantages of NGS-based testing (N=51)

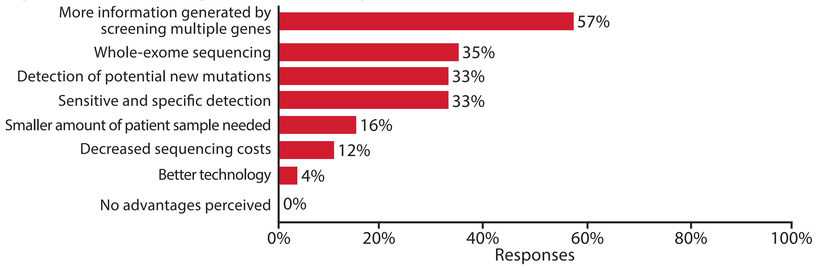


Figure 4. Perceived limitations to NGS-based testing uptake (N=51)

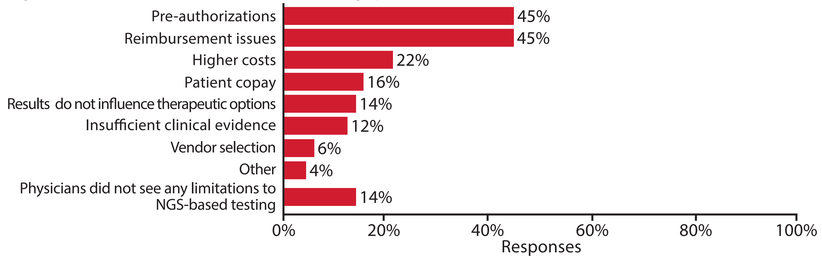
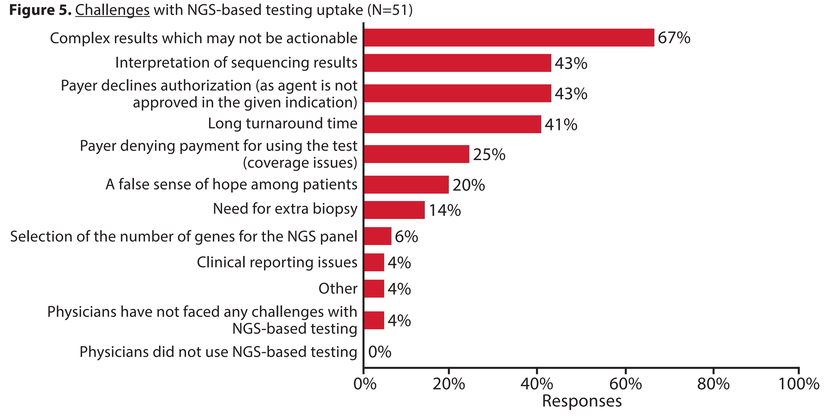


Figure 5. Challenges with NGS-based testing uptake (N=51)



Conclusions

- Despite high levels of utilization, our findings demonstrate a need for further optimization of the integration of genomic sequencing in the pediatric oncology setting.
- It has been well documented that payer determination of coverage and reimbursement for NGS cancer panel testing is hindered by insufficient evidence of clinical utility.
  - Therefore, inconsistent coverage and variable payment hinder NGS adoption into clinical practice.[3]
- Furthermore, the disconnect between high rates of clinically impactful results and low reimbursement rates underscores the need for broader reimbursement policies to adopt NGS panel testing that benefits patients.[3]
- The present study adds to the literature underscoring the medical necessity of education for pediatric oncologists about NGS clinical utility and education on increased financial support for patients to improve utilization and adoption in routine clinical care.

References

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Corresponding author: Marné Garretson, MPH
marne.garretson@cardinalhealth.com

Abbreviations: NB, nota bene; NGS, next-generation sequencing; RNA, ribonucleic acid; U.S., United States.