Clinical pathology selected abstracts

written by CAP TODAY
October 14, 2025

Editor: Deborah Sesok-Pizzini, MD, MBA, adjunct professor, Department of Clinical Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia.

Views of children and young adults about whole genome sequencing in newborn screening

October 2025—Whole genome sequencing is being evaluated in newborn screening to increase the diagnosis and treatment of rare clinical conditions. Such screening raises ethical questions about which results to report and the impact of those results on parents and their children. It is important to focus on societal norms when designing whole genome sequencing–newborn screening (WGS-NBS) to make sure people accept the testing and minimize patient harm. Although parents value the fact that WGS-NBS can lead to early diagnosis and treatment of various conditions, they recognize that results may cause psychological distress, eliminate children's autonomy, raise data-storage and privacy concerns, and lead to uncertainty regarding adult-onset medical conditions. The public, in general, supports WGS-NBS for clinically actionable childhood-onset conditions, with the caveats that health professionals are trained to interpret such results and genetic counseling is available. Most parents reported that they would share testing results with their children, but some indicated that they would postpone disclosure because they believe such information would negatively affect children's mental states and self-esteem. Taking into account children's views and perspectives of WGS-NBS may help better inform parents on how to best support their children. The authors conducted a study in which they explored 11- to 25-year-olds' views and ability to make sense of WGS-NBS results, thereby helping parents determine how and when to share information from WGS-NBS with their children and ensuring that the views of the next generation of parents are available for policymaking purposes. The authors conducted a two-phase qualitative study to gain in-depth insights into participants' views. They explored the viewpoints of healthy young adults (18–25 years old) towards WGS-NBS screening via focus groups and followed up with virtual focus groups with children (11–15 years old) who had cystic fibrosis. Prior to the focus groups, the children were asked to engage with a module and keep a diary for the purpose of reflection. Content analysis was used to assess the diaries, and reflexive thematic analysis was used to evaluate the focus groups. The diaries enabled the participants to ask questions and receive confidential responses over a longer period of time. The results showed that participants broadly supported WGS-NBS based on a belief that the results would improve a person's health. The authors learned that prestudy knowledge of WGS-NGS was not always correct and that this could lead to additional distress. Of interest, the children demonstrated an ability to understand the complexity of the results and even which results should be returned to the patient. The findings from the focus groups showed that all participants could balance the benefits and risks of WGS-NBS. The young adult participants wanted parent–doctor collaboration in WGS-NBS decision-making, while the children had more of an innate trust in physicians. The children were the most concerned about results triggering parental distress from having results before the onset of symptoms in their offspring. The authors concluded that participants valued early diagnosis and treatment, psychological and practical preparation, and improved prognosis but acknowledged that they come at the risk of unnecessary parental distress and treating children differently based on WGS-NBS results. It is important that the study included children with cystic fibrosis and healthy young adults of a wide age range because parents may start talking to their children about test results at various ages, and young adults may need to make decisions about

the continued storage of their genomes. The authors noted that more research is needed to understand the views of children and young adults regarding this topic.

Parfett M, Johnson F, Bennett R, et al. Views of children and young adults about whole genome sequencing in newborn screening: a qualitative study. *Eur J Hum Genet*. 2024;321:1159–1165.

Correspondence: Dr. Fiona Ulph at fiona.ulph@manchester.ac.uk

Assessment of peripheral blood stem cell collection in children with extremely low body weight

Hematopoietic stem cell transplantation is a common curative treatment for many malignant and nonmalignant conditions. In pediatrics, peripheral blood stem cells or hematopoietic progenitor cells (PBSC/HPCs) obtained through apheresis cell collection (HPC[A]) can be used for autologous and allogeneic hematopoietic stem cell transplantation (HSCT) and gene therapies. The use of HPC(A) in pediatrics is increasing because the collection process is less invasive, results in faster hematopoietic recovery after transplantation, and is associated with lower morbidity than harvesting marrow. HPC(A) collection depends on mobilization and release of CD34+ stem cells into the circulating peripheral blood. While HPC(A) collection has become routine, there is still a need for more uniform collection parameters in children and standardized methods and protocols. This is particularly true for low-weight (10 kg or less) pediatric patients. Some of the barriers to HPC(A) collection in pediatric patients include difficulty with vascular access, low total blood volume, and hemodynamic instability. Moreover, the minimum extracorporeal blood volume required for the apheresis circuit can comprise a significant percentage of the total blood volume in pediatric patients, leading to such complications as hypovolemia, hypotension, and cardiovascular instability. These risks can be reduced through such measures as red blood cell prime of the circuit and closely monitoring vital signs. Anticoagulation adjustments using heparin and acid citrate dextrose, solution A (ACD-A) can also reduce complications from calcium chelation during the procedure. Of note, vascular access too can be a significant issue, requiring placement of apheresis-grade venous catheters by surgeons or interventional radiology. The authors conducted a study in which they described a retrospective single-center review of patients weighing 10 kg or less to assess the feasibility and safety of HPC(A) collection in extremely low-weight pediatric patients. They focused on patients who weighed 10 kg or less at the time of HPC(A) collection between 2017 and 2014. The authors extracted data, including information pertaining to patient demographics, vascular access, adverse events, vital signs, collection parameters, apheresis run parameters, and laboratory values from quality assurance reports and the EHR. They also extracted details regarding mobilization, transplant goals, and collection yield. Patients with incomplete records or missing critical laboratory values were excluded. The feasibility of collection was assessed based on the proportion of apheresis collections that achieved the target CD34+ counts for each disease indication. Analysis was performed using descriptive statistics and comparative tests (Wilcoxon rank sum and Welch *t*-test). The results showed that 19 patients, who were an average weight of 7.7 kg, underwent 20 autologous collections. Central venous access was required for all patients, and 90 percent of collections were performed as inpatient procedures. The average blood volume processed per procedure was 2,535 mL. The anticoagulants used for the collection procedures were ACD-A only (50 percent) and ACD-A + heparin (50 percent). The inlet flow rate was significantly higher with the ACD-A + heparin (p=.017), but the run times between the two anticoagulants were not significantly different. Ninety percent of the patients received granulocyte colony-stimulating factor only. The average minimum target dose was 12.8 to 20.5 million CD34+/kg. In all but one collection, the target dose was achieved on day one of collection. The outlier patient achieved the target dose on day two,

likely due to underdosing of the mobilizing agent on day one. Collection efficiency was analyzed using calculations for CE1 and CE2. CE1 is (total CD34+ collected)/(whole blood [WB] processed)/([pre CD34 + post CD34]/2), while CE2 is (total CD34+ collected)/(WB processed × pre CD34). The overall average CE1 and CE2 were 59 and 49 percent, respectively. No serious adverse events were reported, with the exception of one incidence of hypocalcemia. The authors concluded that these findings support expanding HPC(A) HPC collection eligibility for low-weight pediatric patients.

Grewal S, Hassanein R, Mendoza S, et al. Feasibility and safety of peripheral blood stem cell collection in children with extremely low body weight: A single center study. *Transfusion*. 2025. doi: 10.1111/trf.18345

Correspondence: Dr. Reuben Jacob at reuben.jacob@choa.org

CAP TODAY
Pathology • Laboratory Medicine • Laboratory Management