36. Collins JL, La Pean A, O'Tool F, Eskra KL, Roedl SJ, Tluczek A, et al. Factors that influence parents' experiences with results disclosure after newborn screening identifies genetic carrier status for CF or SCH. Patient Educ Couns 2013;90:378-85.
37. Farrell MH, Christopher SA. Frequency of high-quality communication behaviors used by primary care providers of heterozygous infants after newborn screening. Patient Educ Couns 2013;90:226-32.
38. La Pean A, Farrell MH, Eskra KL, Farrell PM. Effects of immediate telephone follow-up with providers on sweat chloride test timing after CF newborn screening identifies a single mutation. J Pediatr 2013;162:522-9.
39. Ahmad NY, Farrell MH. Linguistic markers of emotion in mothers of sickle cell carrier infants: what are they and what do they mean? Patient Educ Couns 2014;94:128-33.
40. Patterson R, Roedl SJ, Farrell MH. Internet searching after parents receive abnormal newborn screening results. Journal of Communication in Healthcare: Strategies, Media and Engagement in Global Health 2015;8:303-15.
41. Farrell MH, La Pean Kirschner A, Tluczek A, Farrell PM. Experience with parent follow-up for communication outcomes after newborn screening identifies carrier status. J Pediatr 2020;224:37-43.e2.
42. Thomasgard M, Shonkoff JP, Metz WP, Edelbrock C. Parent-child relationship disorders. Part II. The vulnerable child syndrome and its relation to parental overprotection. J Dev Behav Pediatr 1995;16:251-6.
43. Dogan DG, Ertem IO, Karaaslan T, Forsyth BW. Perception of vulnerability among mothers of healthy infants in a middle-income country. Child Care Health Dev 2009;35:868-72.
44. Gleason TR, Evans ME. Perceived vulnerability: a comparison of parents and children. J Child Health Care 2004;8:279-87.
45. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. Fam Med 2004;36:588-94.
46. National Institutes of Health. Racial and ethnic categories and definitions for NIH 1. 2018. https://grants.nih.gov/grants/guide/notice-files/not-od-15-089.html. Accessed April 14, 2020.
47. Farrell MH, Christopher SA, Kirschner AL, Roedl SJ, O'Tool FO, Ahmad NY, et al. Improving the quality of physician communication with rapid-throughput analysis and report cards. Patient Educ Couns 2014;97:248-55.
48. Farrell MH, Farrell PM. Newborn screening for CF: ensuring more good than harm. J Pediatr 2003;143:707-12.

50 Years Ago in *THE JOURNAL OF PEDIATRICS*

Impact of Technology and Innovation on Congenital Heart Disease Survival

Hurwitz RA, Simmons RL, Girod DA. Survival of infants with severe congenital heart disease. J Pediatr 1970; 77:412-6.

In the 1950s, the availability of cardiac catheterization and cardiopulmonary bypass revolutionized the diagnosis and treatment of congenital heart disease (CHD). During the 1960s, repair of tetralogy of Fallot, left-to-right shunts, and the atrial switch procedure for transposition of the great arteries (dTGA) were routinely performed in older infants and children; however, surgery for severely ill neonates with CHD did not become a reality until the 1970s.

This report by Hurwitz et al, written on the cusp of the availability of neonatal cardiac surgery, describes survival in 170 infants born between 1963 and 1968 with severe CHD. Overall survival was 44%, and most deaths occurred before 3 months of age. Survival improved over time from 27% to 51%, due to the availability of balloon atrial septostomy and improvements in surgical approach. No infants with hypoplastic left heart syndrome (HLHS) or total anomalous pulmonary venous return survived. The authors concluded that survival would continue to rise and that 59% of the survivors could expect to have definitive surgery with acceptable risk.

In the ensuing 50 years, the management of infants with severe CHD progressed far beyond the predictions of Hurwitz et al. In the late 1970s, transthoracic echocardiography quickly supplanted diagnostic cardiac catheterization, and at present, fetal echocardiography can detect up to 90% of severe CHD. Prophylactic use of prostaglandin E1 prevents the negative consequences of hypoxia and poor perfusion in ductal-dependent CHD, and neonatal cardiac surgery is routinely performed for the most complex lesions. The anatomically correct arterial switch procedure has supplanted the atrial switch in dTGA with outstanding results, and staged palliation of HLHS has resulted in 1-year survival of 69%. Current estimates predict that 90% of children born with CHD will survive beyond 18 years of age.

We are now in an era where more adults are living with CHD than children. The oldest survivors of open-heart CHD surgery are in their 70s, receiving care from board-certified adult CHD subspecialists. The care of patients with CHD has evolved beyond improving operative survival to addressing the challenges of long-term cardiac, medical, psychosocial, and neurodevelopmental outcomes and optimizing quality of life.

Erin A. Paul, MD
Daphne T. Hsu, MD
Division of Pediatric Cardiology
Children's Hospital at Montefiore
Albert Einstein College of Medicine
Bronx, New York