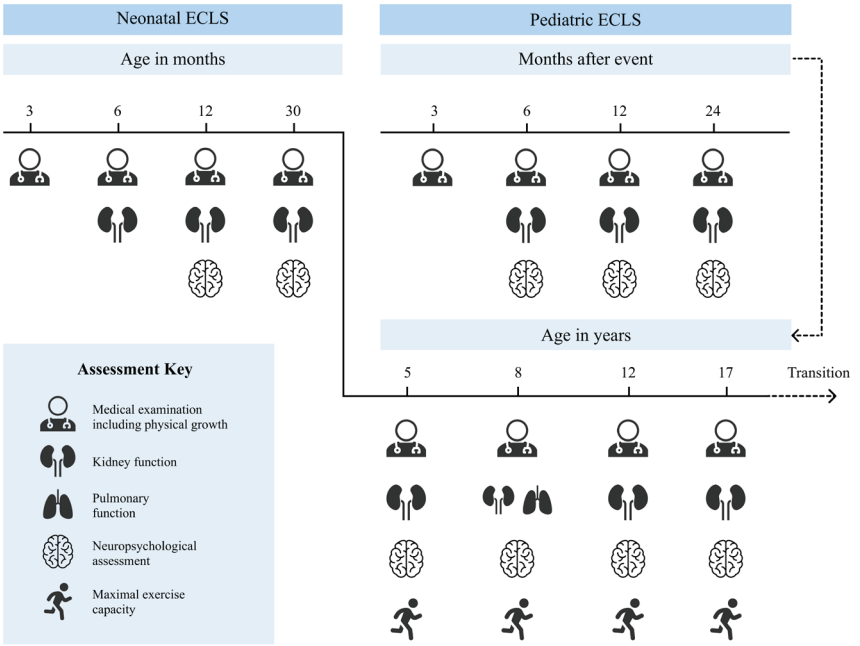
Appendix

Pre ECLS risk factors	On ECLS risk factors	Neuroprotective strategies on ECLS	Post ECLS pre-discharge
Significant duration of hypotension, hypoxemia, acidosis	Seizures (clinical, aEEG, EEG)	Protocolized neuromonitoring	Neurological examination
Significant hypoxic event	Abnormal neurological examination	Regular clinical examination	Neuro-imaging • MRI Brain
Any history of cardiac arrest	Abnormal EEG / neuro-imaging on USS/CT	Cranial ultrasound, EEG, NIRS	Hearing tests • Audiometry
Seizures (clinical, aEEG, EEG)	Major mechanical complication	Neuroprotection - cooling (asphyxia), ensure effective ECMO flows, mitigate complications	Community care and family support
Perinatal asphyxia, history of cooling	Cardiac arrest		
Associated co-morbidities – prematurity/genetic conditions/syndromes			

A schema for multidisciplinary structured longitudinal post discharge follow-up



This figure depicts the risk factors during ICU management and a suggested follow-up schedule for neonatal and pediatric ECLS survivors at regular intervals from 0 to 17 years of life. ELSO recommends all children treated with ECLS have a structured follow-up with a multidisciplinary clinic to promote recovery, follow known organ dysfunction/recovery, and detect unanticipated problems such as learning impairment, long-term kidney disease, and long-term pulmonary function. Assessments include medical examination, neuropsychological assessment (all domains), pulmonary function, kidney function (blood pressure, urinary protein/creatinine ratio) and exercise tolerance, wherever possible. For children with congenital heart disease, the screening and surveillance algorithm recommended by the AHA Scientific Statement provides additional guidance. Since ECLS for acute respiratory failure can occur at any age, the initial timing of follow-up is related to hospital discharge while the later follow-up is related to the child's age. After the age of 17 years, transition to adult health care providers is recommended.

CT – computed tomography, EEG - electroencephalogram and aEEG – amplitude-integrated EEG, ECMO – extracorporeal membrane oxygenation, MRI – magnetic resonance imaging, NIRS – near-infra red spectroscopy, USS – ultrasound

	DOMAINS OF INTEREST	ASSESSMENTS	RELEVANCE/ INTERVENTION
INFANCY	Growth	Length, weight, head circumference	Referral to dietician
	Kidney function	Blood pressure, urinary protein/creatinine ratio	Early referral to (pediatric) nephrologist
0-2 years	Hearing assessment	Age-appropriate auditory tests	Early referral to audiology
	Neurological assessment including imaging	MRI brain (pre-discharge)	Early recognition, referral for neurorehabilitation
			Early referral neurorehabilitation
	Mental development	Age-appropriate locally available formal test	Referral to psychiatric professional
	Motor development	Age appropriate locally available formal test	Referral to physical therapist
PRESCHOOL AGE	Growth (mainly CDH)	Length, weight	Referral to dietician
	Kidney function	Blood pressure, urinary protein to creatinine ratio	Early referral to (pediatric) nephrologist
2-5 years	Cognitive development	Age-appropriate locally available formal test	Referral to child development center
	Language development	Age-appropriate locally available formal test	Hearing assessment, referral to speech-language pathologist
	Motor development	Age-appropriate locally available formal test	Referral to physical therapist
SCHOOL AGE	Growth (mainly CDH)	Length, weight	Referral to dietician
≥6 years	Kidney function	Blood pressure, urinary protein-to-creatinine ratio	Early referral to (pediatric) nephrologist
	Lung function assessment	Spirometry	Evaluate reversibility of airflow obstruction
	Motor development	Age-appropriate locally available formal test	Referral to physical therapist
	Exercise capacity	Age-appropriate locally available formal test	Sports participation and/or exercise training
	Neuropsychological assessment	Age-appropriate locally available formal test for:	Referral to early school support
	Behavior	*Intelligence (only once in follow up)	Referral to cognitive rehabilitation for acquired brain injury
		*Memory	
		*Attention/concentration/information processing	
		Age appropriate locally available formal test for:	
		*Hyperactivity	Referral to psychologist for support/ guidance
		*Somatic problems	
ADOLESCENCE	Growth (mainly CDH)	Length (pubertal growth spurt), weight	Referral to dietician
	Kidney function	Blood pressure, urinary protein-to-creatinin ratio	Referral to (pediatric) nephrologist
>12 years	Motor function	Age appropriate locally available formal test	Referral physical therapist/sports participation
	Exercise capacity	Age appropriate locally available formal test	Sports participation/exercise training
			Referral to school support
	Neuropsychological assessment	Age appropriate locally available formal test for:	Career support/choice of profession
		*Memory	Referral to cognitive rehabilitation
		*Attention/concentration/information processing	
	Behavior	Age appropriate locally available formal test for:	Referral to psychologist for support/guidance
		*Hyperactivity	
		*Depressed feelings/social problems	
		*Somatic problems	
Adapted from *Semin Perinatol* 38:114–121, 2014			

Appendix Table-1. Proposal for, and relevance of, long-term followup after ECMO in neonates and children. Longitudinal multidisciplinary team followup from infancy to adolescence with referral to early intervention services and/or special education services.