Experiences and Future Planning in Neonatal and Pediatric Critical Care Transport

Empowering the Next Generation Investment in Preventable Infant Deaths by a Healthy Start

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Marko Culjat MD PhD

Associate Director for Neonatal Transport for Acute Care Transport Service (ACTS)

Director for Neonatal POCUS

The Hospital for Sick Children, Toronto, Canada

With input from:
Dr. Kyong-Soon Lee
Dr. Hilary Whyte
Maite Browning (ACTS Educator)

Overview

Organizational and Historical Context of the ACTS Team

Neonatal and Paediatric Aspects of Our Team

Expansion from a Neonatal to a Neonatal-Paediatric Mandate

Leveraging New Technologies

Geography, population distribution, and the healthcare network impact the optimal organization of **transport teams**.

How is interfacility transport performed in Ontario?

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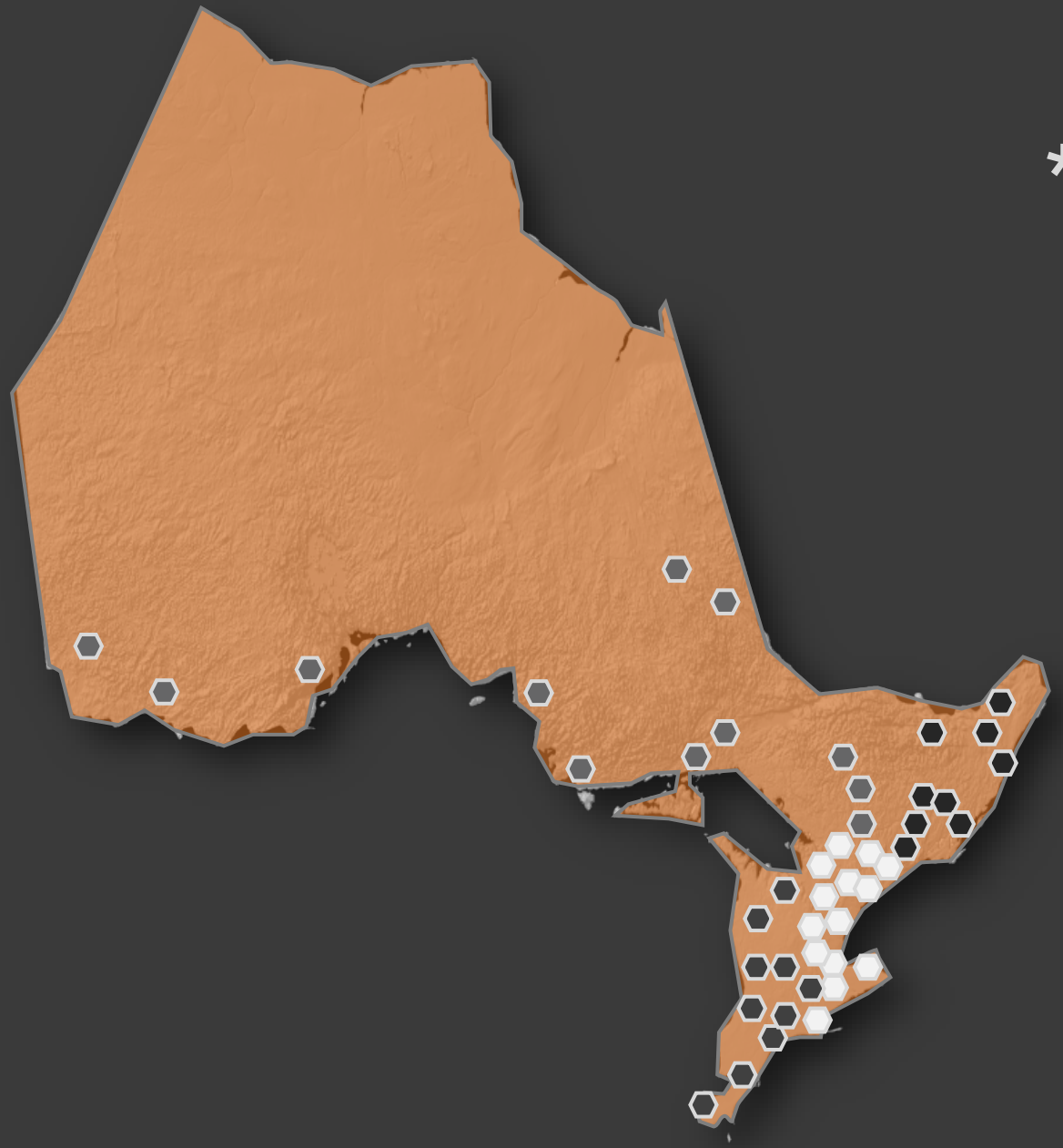
*830

Emergency Medical Services

- 59 locally-based teams
- Northern and Southern Ontario and First Nation services
- Local land ambulance fleet

How is interfacility transport performed in Ontario?



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18

Emergency Medical Services

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ORNGE

- Provincial air-ambulance program with associated ground transport
- 20,000 transports per year

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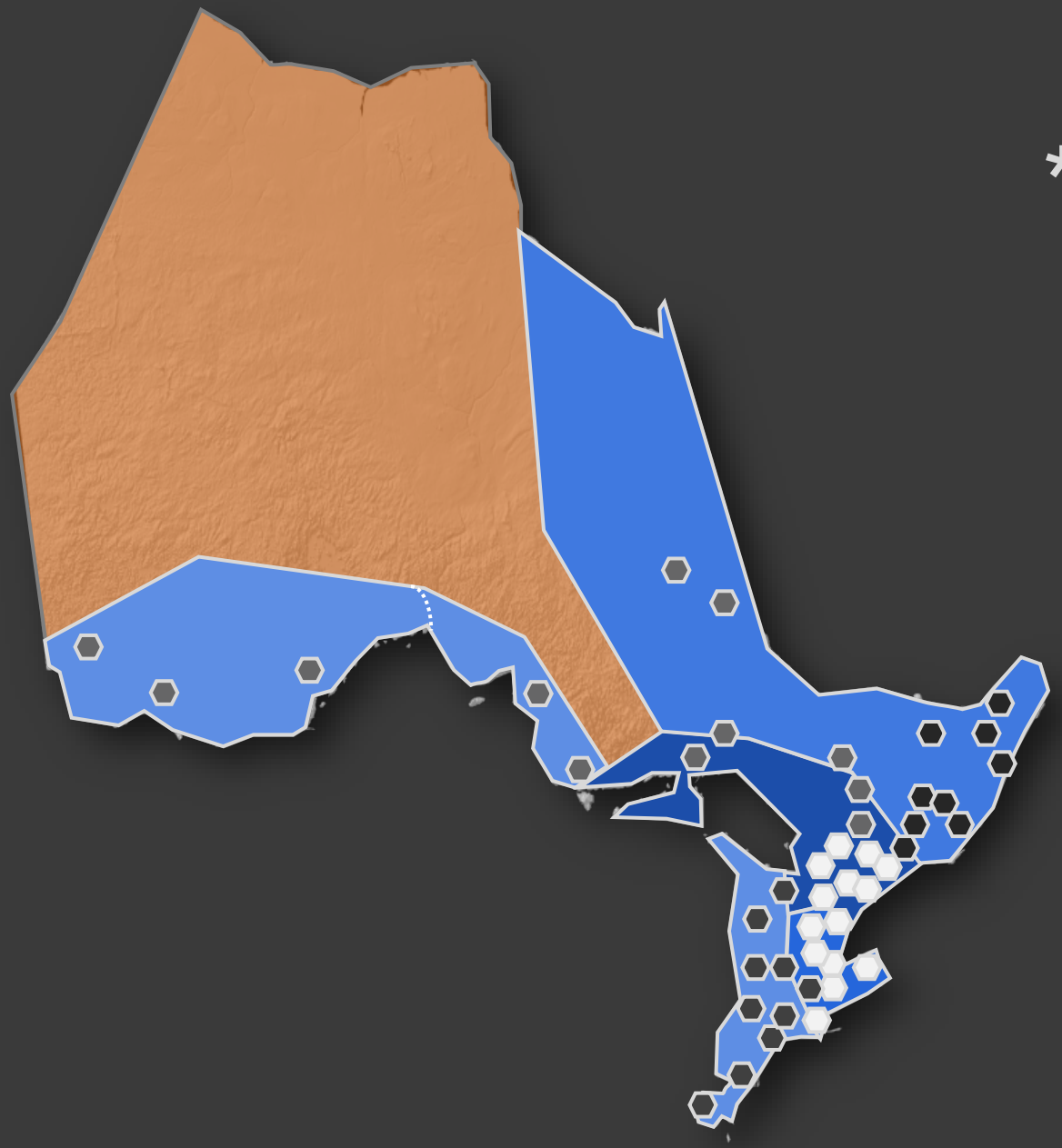

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5

Emergency Medical Services
- 59 locally-based teams
- Northern and Southern Ontario and First Nation services
- Local land ambulance fleet

ORNGE
- Provincial air-ambulance program with associated ground transport
- 20,000 transports per year

Hospital-based teams
- 4 teams, 5th one being established
- Neonatal or neonatal-paediatric
- Custom land ambulances (1 team)


SickKids' ACTS Team


SickKids' ACTS Team


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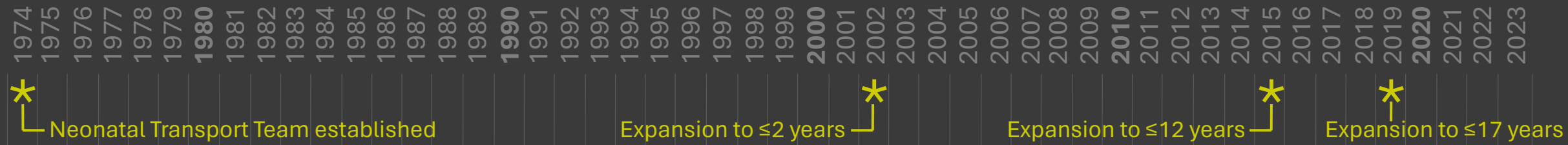
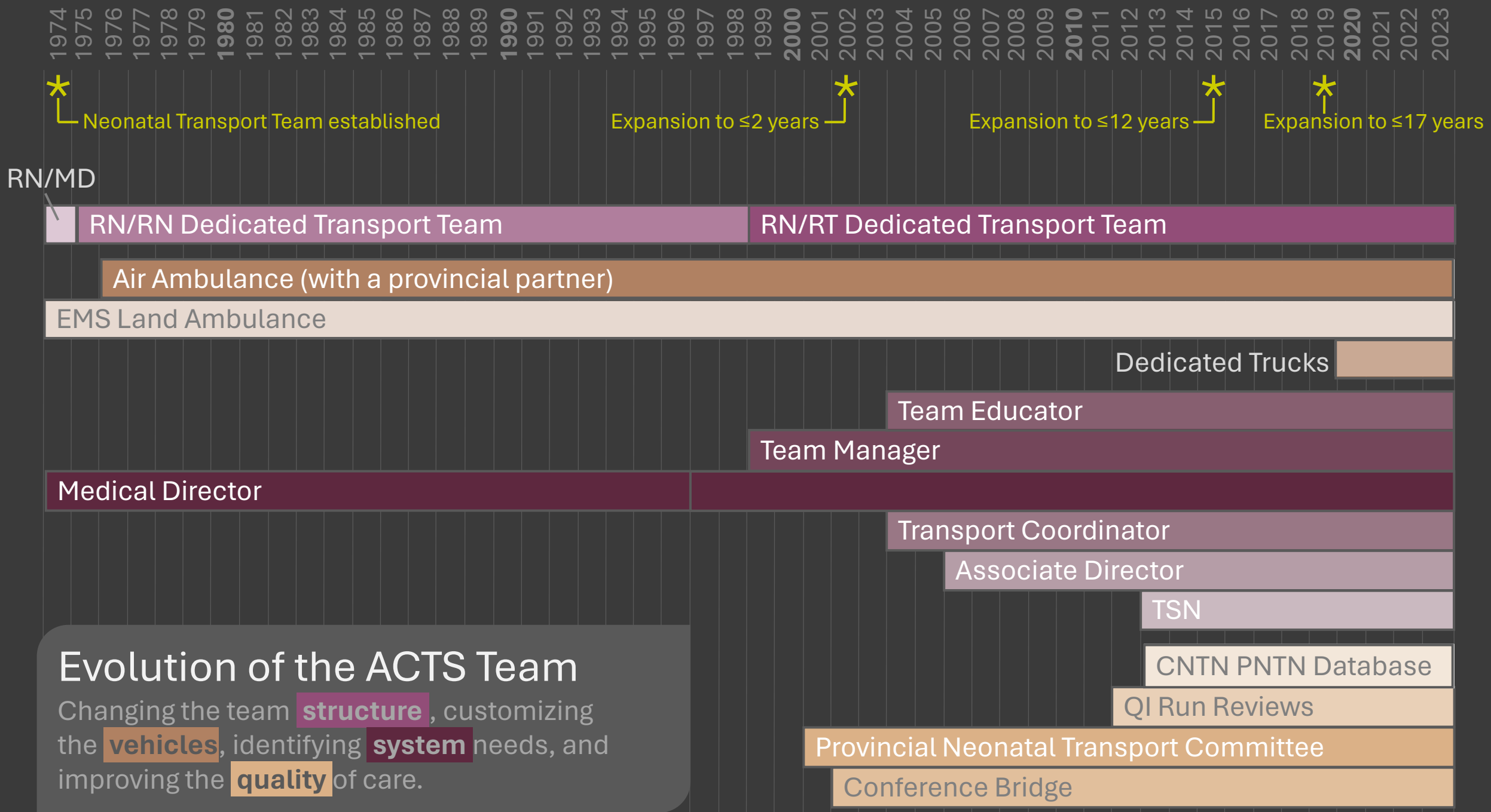


Evolution of the ACTS Team

Changing the team **structure**, customizing the **vehicles**, identifying **system** needs, and improving the **quality** of care.



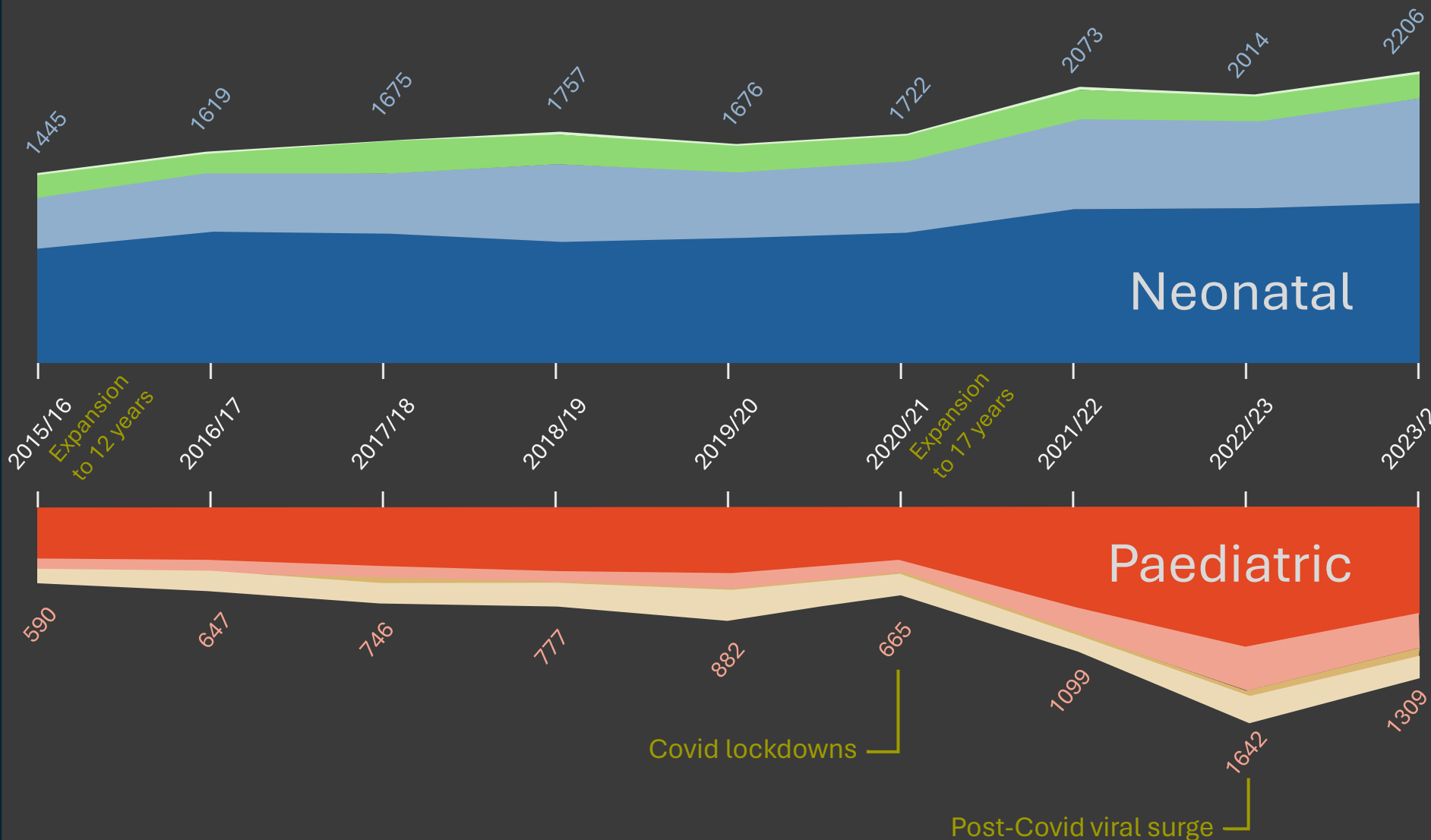
Evolution of the ACTS Team

Changing the team **structure**, customizing the **vehicles**, identifying **system** needs, and improving the **quality** of care.

Outcomes of calls received by the ACTS Team

*excluding bed requests, cancelled calls, and maternal transfers

Neonatal calls: 16,178
Paediatric calls: 8,375

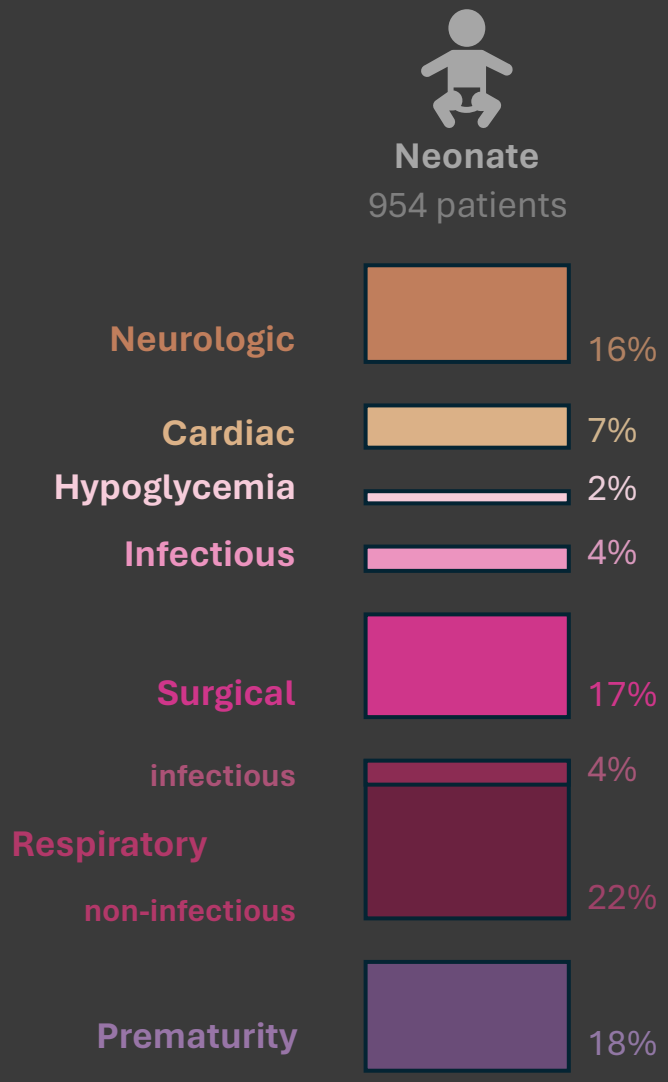


Transported by another transport team (**1%**)
Transported by referral team (**11%**)
Advice only by ACTS MD (**31%**)
Transported by ACTS Team (**57%**)

Transported by ACTS Team (**64%**)
Advice only by ACTS MD (**15%**)
Transported by referral team (**4%**)
Transported by another transport team (**17%**)

Diagnosis distribution across patient age groups transported by ACTS

Data for fiscal year 2022/23



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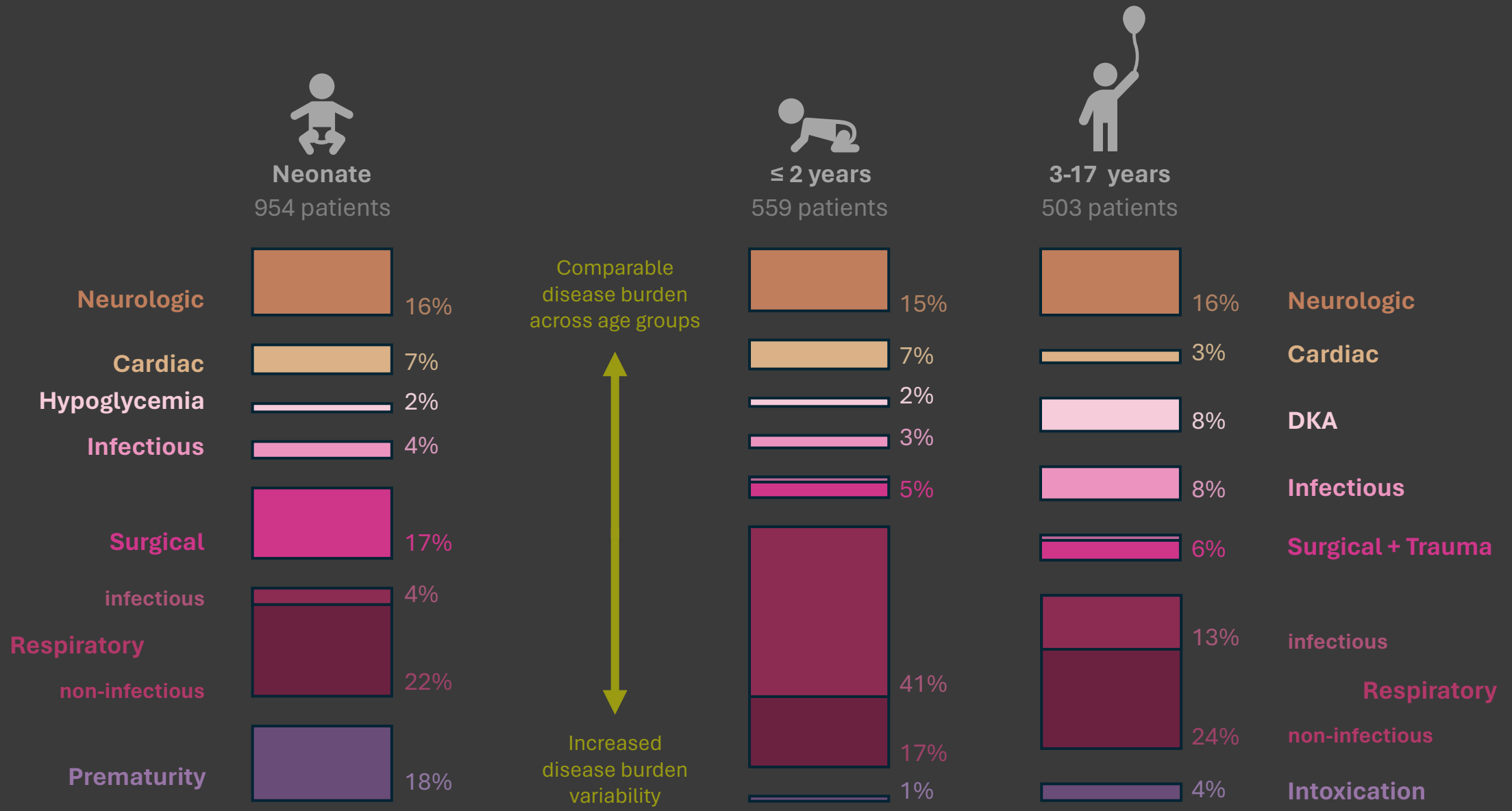
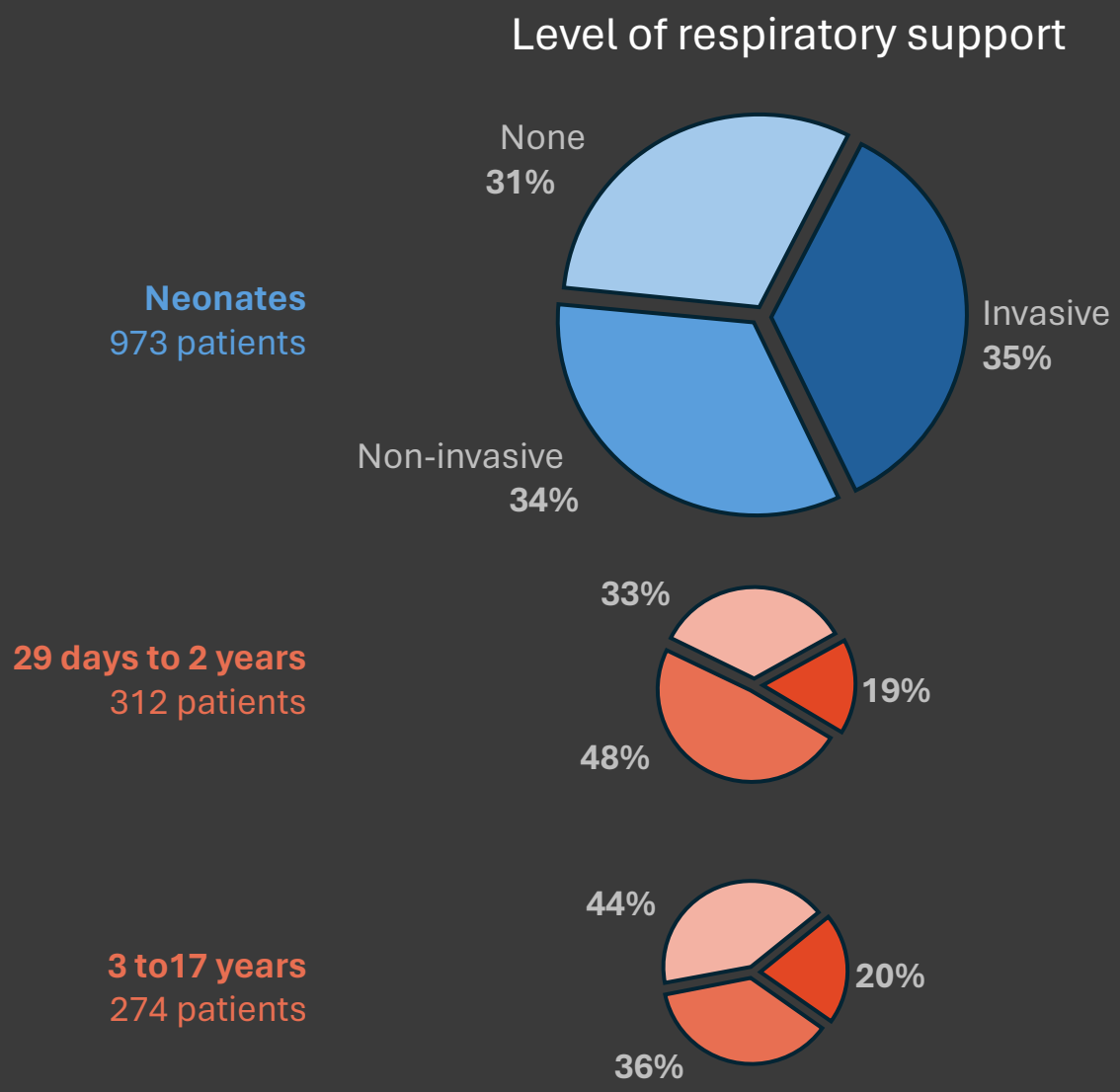


Mechanical ventilation and intubations

Yearly average from 2016 to 2023



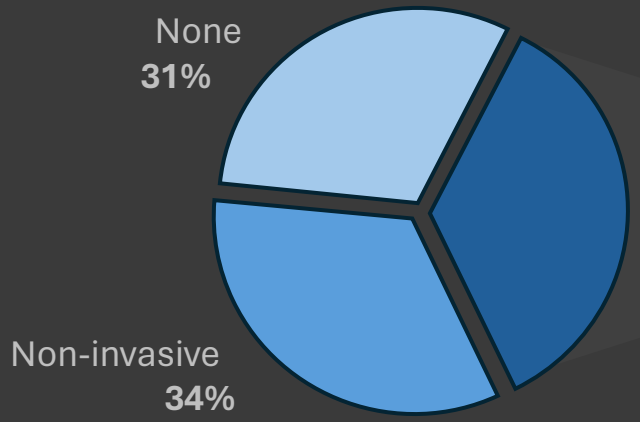
Mechanical ventilation and intubations

Yearly average from 2016 to 2023

Level of respiratory support

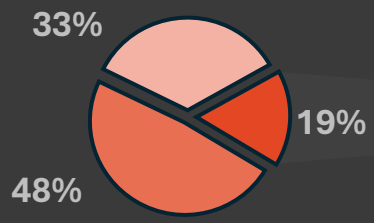
Approximate percent of mechanically ventilated patients who were intubated by ACTS

Neonates
973 patients



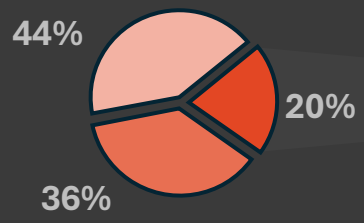
29%

29 days to 2 years
312 patients



10%

3 to17 years
274 patients



4%

Recommendations for Minimal Set of Standards for Interfacility Critical Care Transport

Canadian Association of Paediatric Health Centres – Transport Systems, 2012

"While each individual member of a transport team may not possess all of the required competencies, the critical care transport team, by the collective sum of its members' individual skills and abilities, will meet the recommended minimum set of required competencies."

Integrating scope of service to paediatric age range

Highlights from ACTS' 2015 expansion to 12 years

Step 1: Initial Education Period

Staggered approach to training:

- 3 groups
- 5-8 individuals per group
- 3-4 months per group with 7 dedicated educational days
- 10 months total to complete this stage of training for all

Areas of Focus

Equipment

- Transport Ventilator
- Infusion Pumps
- Point-of-care Testing
- Defibrillator
- Paediatric Transport Decks
- Monitoring Equipment

Knowledge

Skills

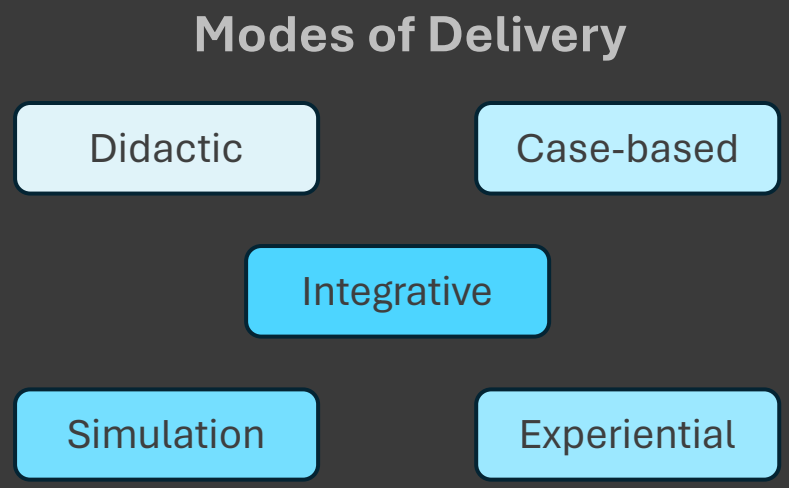
- Basic Life Support
- Pediatric Advanced Life Support
- Advanced Pediatric Life Support
- International Trauma Life Support
- Aero-medical Physiology
- Sedation Course
- ECG Course
- Child Maltreatment course

Integrating scope of service to paediatric age range

Highlights from ACTS' 2015 expansion to 12 years

Step 1: Initial Education Period

- Advanced assessment, history taking
- Cardiovascular:
  - hypovolemic, cardiogenic & distributive/neurogenic shock
  - dysrhythmias
- Respiratory:
  - upper & lower airway
  - cardio-pulmonary failure
  - respiratory care modalities & therapies
- Sepsis
- CNS:
  - Altered LOC, meningitis, trauma, seizures, shock, stroke
- Pharmacology, radiology & blood gas analysis
- Ingestion of Medications/Agents
- Trauma, Surgical Emergencies
- Fluids & electrolytes, glucose management
- Metabolic disorders
- Advanced skills & resuscitation
- SBAR, Crisis Resource Management (CRM)
- Families in crisis
- End of life care considerations



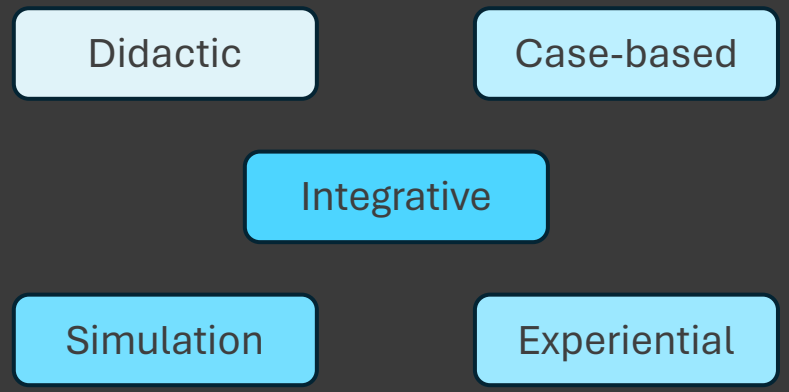
Integrating scope of service to paediatric age range

Highlights from ACTS' 2015 expansion to 12 years

Step 1: Initial Education Period

- Primer for Managing the Difficult Paediatric Airway
- Difficult Airway Management Station
- Vascular Access Station
- CPR Station
- Critical Care Hot Topics
- PICU Case Stream Simulation Room
- CCCU Case Stream Procedure Room

Modes of Delivery



Integrating scope of service to paediatric age range

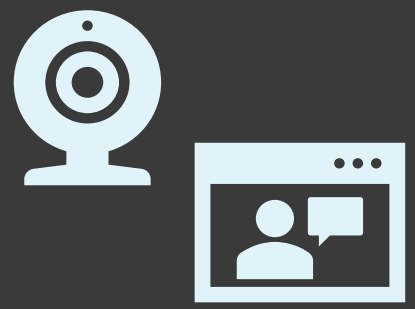
Highlights from ACTS' 2015 expansion to 12 years

Step 2: Consolidation Period

Lasted up to 6 months per transport clinician.

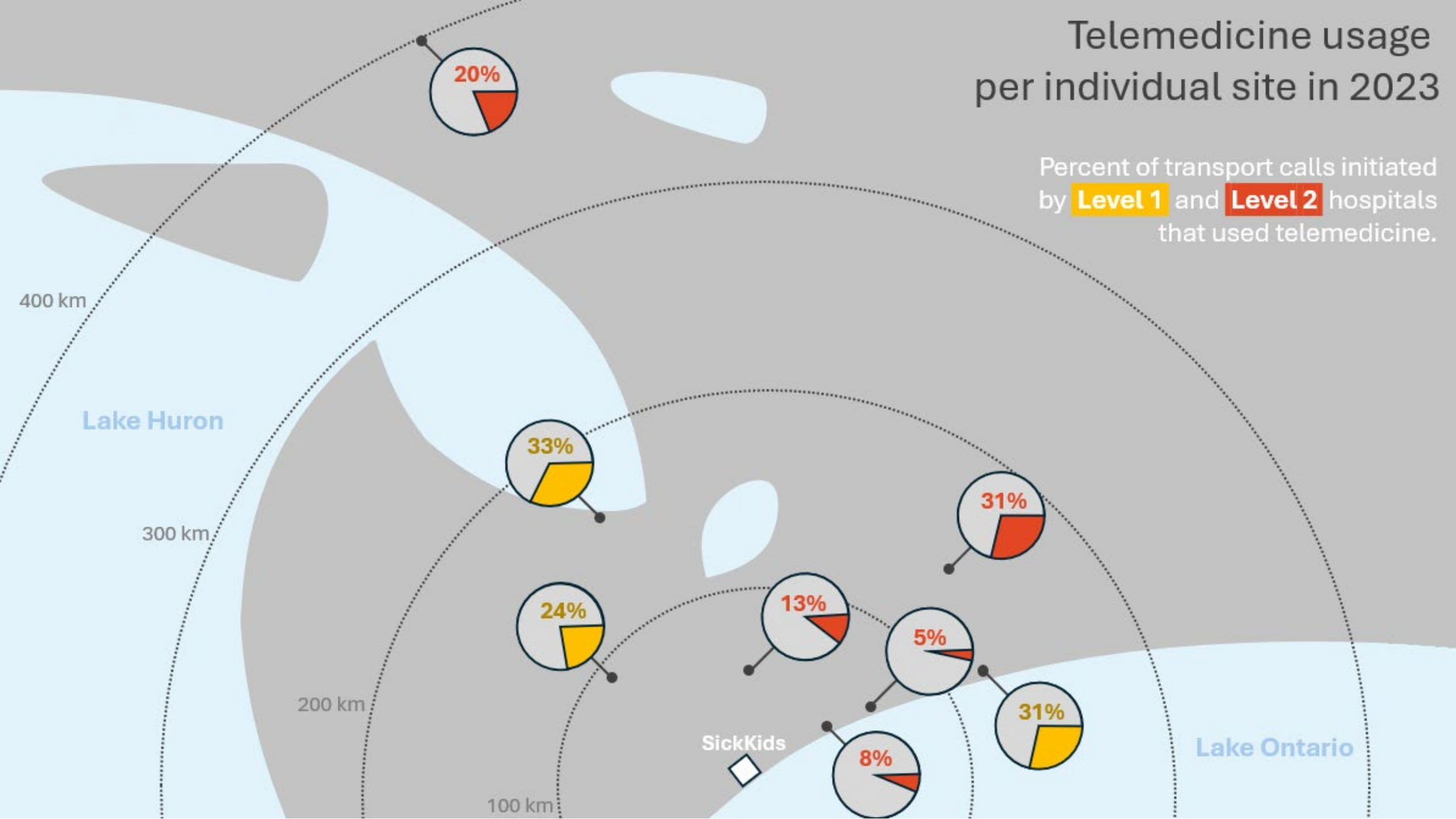
- Participation in Educational Sessions
- Participation in QI Sessions
- Case Reviews
- Self-evaluation
- Progress Meetings

Leveraging Evolving Technologies



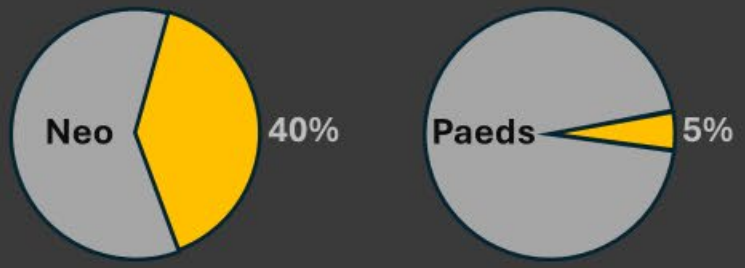
Telemedicine

Ultrasound


Telemedicine usage
per individual site in 2023
Percent of transport calls initiated
by Level 1 and Level 2 hospitals
that used telemedicine.
400 km
300 km
200 km
100 km
Lake Huron
Lake Ontario
SickKids
20%
33%
31%
24%
13%
5%
31%
8%

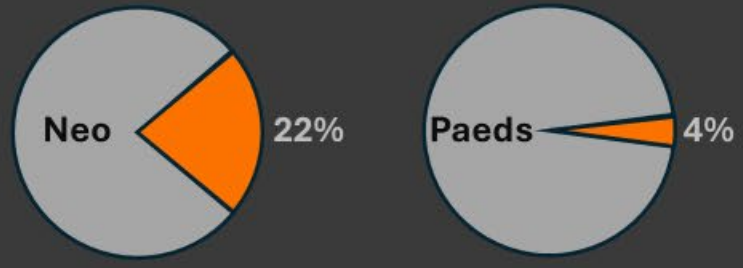
Telemedicine Usage and Disposition Outcomes in 2023

Level 1 Hospitals



Telemedicine was used in 40% of neonatal calls, and 5% of paediatric calls from Level 1 Hospitals.

Level 2 Hospitals



Telemedicine for neonatal calls was used half as often by Level 2 than Level 1 Hospitals.

Telemedicine Usage and Disposition Outcomes in 2023

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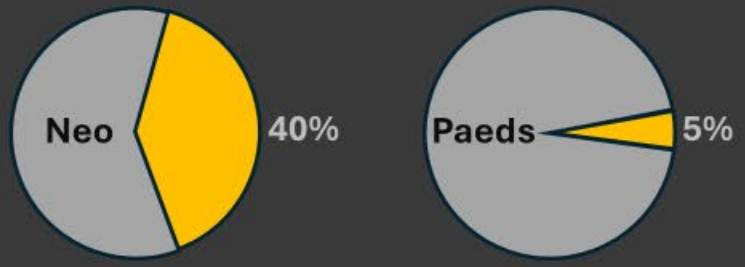

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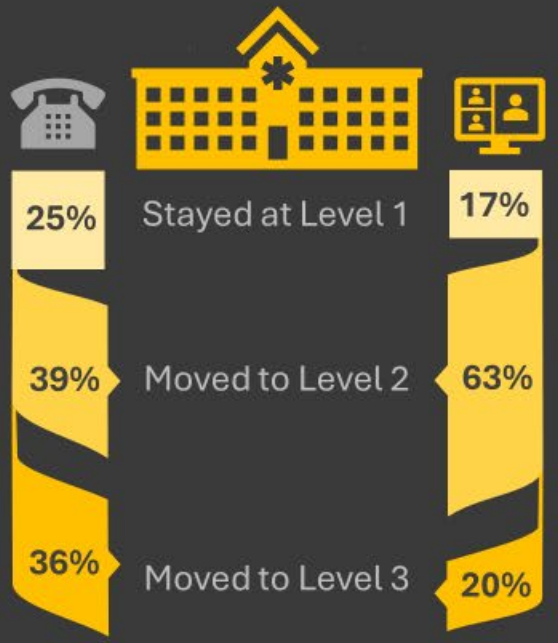

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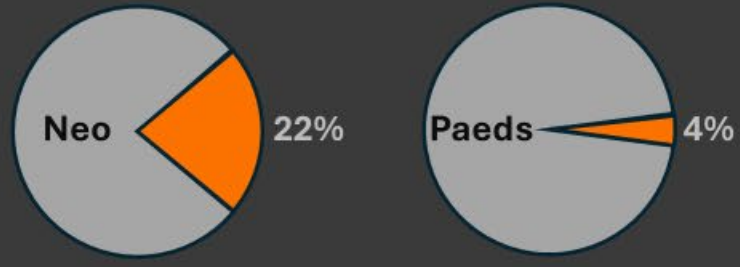

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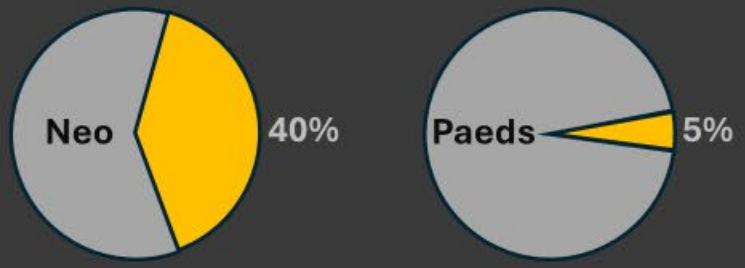

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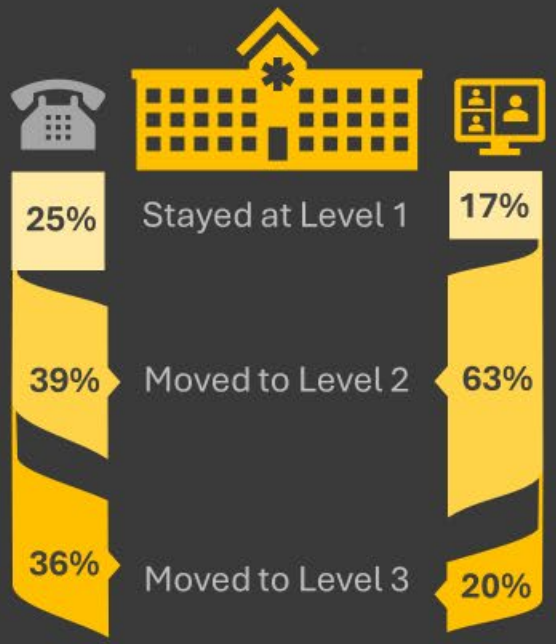

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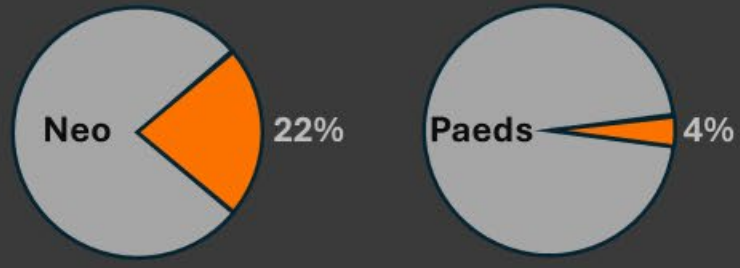

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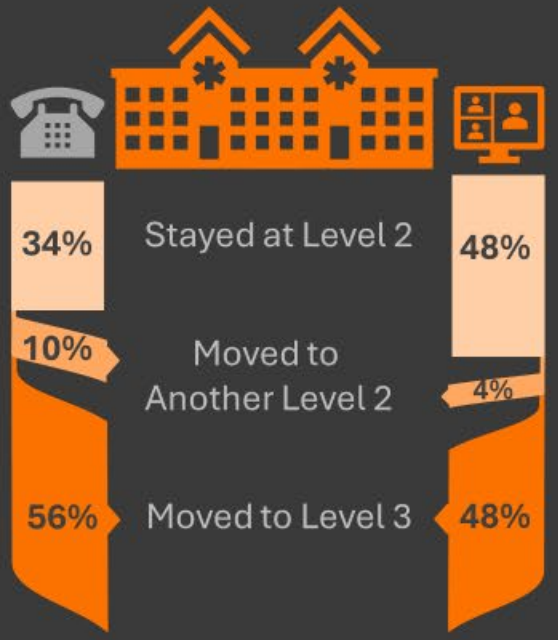

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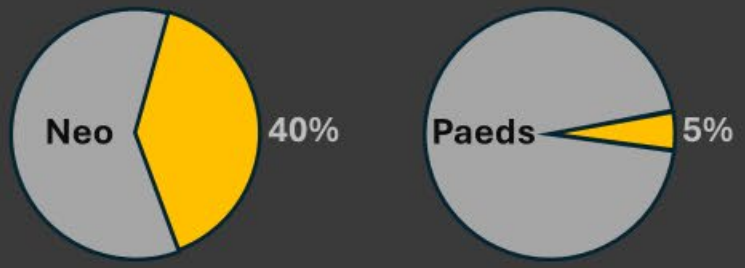

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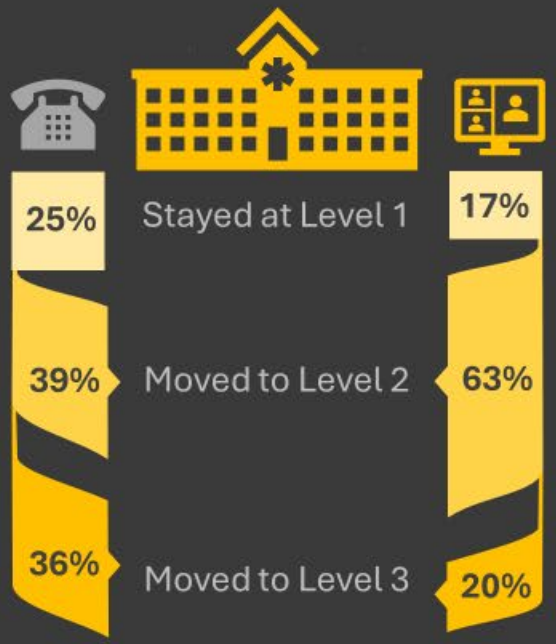

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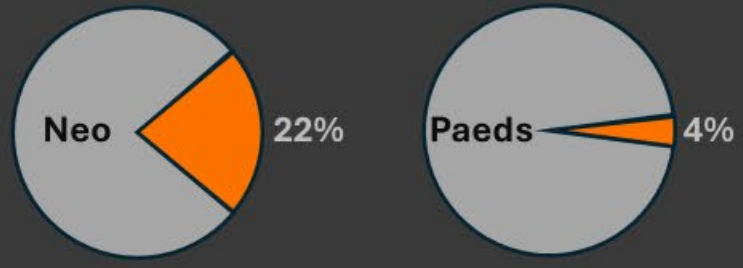

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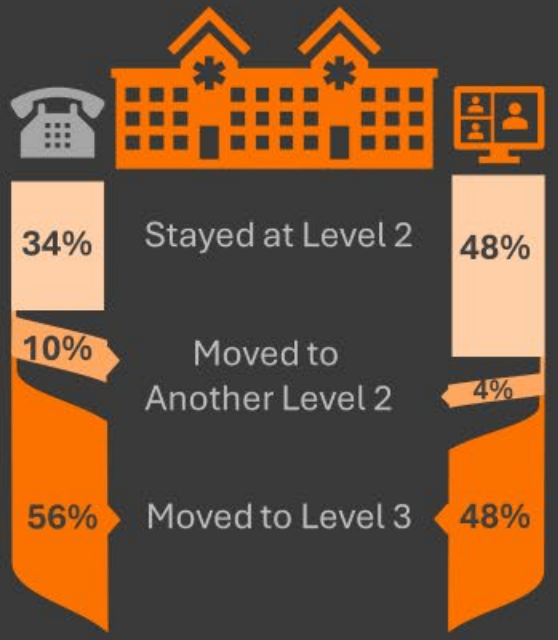
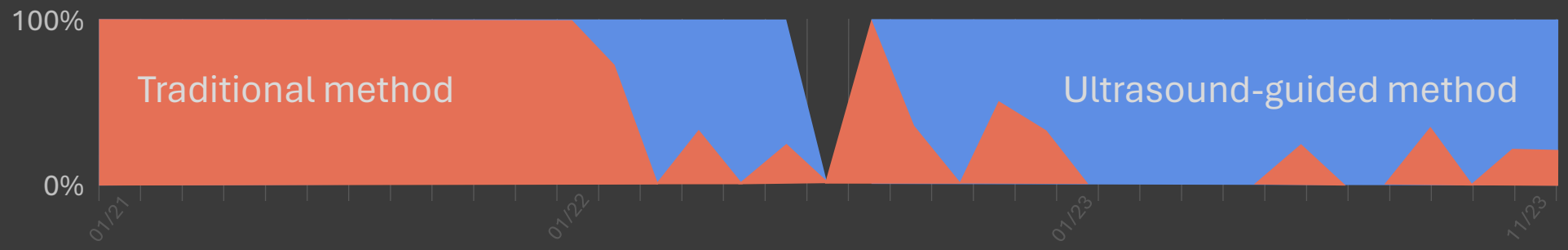
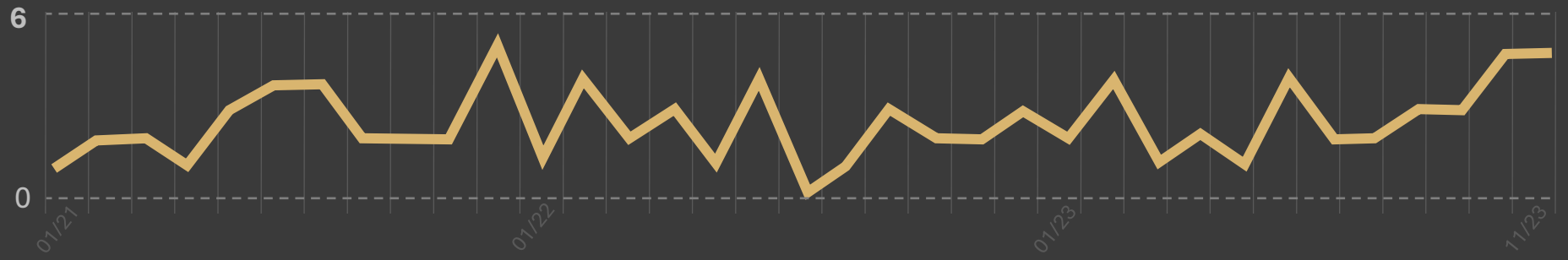


Ultrasound-guided Approach for Peripheral Arterial Lines (PALs)

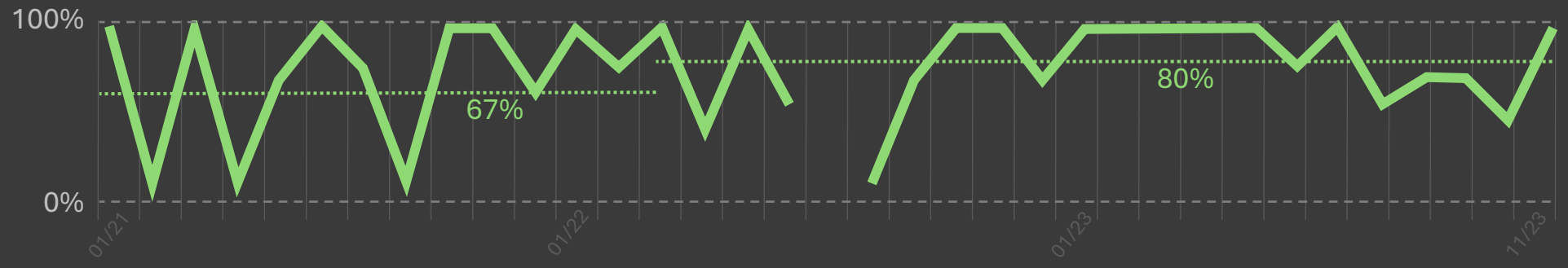
Transition from traditional to ultrasound-guided PAL placements

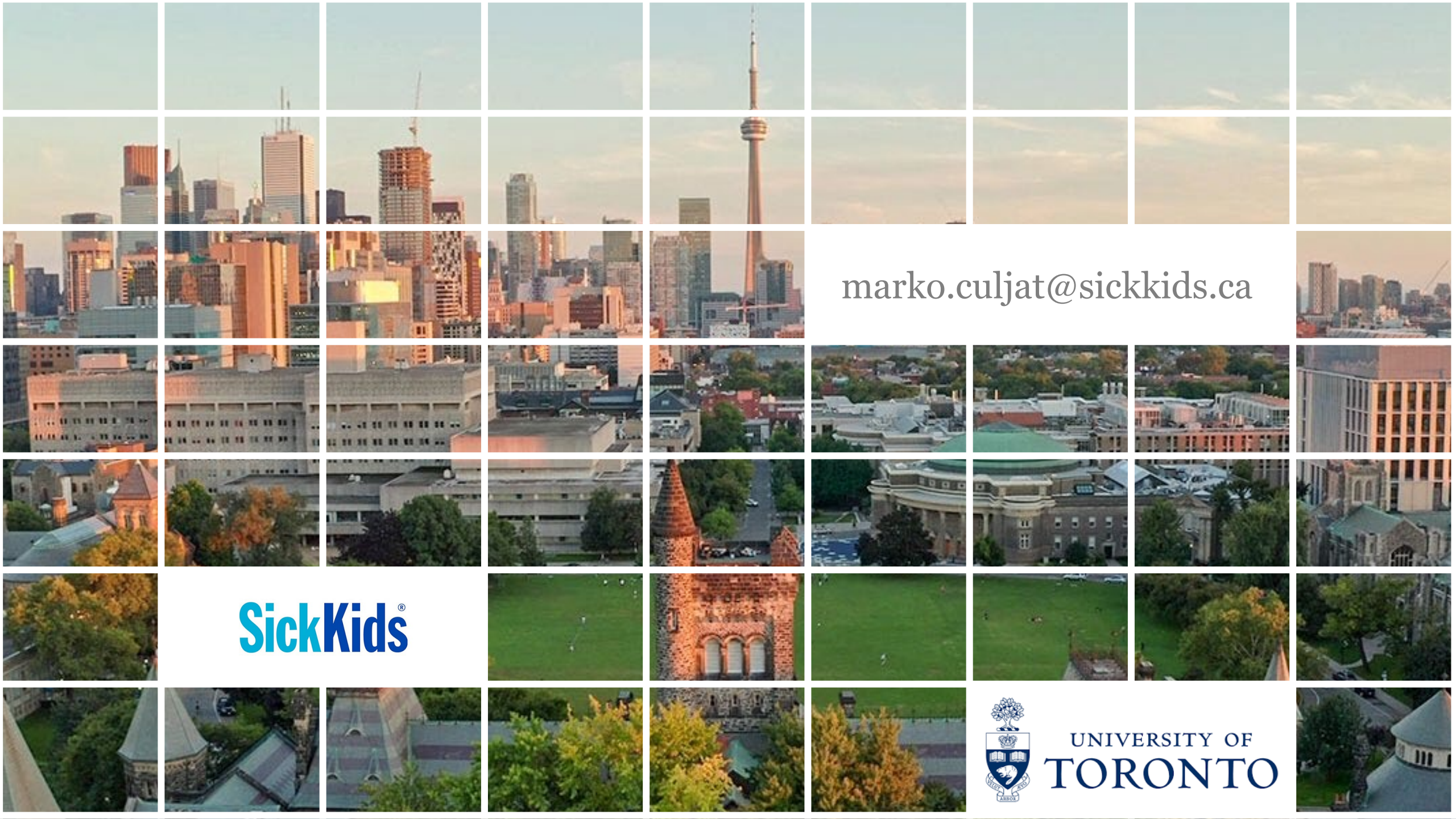


Number of monthly PALs placed by the ACTS Team



Overall success rate of PALs placed by the ACTS Team





marko.culjat@sickkids.ca

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