Children can present to EMS with a distinct set of illnesses. Similar to adults however, critical illness in children can require special airway management. Successful management involves expert judgement and exceptional technical skills. The definitive approach to secure the airway is endotracheal intubation yet this procedure can be quite challenging especially in the pediatric patient.

Paramedics from King County reported their experience with each attempted pediatric intubation to understand challenges and performance. Over a 6 year period, paramedics attempted endotracheal intubation in 299 patients >= 12 years – or about 1 out of every 20 paramedic pediatric responses. Children who required attempted intubation were quite ill with nearly half presenting with cardiac arrest. Other common diagnoses included severe trauma, complicated seizure, and primary pulmonary illness (i.e. pneumonia, drowning). Most patients were directed to Harborview or Seattle Childrens.

The paramedics were able to successfully place the endotracheal tube in 97% while the other 3% used an alternative form of management – either a bag valve mask ventilation or I-gel supraglottic airway. This high level of proficiency in many cases exceeds the in-hospital physician experience.

The project also highlights the complex process and the important steps and challenges that are sometimes necessary to achieve success (Figure). In over half of cases, there was some specific challenge that required corrective action such as suctioning the airway, changing equipment, or repositioning the patient.

**Figure.** Flowchart of airway management for pediatric intubation
**1st intubation attempt**

N=299

- 1st attempt success
  N=197 (66%)
  Cumulative success 66%

- 1st attempt failure
  N=102

  **Alternate airway procedure**
  N=1
  1 failed supraglottic airway

**2nd intubation attempt**

N=102

- 2nd attempt success
  N=70 (69%)
  Cumulative success 89%

- 2nd attempt failure
  N=32

  **Alternate airway procedure**
  N=2
  2 bag-valve-mask ventilation

**3rd intubation attempt**

N=30

- 3rd attempt success
  N=17 (57%)
  Cumulative success 95%

- 3rd attempt failure
  N=13

  **Alternate airway procedure**
  N=3
  1 supraglottic airway
  2 bag-valve-mask ventilation

**≥4 intubation attempts**

N=10

- Success after ≥4 attempts
  N=7 (64%)
  Cumulative success 97%

  **Alternate airway procedure**
  N=3
  3 bag-valve-mask ventilation

**Corrective actions**

N=8

- 4 airway suctioning (40%)
- 4 new operator (36%)
- 3 reposition patient (27%)
- 2 equipment change (20%)

  5 (63%) ≥2 corrective actions