Supraglottic Airway Devices (SAD) i-gel

EMT-OS, AEMT, AEMT –OS, and Paramedic Scopes

Nor-Cal EMS
2021

Learning Objectives

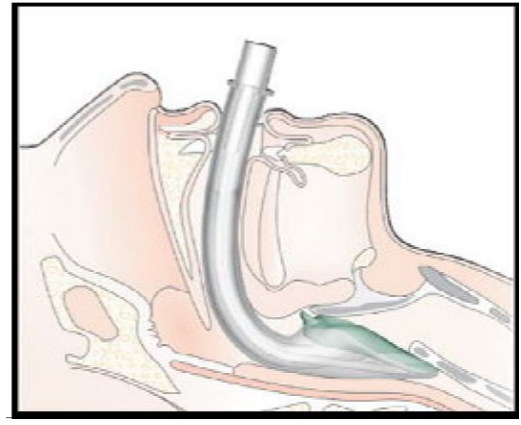
- Understand the i-gel insertion procedure
- Understand the Advantages and disadvantages of i-gel/SAD
- Know the indications and contraindications of i-gel/SAD use.
- Understand the confirmation of placement

Approved SGA Devices

- Currently the only approved SGA devices in Nor-Cal EMS is the i-gel device.
- Paramedics and AEMTs will be able to use the i-gel for both adult and pediatric patients.
- Pediatric patients are defined as less than 12 years of age and below.
- In addition, Nor-Cal EMS will use is the following for pediatric patients: If the patient fits on the length based weight tape they are considered pediatric.
- EMT-OS can only use the i-gel airway devices for adult patients (defined as 12 years of age and above).
- AEMT and Paramedics have to utilize ET CO2 waveform capnography.
- EMT-OS must utilize Colormetric Capnography Device.

i-gel Supraglottic Airway Device

- What is it?
- Advantages
- Disadvantages
- Indications
- Contraindications
- Design/Components
- Sizing Information



i-gel General Aspects

- A supraglottic airway device (SAD), without an inflatable cuff, made of medical grade thermoplastic elastomer
- An anatomical advanced airway device, achieving a mirrored impression of the pharyngeal, laryngeal, and perilaryngeal structures, without causing compression or displacement trauma to the tissue

i-gel Advantages

1) Easy of insertion and therefore more rapid placement
2) Minimal trauma
3) Stability after insertion
4) Latex-free
5) Single use
6) No inflatable cuff
7) No air pressure issues causing compression of vital structures
8) No over inflation
9) Oxygen port allows for passive oxygenation during CP

i-gel Advantages

- Higher seal pressures than LMA
- Head strap may account for higher leak pressures.
- All sizes from neonate to large adult
- Gastric channel to reduce risk of aspiration
- Blind ETT insertion possible (I-Gel size + 3 = ETT size)
- Gastric channel, except in neonatal size, allows for gastric venting, suction/decompression (for air and liquid, no chunks)
- Integrated bite block
- Easy of insertion and therefore more rapid placement
- Minimal trauma, stability after insertion
- Latex-free, Single use, No inflatable cuff
- No air pressure issues causing compression of vital structures
- No over inflation, allows for passive oxygenation during CPR

i-gel SAD Advantages

- Causes less trauma to airway tissue then other airway devices (King Airway, etc.)
- No balloons, less pieces to malfunction
- Easier/quicker to place (single port, single tube)
- Does not require CPR interruption during placement
- Requires little/no spinal movement during placement
- Provides a means for positive pressure ventilation
- Minimizes gastric insufflation
- Available in multiple sizes based on patient size

i-gel SAD Disadvantages

- Blind insertion
- Not a “definitive” airway
- Does not fully protect from aspiration
- Possible vocal cord paralysis
- Possible lingual or hypoglossal nerve injuries
- Can be dislodged or rotate resulting in airway obstruction

i-gel SAD Indications

- Adult i-gel SAD Indications
  - Adult patients (≥ 12 yo) in need of advanced airway protection and/or unable to be adequately ventilated with a BVM when orotracheal intubation is unavailable or unsuccessful

  - Adult patients (≥ 12 yo) in need of rapid advanced airway control when orotracheal intubation is anticipated to be difficult or likely to interrupt continuous chest compressions

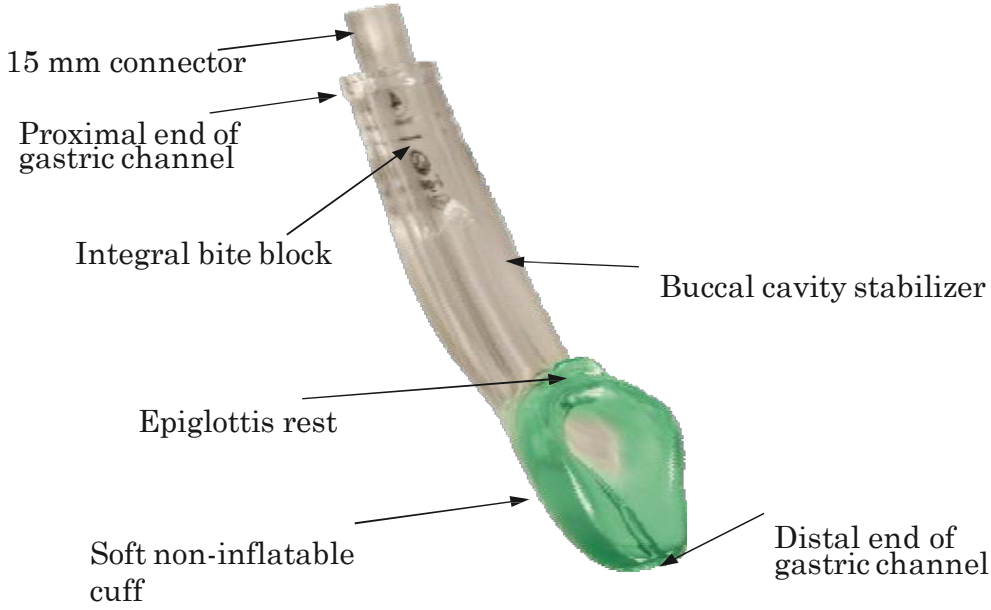
i-gel SAD Indications

- Pediatric i-gel SAD Indications
  - **AEMT & Paramedic Personnel Only**
  - Pediatric patients (less than 12 yo) in need of airway protection or unable to be adequately ventilated with a BVM

i-gel SAD Contraindications

- Intact gag reflex
- Caustic ingestion
- Unresolved complete airway obstruction
- Trismus or inability to open the mouth and insert the device
- Oral trauma (relative)
- Distorted anatomy that prohibits proper device placement (relative)

i-gel SAD Design/Components



i-gel SAD Design/Components

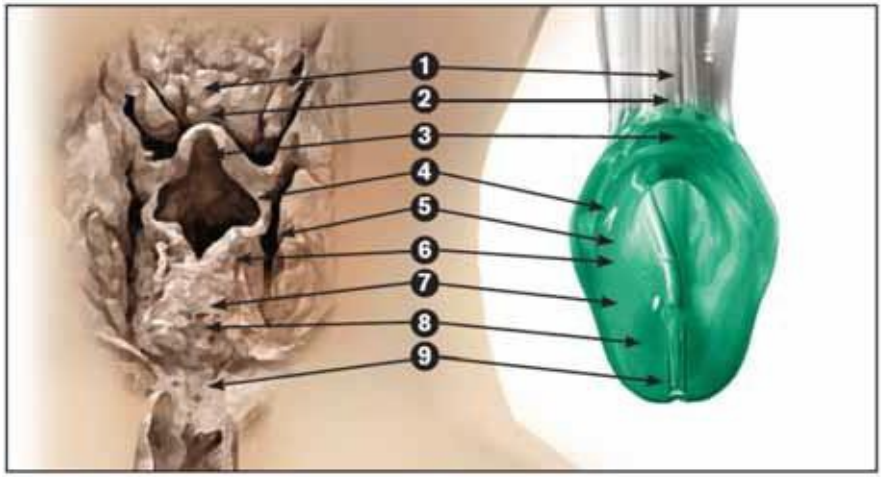


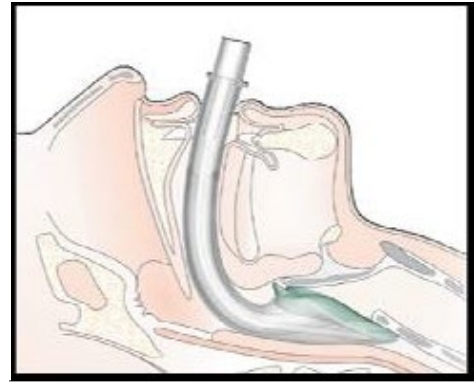
Figure 1: View of the **i-gel** *cuff in relation to the laryngeal framework*

1. Tongue
2. Base of tongue
3. Epiglottis
4. Aryepiglottic folds
5. Piriform fossa
6. Posterior cartilages
7. Thyroid cartilage
8. Cricoid cartilage
9. Upper oesophageal opening

i-gel SAD Sizing Information

i-gel size	Patient size	Patient weight guidance (kg)
1	Neonate	2-5
1.5	Infant	5-12
2	Small paediatric	10-25
2.5	Large paediatric	25-35
3	Small adult	30-60
4	Medium adult	50-90
5	Large adult+	90+

- Insertion Procedure
- Confirmation Procedure
- Tips
- Troubleshooting
- Removal
- Additional Requirements



i-gel General Procedure

- Open package using standard sterile precautions
- Remove cradle
- Apply water-based lubricant to back, sides, front
  - Use the cradle to make distribution more uniform
    - Do not use unsterile gauze
  - Ensure no bolus of lubricant remains on the device
  - Replace into cradle until ready to insert
- Avoid touching cuff of device with your hands

i-gel SAD Adult Insertion Procedure

- Open the i-gel package
- On a flat surface, take out the protective cradle containing the device

i-gel SAD Adult Insertion Procedure

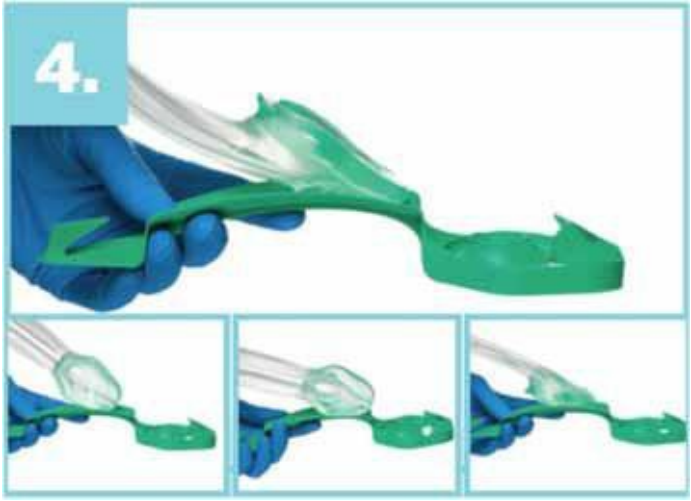
- Remove the i-gel
- Transfer it to the palm of the same hand that is holding the protective cradle

i-gel SAD Adult Insertion Procedure

- Place a small amount of water based lubricant onto the middle of the smooth surface of the protective cradle

i-gel SAD Adult Insertion Procedure

- Grasp the i-gel with the free hand along the integral bite block and lubricate the back, sides, and front of the cuff with a thin layer of lubricant



i-gel SAD Adult Insertion Procedure

- Inspect the device carefully, confirm there are no foreign bodies or lubricant obstructing the distal opening
- Place the i-gel back into the protective cradle in preparation for insertion

i-gel SAD Pediatric Insertion Procedure (AEMT & Paramedic Personnel Only)

- Open the i-gel package
- Take out the cage pack containing the device

i-gel SAD Pediatric Insertion Procedure (AEMT & Paramedic Personnel Only)

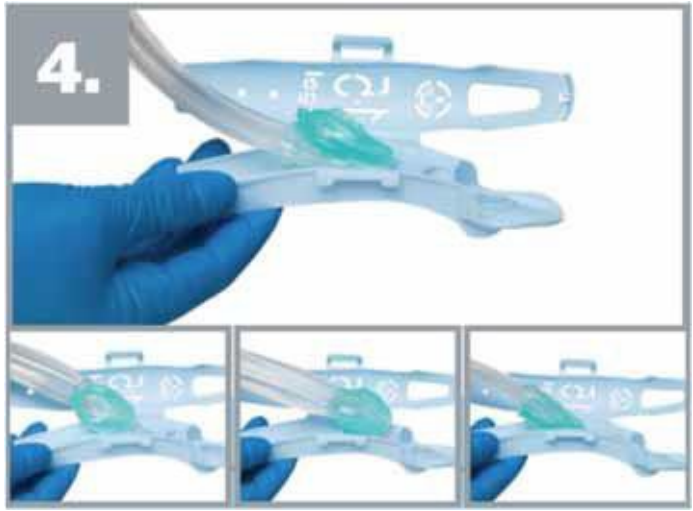
- Open the cage pack and transfer the i-gel into the lid of the cage

i-gel SAD Pediatric Insertion Procedure (AEMT & Paramedic Personnel Only)

- Place a small amount of a water based lubricant onto the smooth surface of the cage pack

i-gel SAD Pediatric Insertion Procedure (AEMT & Paramedic Personnel Only)

- Grasp the i-gel along the integral bite block and lubricate the back, sides, and front of the cuff with a thin layer of lubricant



i-gel SAD Pediatric Insertion Procedure (AEMT & Paramedic Personnel Only)

- Inspect the device carefully, confirm there are no foreign bodies or lubricant obstructing the distal opening
- Place the i-gel back into the cage pack in preparation for insertion

i-gel General Insertion Procedure

- Ensure dentures or plates are removed
- Remove from cradle/cage pack
- Can be inserted in less than 15 seconds
- Grasp along integral bite block
- Position so cuff is facing toward patient's chin
- Patient should be in sniffing position

i-gel General Insertion Procedure

- Press chin gently down
- Insert leading soft tip into mouth in direction of hard palate
- Glide device downwards and backwards along hard palate with continuous push until definitive resistance felt
  - Do not apply excessive force
  - Do not insert fingers/thumb into patient's mouth

i-gel General Insertion Procedure

- If early resistance is felt:
  - Often due to passage through faucial pillars
  - Jaw thrust or gentle rotation
- When inserted appropriately,
  - tip of i-gel is in upper esophageal opening and
  - cuff against laryngeal framework
  - Teeth rest on bite block

i-gel General Insertion Procedure

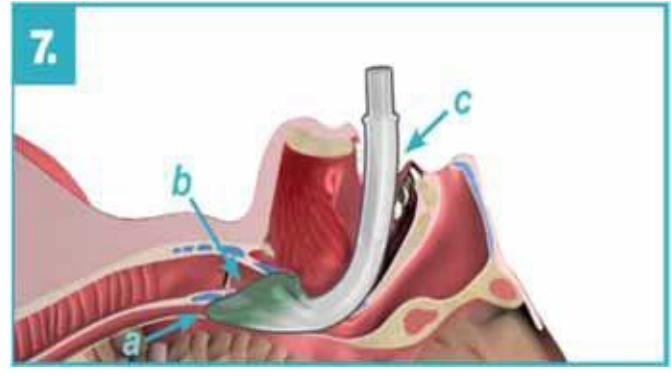
- Horizontal line on i-gel indicates optimal position of the teeth, though teeth may rest safely anywhere along bite block
- Tape i-gel in place maxilla to maxilla

i-gel SAD Adult & Pediatric Insertion Procedure

- Remove the i-gel, by grasping along the integral bite block
- Position the device so the cuff outlet is facing towards the chin of the patient
- The patient should be in the "sniffing" position and the chin should be gently pressed down
- Introduce the leading soft tip into the mouth in a direction towards the hard palate

i-gel SAD Adult & Pediatric Insertion Procedure

- Glide the device downward and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt



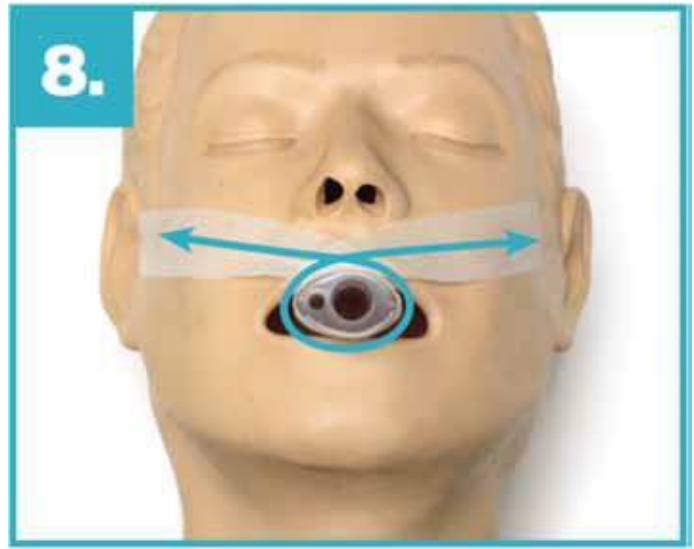
- The tip of the airway should be located into the upper oesophageal opening (a) and the cuff should be located against the laryngeal framework (b) - the incisors should be resting on the integral bite block (c)

i-gel SAD Adult & Pediatric Confirmation Procedure

- Correct device placement must be confirmed utilizing all of the following:
  - ✓ Chest rise and fall
  - ✓ Presence of lung sounds
  - ✓ Absence of epigastric sounds
  - ✓ ETCO2 waveform monitoring device (AEMT and Paramedic) for pediatric patients.
  - ✓ ETCO2 Colormetric Capnography Device for EMT-OS for adult patients.

i-gel SAD Adult & Pediatric Insertion Procedure

- Properly secure the device once placement is confirmed
  - ✓ If a commercial securing device is not used, the i-gel should be secured, using tape (tape from maxilla to maxilla)



i-gel SAD Tips

- Make sure the i-gel SAD follows the mouth's hard palate during insertion to ensure it maneuvers past the patient's tongue
- Do not force the device during insertion, gently follow the anatomy until definitive resistance is felt
- Once definitive resistance is felt, stop the insertion process and inspect the position of the teeth in relation to the integral bite-block

Challenges

- Abnormal airway anatomy
  - Patients with surgically altered airways (example: old/closed tracheal stoma)
  - Obtaining an initial seal and maintaining a seal due to altered anatomical structures.
  - Trismus (clenched jaw), limited mouth opening, pharyngo-perilaryngeal abscess, trauma or mass
  - While not specifically listed a surgically altered airway would fit under the 'trauma or mass' classification.

i-gel SAD Tips

- A horizontal line (Adult sizes 3, 4 and 5 only) at the middle of the integral bite- block represents the correct position of the teeth
- If the teeth are located lower then the distal tip of the bite block, the device may be incorrectly inserted

i-gel SAD Trouble Shooting

- Excessive leaking air from the gastric channel means the device is incorrectly inserted
  - ✓ Attempt to re-position for no more than 10 seconds, if excessive leaking continues remove the device and reinsert with a gentle jaw thrust applied by an assistant
- Removal steps
  - ✓ Once in place, the i-gel should only be removed in the prehospital setting if absolutely necessary (unable to confirm patency, patient regains consciousness, unable to ventilate, etc.)
  - ✓ If device is removed, reassess the patient and continue to appropriately manage the airway

- ***The i-gel should not be able to be inserted in the esophagus (too deep).***
- ***The i-gel buccal cavity stabilizer prevents the device from rotating in the upper airway***

i-gel SAD Utilization Additional Requirements

- Other responsibilities
  - Inform other appropriate EMS providers and/or the receiving hospital of any pertinent details related to the utilization of the i-gel
  - ***Adequately document the utilization of the i-gel forreporting and QI review requirements***
  - ***There are specific metrics that are require for state mandated reporting!***

Thank You