Provision of General Anesthesia Out of Hospital: Perspective from The Americas

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Welcome!! A Little About Me…

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- Past President, American Society of Dentist Anesthesiologists
- Fellow, American College of Dentists
- Fellow, International College of Dentists
- Diplomat, American Dental Board of Anesthesiology
- Diplomat, National Dental Board of Anesthesiology
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Is it Safe?

• There exists no good evidence to support the relative safety of OBA for patients with developmental or intellectual disabilities.

• “Providing deep sedation and general anesthesia for patients with special needs in the dental office-based setting”, Special Care in Dentistry, Volume 29, Issue 1, pages 26–30, January 2009.

• Various reports indicate mortality risk to be 1:200,000 – 1:400,000, but there are no documented statistics for OBA.
Regulations

• Canada;
  – Ontario
  http://www.rcdso.org/KnowledgeCentre/RCDSOLibrary

• United States;
  – Individual State Dental Boards- Permits
  – ADA Guidelines for the Use of Sedation and General Anesthesia by Dentists
Practice Experience

• Tens of thousands of patients treated over a period of 4 decades (five practices reported)
• No direct mortality
  – Two deaths reported, but not due to anesthesia or dentistry
• Most reported morbidity resulted from unknown medical issues or conditions
  – Others related to experience of provider
  – Vomiting- during or after the procedure
  – Adverse recovery experience- agitation, dysphoria
Considerations

• Patient
• Procedure
• Location
• Practitioner
• Staff
• Available Resources
• Expectations
Patient

• Ability to Cooperate
  – Past dental experiences
  – Level of anxiety/fear
  – Expression of anxiety/fear

• Medical History
  – Presenting conditions
  – Medical consultation- labs, reports, tests
  – Physical evaluation
  – Review of systems

• Physical Evaluation
Procedure

• What is the planned treatment?
• Where in the mouth?
• How long is the procedure (realistic!)?
  – Do you need to consider multiple appointments?
• Will there be an issue with fluids?
• Is there a local anesthesia concern?
• Will a rubber dam be used? Throat Pack? Isolite?
• Does the patient require anesthesia for the entire procedure?
Location

• Where will treatment be performed?
• What is the access outside of the operatory?
• Is there appropriate room in the operatory?
• Will the requisite equipment and supplies fit in the room?
• Is the area appropriate for anesthesia?
• Is the area appropriate for an emergency?
• Where is the x-ray unit?
Practitioner

- Who is doing the procedure?
  - GP, Specialist
- What is their experience with OBA?
- What is their understanding of OBA?
- What is their skill level in doing the planned treatment?
- How long have they been in practice?
- Does the practitioner understand emergency management?
- Will the practitioner be present for entire procedure?
Staff

• Does the staff understand OBA?
• Are the staff trained in CPR/ACLS/Other?
• What is the staff experience with OBA?
  – With their provider, others
• Does the staff understand their role during OBA?
• Does the staff understand emergency management?
Available Resources

• Do any staff/practitioner have other training?
  – Nurse, EMT, Military

• Is a designated anesthesia provider present?

• What is the emergency response for the office?

• Is there additional medical assistance available?

• Does the office have anesthesia equipment and supplies available?

• Are there other anesthesia providers present at same office?
Expectations

• What are the practitioner’s expectations?
  – Are they considerate of the treatment, patient, OBA?
  – Important to know this before first case!

• What are the patient’s expectations of OBA?
  – Are they realistic?
  – “I’m deathly afraid of needles and I want to be out!”
  – Available assistance is important for Adults with DD/ID
  – Consider pre-operative assessment before DOS

• What are your expectations of treatment?
  – Important to understand this is a team effort!
# Safety Checklist for Office-Based Surgery

*from the Institute for Safety in Office-Based Surgery (ISOBs)*

## Introduction
Preoperative encounter; with practitioner and patient

<table>
<thead>
<tr>
<th>Patient</th>
<th>Patient medically optimized for the procedure?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ Yes</td>
</tr>
<tr>
<td></td>
<td>☐ No, and plan for optimization made</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Procedure complexity and sedation/analgesia reviewed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

| NPO instructions given? | ☐ Yes |

| Escort and post-procedure plans reviewed? | ☐ Yes |

## Setting
Before patient in procedure room; with practitioner and personnel

<table>
<thead>
<tr>
<th>Emergency equipment check complete (e.g. airway, AED, code cart, MH kit)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

| Patient identity, procedure, and consent confirmed? | ☐ Yes |

<table>
<thead>
<tr>
<th>Is the site marked and side identified?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
<tr>
<td>☐ N/A</td>
</tr>
</tbody>
</table>

| DVT prophylaxis provided? | ☐ Yes                  |
|                          | ☐ N/A                  |

<table>
<thead>
<tr>
<th>Essential imaging displayed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
<tr>
<td>☐ N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practitioner confirms verbally:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Local anesthetic toxicity precautions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient monitoring (per institutional protocol)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Anticipated critical events addressed with team</th>
</tr>
</thead>
</table>

| ☐ Each member of the team has been addressed by name and is ready to proceed |

## Operation
Before sedation/analgesia; with practitioner and personnel*

## Before discharge
On arrival to recovery area; with practitioner and personnel

<table>
<thead>
<tr>
<th>Assessment for pain?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment for nausea/vomiting?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recovery personnel available?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

Prior to discharge:

| ☐ (with personnel and patient) |

<table>
<thead>
<tr>
<th>Discharge criteria achieved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient education and instructions provided?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan for post-discharge follow-up?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Escort confirmed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

## Satisfaction
Completed post-procedure; with practitioner and patient

<table>
<thead>
<tr>
<th>Unanticipated events documented?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient satisfaction assessed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider satisfaction assessed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

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This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged. *Adapted from the WHO Surgical Safety Checklist.*

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# Patient’s Checklist for Office-Based Procedures

from the Institute for Safety in Office-Based Surgery (ISOBs)

<table>
<thead>
<tr>
<th>Inquire</th>
<th>What are my doctor’s credentials?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Does the doctor have privileges to perform the same procedure at a hospital?</td>
</tr>
<tr>
<td></td>
<td>What is your doctor board-certified in?</td>
</tr>
<tr>
<td></td>
<td>How many times recently has the doctor performed your type of procedure?</td>
</tr>
<tr>
<td></td>
<td>What is your doctor’s reputation?</td>
</tr>
<tr>
<td></td>
<td>Who will be giving sedation/anesthesia, if needed, and who will be monitoring me while during sedation?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stable</th>
<th>Are my medical conditions stable?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Are my medical conditions under control?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Office</th>
<th>Is the office accredited and licensed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the office accredited and the sign posted on the wall?</td>
</tr>
<tr>
<td></td>
<td>Who inspects and certifies the office for safety and infection control?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Best</th>
<th>Is this office the best place for my procedure?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the office the right setting for my procedure?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suited</th>
<th>Can this office handle an emergency?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the office prepared for an unexpected emergency, such as drugs, equipment and training?</td>
</tr>
<tr>
<td></td>
<td>If I need additional medical care, where will I be transferred?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan</th>
<th>What is the plan for my recovery after the procedure?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Who will monitor my recovery and who will supervise my discharge home?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication</th>
<th>How will I be able to communicate with the office?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Have you had a follow-up call or visit with your doctor or nurse?</td>
</tr>
<tr>
<td></td>
<td>Have you communicated your questions and overall satisfaction to the office staff?</td>
</tr>
</tbody>
</table>

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Airway Considerations

- Airway Assessment - MP, TMD, ROM
- Auscultation of lungs
- Pre-existing conditions - Asthma, Diabetes
- Medical interventions - Nebulizer, Insulin
- Procedure type - surgery, bleeding, water
- Procedure length
- Practitioner, staff, location capabilities
- Level of comfort, skill and experience with GA
Airway Considerations

- Clinical Assessment of the Airway
  - Original Mallampati Classification
    - Class 1: Fauccial pillars, soft palate and uvula could be visualized.
    - Class 2: Fauccial pillars and soft palate could be visualized, but uvula was masked by the base of the tongue.
    - Class 3: Only soft palate visualized.
  - A systematic review of 42 studies, with 34,513 participants, found that the modified Mallampati score is a good predictor of difficult direct laryngoscopy and intubation, but poor at predicting difficult bag mask ventilation.
Clinical Assessment of the Airway

*Modified MP:*

- **Class I:** Soft palate, uvula, fauces, pillars visible.
- **Class II:** Soft palate, uvula, fauces visible.
- **Class III:** Soft palate, base of uvula visible.
- **Class IV:** Only hard palate visible.
STOP-BANG Questionnaire

- Snoring - at night, during sleep
- Tired - sleepy, fatigued during the day
- Observed - breathing issues when sleeping
- Pressure - treatment for HTN
- BMI - >35kg/m² *
- Age - >50 y.o.
- Neck size - M, >43cm F, >41cm *
- Gender - Male *
- Risk score - L=0-2, M=3-4, H=5-8 *
Airway Approaches

• Open airway
  – With or without NPA
• LMA
  – Consider procedure, practitioner, patient
• Intubation
  – Oral, nasal
Open Airway

• Helpful to have trained provider and staff
• Consider airway protection
  – Rubber dam, throat pack, mouth prop, Isolite
• NPA not always helpful
  – Consider appropriate size
  – Attempt to visualize distal end
• Use of water?
  – Judicious vs. dry
• Position is important!
Rubber Dam Isolation

Even with the RD in place, there is still a need to consider other airway protection!
Throat Packs from Xemax

These come in various sizes. Important to tie a piece of floss around the pack for safety!
Throat Pack with Floss

The floss is tied around the center of the throat pack to make it safely retrievable.
Mouth Props from Common Sense Dental

More versatile than standard mouth props due to open center. Make sure to tie a piece of floss through the prop for safety!
Molt Mouth Prop

The existing dentition and occlusion of patient impact how successful this device will be to use. Can be a helpful adjunct for other mouth prop insertion.
Throat Pack and Mouth Prop in Place

The throat pack is placed posterior to all teeth involved in the procedure. It is important to hold tongue forward when placing the throat pack.
Removal of Double Pack after Treatment

The primary pack is on the left with the secondary pack on the right. The floss was removed from the primary pack to show that it is relatively clean versus the secondary pack.
Throat Pack in Place

Able to visualize the forward position of the tongue.
Isolite
Nasal Pharyngeal Airways

Important to select appropriate size! Lubricate prior to insertion- put lubricant in the nostril not on the NPA.
Selecting the Correct Size

Length is determined by placing the mesial end at the tragus of the ear and the distal end at/near the tip of the nose.
Patient position during Open Airway

Ensuring airway patency is critical with an open airway procedure.
Airway position for Open Airway

Establishing airway patency prior to the start of treatment. It is important to ensure head is supported!
Laryngeal Mask Airway

- Need to discuss approach with provider and patient
- There is level of difficulty due to the presence of the tubing
  - Best choice is the flexible LMA
- Type of procedure
  - Oral surgery, hygiene, implant placement
- Location of treatment - anterior versus posterior
- Length of procedure - shorter versus longer
- Need for checking occlusion
- Consider Intubation
Laryngeal Mask Airway

• Indications
  – Administration of volatile agents (leak pressure!)
  – Difficult intubation anticipated
  – Ease of use in OBA
  – Patients with URI
  – Better airway protection versus open airway

• Contraindications
  – Morbidly obese patients
  – Concern for fluids and potential aspiration
  – Ability of practitioner to provide treatment
Diagram of LMA Placement

The ability of the LMA to securely provide protection for the glottis is superior to open airway though the tubing must be accounted for in the oral cavity.
Intubation

• Indications
  – Airway protection
  – Ventilation of patient- improved versus LMA
  – Administration of volatile agents

• Nasal Intubation- no oral involvement

• Concerns
  – Nasal anatomy, trauma-bleeding, swelling
  – Difficulty passing ET through nasal passage
  – Edema present
  – Pharyngeal anatomy- laryngoscopy
  – URI
Basic Intubation Set-Up with TIVA

Pre-tracheal stethoscope with amplifier, videolaryngoscope, single-limb circuit with KAB absorber, central delivery system for O2.
NET for Dental Procedure

TIVA procedure in dental clinic with residents.
Anesthesia Machine with Vaporizer

Adult patient with DD for comprehensive examination and treatment in the dental office.
Portable Anesthesia Machine with Vaporizer

Adult patient in dental office for periodontal surgery.
TIVA with Jackson Rees Circuit

Pediatric procedure in the dental office.
Patient Selection

Adult patient with DD for comprehensive dental examination and treatment. Patient has limited opening with limited ROM.
Patient Selection

Adult patient with DD and Muscular Dystrophy. Patient is unable to transfer without lift and is otherwise uncooperative.
Patient Selection

Not all patients require GA! Identifying expectations and discussing options before treatment can facilitate practical treatment approaches.
Established Airway
Success

• It is ALL about Preparation and Planning!
• Decisions should not be made in one direction
• Always maintain “Situational Awareness”
• Consider ALL involved entities/people
  – Location
  – Treatment
  – Patient
  – Dentist
  – Staff
  – Anesthesia Provider