Reality of Dental Emergencies

Almost Never

Almost Always

How can we as health professionals, who are supposed to have higher skills, be expected to treat an emergency situation in the office or in life when they NEVER occur?

The Challenge
Inconveniences

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>15,407</td>
</tr>
<tr>
<td>Mild Allergy</td>
<td>2,583</td>
</tr>
<tr>
<td>Postural Hypotension</td>
<td>2,475</td>
</tr>
<tr>
<td>Bronchospasm (asthma)</td>
<td>1,392</td>
</tr>
<tr>
<td>Hyperventilation</td>
<td>1,326</td>
</tr>
<tr>
<td>Epinephrine Reaction</td>
<td>913</td>
</tr>
</tbody>
</table>

Martin & Ellis JADA 112:499-501, Malamed JADA 124:4-53 >30,000 events

What today is NOT:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCONVENIENCE?</td>
<td></td>
</tr>
<tr>
<td>URGENCY?</td>
<td></td>
</tr>
<tr>
<td>EMERGENCY?</td>
<td></td>
</tr>
<tr>
<td>RARITY?</td>
<td></td>
</tr>
</tbody>
</table>

Urgencies

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>15,407</td>
</tr>
<tr>
<td>Angina</td>
<td>2,552</td>
</tr>
<tr>
<td>Seizure</td>
<td>1,595</td>
</tr>
<tr>
<td>Bronchospasm (asthma)</td>
<td>1,392</td>
</tr>
<tr>
<td>Epinephrine Reaction</td>
<td>913</td>
</tr>
<tr>
<td>Insulin Shock (conscious)</td>
<td>890</td>
</tr>
</tbody>
</table>

Martin & Ellis JADA 112:499-501, Malamed JADA 124:4-53 >30,000 events
### What’s Really Important?

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>15,407</td>
</tr>
<tr>
<td>Angina</td>
<td>2,552</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>289</td>
</tr>
<tr>
<td>Cardiac Arrest</td>
<td>??</td>
</tr>
<tr>
<td>Asthma, Severe Allergy ⇒ Bronchospasm</td>
<td>1,392</td>
</tr>
</tbody>
</table>

### Emergencies

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
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<tr>
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<td>1,392</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>289</td>
</tr>
<tr>
<td>Local Anesthetic Overdose</td>
<td>204</td>
</tr>
<tr>
<td>C.V.A.</td>
<td>68</td>
</tr>
</tbody>
</table>

*Martin & Ellis JADA 112:499-501, Malamed JADA 124:4-53 >30,000 events*

### Everything Else Has Time!

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic Coma/Insulin Shock</td>
<td>Sugar</td>
</tr>
<tr>
<td>Epilepsy/Seizure/Convulsions</td>
<td>Airway</td>
</tr>
<tr>
<td>Hyperventilation O₂ Sat?</td>
<td>100%</td>
</tr>
<tr>
<td>Mild Allergy Itchiness/Rash</td>
<td>Wait</td>
</tr>
<tr>
<td>Local Anesthetic / Epinephrine</td>
<td>β Blockers</td>
</tr>
</tbody>
</table>

### Rarity (“Non” Events)

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Pulmonary Edema</td>
<td>141</td>
</tr>
<tr>
<td>Diabetic Coma</td>
<td>105</td>
</tr>
<tr>
<td>Adrenal Insufficiency</td>
<td>25</td>
</tr>
<tr>
<td>Thyroid Storm</td>
<td>4</td>
</tr>
</tbody>
</table>

*Martin & Ellis JADA 112:499-501, Malamed JADA 124:4-53 >30,000 events*
WHAT TODAY IS:

Protocols, Age/Risk Pharmacodynamics

IT DEPENDS on:

• What,
• When, and
• Where the problem is!

Emergency Protocol

Is 911 a false sense of security?

YES

Problem

911 is a solution.

What to do in the meantime???
Communication

- Front Desk
- Office Manager

```
What is your Emergency?

The 3 U's
Unconscious
Unresponsive
Unable to find a pulse
```

RESPONSIBILITIES

911

Attending person
911

“WE HAVE A PATIENT IN CARDIAC ARREST WITH CPR IN PROGRESS”
91 Rylander Blvd.
Dr. Hawkins office
Front parking lot
“I will meet you there”

RESPONSIBILITIES

911

“I HAVE AN UNRESPONSIVE CHILD WITHOUT A PULSE”
123 Home Street
Hawkins residence
Front door
“I will meet you there”

RESPONSIBILITIES

911

“I WILL MEET YOU THERE”

All the staff must know the location of:

- Portable oxygen with masks/cannulas
- BVM Ambu® bag with airways
- A.E.D.
- Emergency drug kit
- Portable suction
- Emergency lighting source

Recommendation:
Can you discover, *privately*, without embarrassment who is and who *may not be* prepared for an assigned duty *before* an event, *not* during.

Every 2 Months: Syncope
for 15 Minutes: Syncope

- Current BLS training
- Task designation: 2 groups, action + support
- Mock simulations:
  → shorter time (15 min.)
  → higher frequency (2 mo.)
**Syncope Algorithm**

**Position, ABC’s**

- Always!
- Time, Time, Time
- Oxygen by nasal cannula
- 4 litres/minute
- + Glucose

**Medical Consultation**

**EMERGENCY KITS**

- Acme Dental / Medical Kit

**MUST HAVE A GAME PLAN!**

1. Dental treatment risk/benefit
2. Contemplated medications in mg. or µg.

**Ready made?**

- Self assembled?
The Senior Citizen

Although inaccurate, a “senior” in our society is usually defined as 65 years old, unless you’re in some drug stores on a Tuesday.

A “bad day” will usually happen because of an attack of a pre-existing condition...

Senior Citizen Considerations

Fear Factors:
• Loss of function and independence
• Long term institutionalization
• Disability
• Death

Pharmacodynamics: Age/Risk

“AVER-AGE” PATIENT

PEDiATRIC CONSIDERATIONS

Physical Classifications - ASA

ASA I – normal, healthy
ASA II – mild systemic disease
ASA III – severe multiple systems, medication
ASA IV – severe disease, threat to life
ASA V – won’t survive without operation
ASA VI – brain dead, alive for organ transplant
E – operation modification e.g. ASA III-E
COMMUNICATION DIFFICULTIES

C.N.S:
- Loss of Neurons

C.V.S:
- Systolic B.P. ↑ with age
- Rate ↓ due to parasympathetic activity

The “Aver-age” Patients

ASA I or II are generally safe patients medically.
ASA III is a judgment call.
A “heart” patient is safer with sedation.

Pulmonary:
- Loss of alveolar septa
- ↓ elasticity of lungs
- Chronic smoking a factor

A “bad day” will usually happen because of lack of attention to the rules - doses, lack of good L.A. or “point of no return” feelings.
Why does Morbidity – Mortality “target” CHILDREN?

Although inaccurate, a “child” in our society is usually defined as up to 12 years old.

A “bad day” will usually happen because of lack of respect of their airway...

**Pediatric Considerations**

**C.V.S / C.N.S:**
THE 2 MOST IMPORTANT Physiological Considerations IN PEDIATRIC RESCUE are:

- High MYOCARDIAL O₂ Consumption
- High BRAIN O₂ Consumption

**C.N.S:**
The CPR / BLS guideline of:
“3 – 6 minutes until permanent brain damage begins” is for the adult **without** an O₂ debt and does **NOT** apply in pediatric life.”
Pediatric Considerations

Drug (local anesthetic) impact:
- Unpredictable
- Blood Brain Barrier is immature
- Metabolism due to immature liver

Pediatric Considerations

COMMUNICATION DIFFICULTIES

Airway, A Few Good Adjuncts, Oxygen and Vasoconstrictors

MANAGEMENT OF AIRWAY Actions & Armamentarium
Airway Obstructions: The Conscious Victim

- Know Each Patient's Airway
- Always Maintain Patency
- Head Position
- Clear Debris
- Use Throat Partitions
- Use Rubber Dam When Possible

It would be ideal to be able to use the emergency armamentaria in day-to-day dentistry, for cost efficiency, familiarity and for practice!

"Mouth Rester"... not a prop
Disposable Laryngoscope

“A tongue depressor with a light on it”

Magill Forceps

Serated, circular tips, double lumen

Disposable “long saliva ejector”

...with a screen tip that doesn’t come off
Airway Obstructions: The Unconscious Victim

Oral Pharyngeal Airway

Size? Angle of Mandible to Corner of Mouth

CRICOTHYROTOMY

Old and New Ideas

Starting Position
Airway is inserted backwards and rotated into position...
Cricothyroid Membrane Puncture for Tracheal Access

Management of Breathing

Actions & Armamentarium

Oxygen Sources
- Portable tanks (Stem & Wrenches)
- Central tanks
- Regulators and Components
- Flow meters

What you really need to know about old and new ideas of cricothyrotomy is...
Flow meter: 0-15 liters/min

Full: 2000 PSI

Nasal Cannula - Disposable

O2 4 l/min

Non-rebreathing Mask (NRB)

O2 6-10 l/min

Bag-valve-mask Systems (B.V.M.)
Can be used if breathing

Bag Valve Mask (BVM)

Inflatable Mask (use 10 cc syringe – air)

One way valve – once sealed no need to lift edge of mask for expiration

Supplemental O₂ with reservoir at 10-15 liters/minute

2-3 l. bag

Transparent mask – can see regurgitation

These 3 fingers pull up

These 2 digits press

Demand Valve

MANAGEMENT OF CIRCULATION

Actions & Armamentarium
**Vasoconstrictor Considerations**

**A.** Use is based on vasoconstrictive alpha receptor agonists

1. Delays absorption, reducing toxicity and prolonging duration. No advantage with concentrations > 1:200,000.
2. Reduces hemorrhage at surgical site (CONCENTRATION IS ADVANTAGEOUS IN THIS CASE).

**Vasoconstrictor Considerations**

Deep Arteries

Adrenergic alpha receptor functions and vascular distribution

- Vasoconstriction
- Vasodilation + Bronchial dilation
- Cardio-tropic

Relative Receptor Affinities:

- Epinephrine 50:50 alpha:beta 1=2
- Levonordefrin 75:25 alpha:beta 1

These ratios are misleading - reflect levonordefrin’s limited action at beta 2 receptors. It’s activity at cardiac beta 1 receptors is comparable to epinephrine’s at equipotent doses.
With most heart conditions, the most serious medical-dental risk for dental treatment is the vasoconstrictor.

D. Systemic influences following absorption are UNEQUIVOCAL.
   1. Systemic absorption WILL occur!
   2. Rate/Pressure Product WILL increase!
   3. Issue is whether this effect is detrimental to patient.

E. Potential for enhanced pressor response in those patients medicated with nonselective beta blockers.
   1. Low doses of epinephrine exhibit beta₂ preferences on large systemic arteries.
   2. If beta blockade is present, epinephrine will bind with alpha receptors + increase peripheral resistance.

B. Posology

C. Concentration represent grams / ml
   1:100,000 = 0.01 mg or 10 µg per ml
   1:50,000 = twice the amount or 20 µg
   1:200,000 = half this amount or 5 µg
ANTIDEPRESSANTS
CLASS: MONOAMINE OXIDASE INHIBITOR

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>TRADE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>phenelzine sulfate</td>
<td>Nardil</td>
</tr>
<tr>
<td>tranylcypromine sulfate</td>
<td>Parnate</td>
</tr>
<tr>
<td>moclobemide</td>
<td>Manerix</td>
</tr>
<tr>
<td>isocarboxazid</td>
<td>Marplan - (U.S. Only)</td>
</tr>
</tbody>
</table>

Local Anesthetic/ Vasoconstrictor Precautions:
None, since both epinephrine and neocobefrin are metabolized by COMT, not MAO.

ANTIDEPRESSANTS
CLASS: TRICYCLIC

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>TRADE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>maprotiline hydrochloride</td>
<td>Ludiomil, Novo-Maprotiline</td>
</tr>
<tr>
<td>nortriptyline hydrochloride</td>
<td>Aventyl, Pameler</td>
</tr>
<tr>
<td>protriptyline hydrochloride</td>
<td>Triptil, Vivactil</td>
</tr>
<tr>
<td>trimipramine maleate</td>
<td>Apo-Trimip, Novo-Tripramine, Nu-Trimipramine, Rhotrimine, Surmontil</td>
</tr>
</tbody>
</table>

Local Anesthetic/ Vasoconstrictor Precautions:
Use with caution; epinephrine, norepinephrine and levonordefrin have been shown to have an increased pressor response in combination with TCAs. This is more of a theoretical concern, and clinically may only be seen in higher doses.

Cardiovascular Influences
Prototypic Catecholamines

Selecting a Vasopressor

- Epinephrine for Hypertensive Patients
- Levonordefrin if Tachycardia is Concern
- Both Increase Myocardial Oxygen Demand
  - Epinephrine > Heart Rate
  - Levonordefrin > Afterload
**ANTIDEPRESSANTS**
CLASS: SELECTIVE SEROTONIN REUPTAKE INHIBITORS

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>TRADE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluoxetine hydrochloride</td>
<td>Prozac, Apo-Fluoxetine, Dom-Fluoxetine, Nu-Fluoxetine, STTC-Fluoxetine</td>
</tr>
<tr>
<td>fluvoxamine maleate</td>
<td>Luvox</td>
</tr>
<tr>
<td>paroxetine hydrochloride</td>
<td>Paxil</td>
</tr>
<tr>
<td>sertratine</td>
<td>Zoloft</td>
</tr>
</tbody>
</table>

Local Anesthetic/ Vasoconstrictor Precautions:
No interactions have been reported with vasoconstrictors.

**ANTIDEPRESSANTS**
CLASS: MISCELLANEOUS

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>TRADE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>nefazadone hydrochloride</td>
<td>Serzone</td>
</tr>
<tr>
<td>trazodone</td>
<td>Alti-Trazodone, Apo-Trazodone, PMS-Trazodone, Trazon, Trialodine, Desyrel</td>
</tr>
<tr>
<td>l-tryptophan</td>
<td>Tryptan</td>
</tr>
<tr>
<td>venlafaxine hydrochloride</td>
<td>Effexor</td>
</tr>
<tr>
<td>buspirone hydrochloride</td>
<td>BuSpar</td>
</tr>
</tbody>
</table>

Local Anesthetic/ Vasoconstrictor Precautions:
No precautions appear necessary.
Case Report #1

**NOW WHAT?**

1. IF SYMPTOMS ➔ Activate EMS
2. Position, ABC’s, O₂,
3. Lower Blood Pressure – Nitroglycerine spray + support
4. ASA ???

---

Managing Beta Blocked Patients

No issue with cardioselective agents, (a) category BUT
Inderal™ and Corgard™, non-selective, (b) category

**WHAT TO DEFINITELY DO!**
1. Look it up in the PDR (CPS Canada)
2. Wait 5 minutes after each cartridge and reassess vitals

---

Case Report #1

- 43 year old female, Candace, 1 hour hygiene appt.
- Inderal® 40 mg. b.i.d. for *migraine headaches*, but no CVD,
  BP 128/86   HR 88
- IV sedation - 4 mg. midazolam with RN Nancy
- Local anesthesia: 4% articaine
  1:100K epi 6.8 ml. – 4 cartridges
  ➔ 2 minutes: 152/94   92
  ➔ 3     168/98   78
  ➔ 4     190/104  64
  ➔ 5 minutes: 158/98  78

---

**BETA-ADRENERGIC BLOCKERS**

<table>
<thead>
<tr>
<th>Sympathomimetics epinephrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>“alright” β 1 blocked only</td>
</tr>
<tr>
<td>Monitan Rhotral Sectral</td>
</tr>
<tr>
<td>Tenormin</td>
</tr>
<tr>
<td>Betaloc Lopressor</td>
</tr>
<tr>
<td>“beware” β 1,2 both blocked</td>
</tr>
<tr>
<td>Corgard</td>
</tr>
<tr>
<td>Trasicon</td>
</tr>
<tr>
<td>Visken</td>
</tr>
<tr>
<td>Inderal</td>
</tr>
<tr>
<td>Sotacor</td>
</tr>
<tr>
<td>Blocadren Timoptic</td>
</tr>
<tr>
<td>“cool” all blocked</td>
</tr>
</tbody>
</table>

(a) Cardioselective
- acebutolol
- atenolol
- metoprolol

(b) Noncardioselective
- nadolol
- oxprenolol
- pindolol
- propranolol
- sotalol
- timolol

(c) Noncardioselective and alpha blocker
- labetalol
- Trandate
Managing Beta Blocked Patients

WHAT TO POSSIBLY DO?

3. Avoid using a vasopressor if (b) category
4. Consult physician regarding discontinuing (b) beta blocker or changing it to a cardioselective (a) beta blocker

Hypertension Algorithm

- Reassess BP / Perfusion
- Nitroglycerin
- EMS transport if symptomatic

3

Defibrillation, Drugs and Diagnosis

CARDIAC ARREST
Victim Must Be On “Firm” Surface??

Monitor the Vital Signs
- Pulse
- Pupils
- Breathing

Dilated

Constricted
• If you are State Board regulated to have one, then get one!

AED + ECG

Simple but Sophisticated

$1999.00
CPR Savers and First Aid Supply®

A.E.Ds

One-Touch

A.E.Ds

$1245.00
CPR Savers and First Aid Supply®
Drugs

Guidelines

Emergency Medications
Responsible Auxiliary:

- Check kit every two months (on mock simulation day) to assure drugs are not expired or broken. Replace as needed.

What do you need?

OXYGEN
Epinephrine

**EPIPEN®** for anaphylaxis (severe allergy; bee stings, peanuts) and bronchospasm

**CHILD / ADULT:** EpiPen 2-Pak®:
- child: 0.15 mg….. $279.06
- adult: 0.3 mg…. $ 279.06

*until you can draw up from an amp.

**Epinephrine**

Equi-potent doses: (1ml 1:1000 amps) by route of administration:

- **SC** - 0.5 mg
- **IM** - 0.3 mg.
- **IL** - 0.2 mg.
- **IV** - 0.1 mg. - must dilute 1:10,000

If patient has **air exchange:**
- β-2 inhaler: albuterol (Ventolin®)
Nitroglycerin

**Action is unclear:** SL administration ⇒ vasodilation result in a reduced venous return, or preload reduction, lowering myocardial O₂ consumption.

**Indications:** Ischemic chest pain - 1 tab Q5M x 3
Symptomatic hypertensive episodes

**Dose:** 0.3-0.6 SL mg. tabs / 0.4-0.8 SL spray

**Warning:** do not give another “nitro” if SBP < 90

---

ASA

Giving the maximum as a 325 mg. tablet is OK but...

Expiration date must be “Sharped” to 8-10 weeks from “today’s seal breaking”
ASA (for MI)

325 mg. = peak effect

It’s best via 4X baby
ASA (81 mg.) chewed, aside from, and over and above prophylactic use

Action: Keeps # of platelets from increasing, which could lead to further coronary artery blockage or if cerebral blockage, STROKE!

Albuterol / Bronchodilator

Inhaler: Inhale 1 to 2 puffs of albuterol up to 4 times daily.

More than 8 inhalations per day is not recommended.

Albuterol - Ventolin® - β2 agonist

ASA (for MI)

325 mg. = peak effect

ASA (for MI)
Diphenhydramine (Benadryl®)

- Action and effect based on blocking histamine release
- Indications / Dose: (50mg/ml amp or SDV)
  - pruritus / urticaria / nausea
  - 50mg IM followed by 50mg TID P.O.
  - medical follow up to anaphylaxis
- THINK FIRST!

Glucose Source

ALL dental offices have sugar
Diagnosis
Dependent
Treatments

Syncope
• Sudden, transient loss of consciousness
• Common immediately pre- or post injection
• Most common procedure – extraction
• Common immediately pre- or post consciousness
• Syncope, transient loss of

Syncope Profile of Prevalence
• Male » Female
• Never in children
• Average age: 35 years old
• Male » Female

Scenario:
Male, 35 y.o., anxious, “macho” guy, needlephobic

Signs / Symptoms
• Pallor
• Nausea
• Disorientation
• Loss of Consciousness
• Pulse thready, may arrest 30-45 sec.
• Blood pressure
• Low blood sugar
Syncope Causes
- Anxiety, Pain
- Sit up too fast
- Inject too fast
- Intravenous injections
- Hypoglycemia (prolonged NPO)

Syncope Algorithm
Position, ABC’s
Time, Time, Time
Always!
O₂ by nasal cannula
4 litres/minute + Glucose

Hyperventilation
Signs / Symptoms:
- Rapid, shallow breaths, “air hunger”
- Impaired inspiration / expiration
- Sense of panic
- Disorientation
- \( O₂ \) saturation = 100%

Angina
- Pallor, chest pain in “waves”
- “Indigestion?”
- Denial
- Midsternal pain, left arm, left mandible
- Nausea, diaphoresis
- Rapid, shallow breathing, treatment - administer 1 nitroglycerine
Myocardial Infarction

- **Female:** “weight on chest” / indigestion?
- **Male:** chest pain, sharp, severe, left arm
- Mild shortness of breath (SOB), nausea
- Panic, fear, but denial
- Rapid, shallow breathing

Cardiac Arrest

- Marked hypotension
- Rapid, shallow breathing 🕒 LOC
- Apnea 🕒 cyanosis = respiratory arrest
- Fibrillation = no pulse
- AED gives diagnosis and action

Angina / MI Algorithm

1. Syncope Protocol
2. Nitroglycerin q. 5 min x 3
3. Assume MI / Call EMS

Cardiac Arrest Algorithm

1. Syncope Protocol
2. CPR
3. 100% Oxygen
4. 1 - 2 mg epinephrine
ACUTE ASTHMA

Asthma and Severe Allergy Signs/Symptoms Combination

ACUTE ASTHMA AND BRONCHOSPASTIC EVENTS

In The Dental Office or Witnessed at home

• Primary assessment is in front of you or in the history
• Activate EMS, 911
• Assign, Designate

Unexplained, Unwitnessed, Unconscious

• Primary assessment
• Call for HELP, get to a phone even if it’s you that has to leave
• No medical history, no relatives, no knowledgeable friends

Bronchospasm Algorithm

ABC’s & Position

Oxygen

B-2 inhaler

BUT if not exchanging air:

epinephrine 0.3 mg

Cardiac arrest NOW

C, A, B
IN LIFE...triple “U”

- Look for MEDIC ALERT bracelet or necklace
- Read allergies, medical conditions
- Phone emergency hot line # on MEDICAL ALERT tag, quote victim’s ID #
- Medical history will be given 24 / 7 by phone
COMPLAINT:
7 patients 'stroke-like' reactions to 3% mepivacaine (plain)

DOCTOR'S INTERVIEW

WHAT'S YOUR DIAGNOSIS, DOCTOR?
Medical Emergencies in the Dental Office, Medical Emergencies in Life!

The
Washington State Dental Association –

2015 Pacific Northwest Dental Conference

June 11-12, 2015

Mel Hawkins, DDS  BScD AN
Dentist/Dentist Anesthesiologist
Toronto, ON Canada