Medical Emergencies in the Dental Office, Medical Emergencies in Life!

The New Hampshire Dental Society

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Toronto, ON Canada

Concord, NH
Friday, November 9th, 2018
DISCLOSURE

Mel Hawkins

has no relevant financial relationship with any company or organization to disclose with respect to this continuing dental education program

The New Hampshire Dental Society
Friday, November 9th, 2018
Reality of Dental Emergencies

Almost **Always**

Almost **Never**
The Challenge

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* (well, almost never) occur?
What today is NOT:

28 different emergency situations involving 28 different medical scenarios (15 of which you and I have never heard of), which drug to use, IV?, IM?, IL?, dose in mg., repeat how often?, side effects, which drug to combat the side effects? etc…etc…
Are we facing an . . . .

INCONVENIENCE?

URGENCY?

EMERGENCY?

RARITY?
# 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
## Urgencies

<table>
<thead>
<tr>
<th>Event</th>
<th>Count</th>
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</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>

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

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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>
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</tbody>
</table>

Martin & Ellis JADA 112:499-501, Malamed JADA 124:4-53  >30,000 events
## Rarity ("Non" Events)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Acute Pulmonary Edema</td>
<td>141</td>
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<tr>
<td>Diabetic Coma</td>
<td>105</td>
</tr>
<tr>
<td>Adrenal Insufficiency</td>
<td>25</td>
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<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’s Really Important?”

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</tr>
<tr>
<td>Cardiac Arrest</td>
<td>???</td>
</tr>
<tr>
<td>Asthma, Severe Allergy  Bronchospasm</td>
<td>1,392</td>
</tr>
<tr>
<td>Condition</td>
<td>Treatment</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Diabetic Coma/Insulin Shock</td>
<td>Sugar</td>
</tr>
<tr>
<td>Epilepsy/Seizure/Convulsions</td>
<td>Airway</td>
</tr>
<tr>
<td>Hyperventilation</td>
<td>$O_2$ Sat? 100%</td>
</tr>
<tr>
<td>Mild Allergy Itchiness/Rash</td>
<td>Wait</td>
</tr>
<tr>
<td>Local Anesthetic / Epinephrine</td>
<td>$\beta$ Blockers</td>
</tr>
</tbody>
</table>
WHAT TODAY IS:

1. Protocols, Age/Risk Pharmacodynamics
2. Airway + a few good adjuncts, Oxygen, Vasoconstrictors
3. Defib, Drugs and Diagnosis

WHAT TODAY IS:

Airway + a few good adjuncts, Oxygen, Vasoconstrictors

Defib, Drugs and Diagnosis
- Protocols,
- Age/Risk
- Pharmacodynamics
Emergency Protocol

Is 911 a false sense of security?

IT DEPENDS on:
• What,
• When, and
• Where the problem is!
Emergency Protocols

Problem

What to do in the meantime???

YES

911 is a solution.
Communication

• Front Desk
• Office Manager
“What is your Emergency?”

The 3 U’s

Unconscious
Unresponsive
Unable to find a pulse
RESPONSIBILITIES

Attending person 911

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

“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”
All the staff must know the location of:

- Portable oxygen with masks/cannulas
- Bag-Valve-Mask with airways
- Automatic External Defibrillator
- Emergency drug kit
- Portable suction
- Emergency lighting source
Staff Training

- Current **BLS** training
- **Task** designation: 2 groups, action + support
- **Mock** simulations:
  - shorter time (15 min.)
  - higher frequency (2 mo.)
  - repetition, repetition, repetition
Recommendation:
Can you discover, privately, without embarrassment who is and who may not be prepared for an assigned duty before an event, not during.
Mock Simulations

Every **2** Months: Syncope

for **15** Minutes: Syncope
Syncope Algorithm

Position, ABC’s

Time, Time, Time

Always!

$O_2$ by nasal cannula

4 litres/minute

+ Glucose
Hey Doc, how do I treat your medically compromised patient?
1. Dental treatment risk/benefit
2. Contemplated medications in mg. or µg.

MD scrawling “BP is 240/120 but OK for dental treatment” on Rx pad is \textcolor{red}{\textbf{NOT}} a mandate!
EMERGENCY KITS

Ready made?

Self assembled?

Acme™ Dental / Medical Kit
IN OLD DAYS:
nice suitcase and color coded micro-print
Pharmacodynamics: Age/Risk

PEDiatric CONSIDERATIONS

SENIOR CITIZEN

“AVER-AGE” PATIENT
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
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 $O_2$ Consumption

High BRAIN $O_2$ Consumption
Pediatric Considerations

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.”

IT’S MORE IN THE ORDER OF 1 MINUTE!
Pediatric Considerations

Drug (local anesthetic) impact:

• Unpredictable
• Blood Brain Barrier is immature
• ↓ Metabolism due to immature liver
Pediatric Considerations

COMMUNICATION DIFFICULTIES
Questions
- Airway,
- A Few Good Adjuncts,
- Oxygen and
- Vasoconstrictors
MANAGEMENT OF AIRWAY

Actions & Armamentarium
Airway Obstructions: The Conscious Victim
Airway Considerations

• 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
STARTING POSITION

Airway is inserted backwards...

and rotated into position
CRICOTHYROTOMY

Old and New Ideas
Cricothyroid Membrane Puncture for Tracheal Access
Cricothyrotomy

What you really need to know about old and new ideas of cricothyrotomy is…
Cricothyrotomy
MANAGEMENT OF BREATHING

Actions & Armamentarium
Oxygen Sources

• Portable tanks
  (Stem & Wrenches)

• Central tanks
  • Regulators and Components
  • Flow meters
Flow meter: 0-15 liters/min

Full: 2000 PSI
Nasal Cannula - Disposable

O₂

4 l/min
Non-rebreathing Mask (NRB)

$O_2 \rightarrow 6-10 \text{ l/min}$
Bag-valve-mask Systems (B.V.M.)
Bag Valve Mask (BVM)

Inflatable Mask
(use 10 cc. syringe – air)

One way valve- once sealed no need to lift edge of mask for exhalation

Can be used IF breathing

Supplemental O₂ with reservoir at 10-15 liters/minute

Transparent mask – can see regurgitation

2-3 l. bag
These 2 digits press

These 3 fingers pull up
Demand Valve

NOT Recommended
MANAGEMENT OF CIRCULATION

Actions & Armamentarium
Vasoconstrictor Considerations

VASOCONSTRICTOR “ISSUES”
or

Truths, Lies and Consequences
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

Adrenergic alpha receptor functions and vascular distribution

\( \alpha \) Vasoconstriction

\( \beta_2 \) Vasodilation + Bronchial dilation

\( \beta_1 \) Cardio-tropic

Veins and Submucosal Arteries

Deep Arteries
True or False

With most heart conditions, the most serious medical-dental risk for dental treatment is the **vasoconstrictor.**
A. Epinephrine is **not** safe for the hypertensive patient

**True or False?**
Cardiovascular Influences
Prototypic Catecholamines

<table>
<thead>
<tr>
<th>BLOOD PRESSURE</th>
<th>EPINEPHRINE</th>
<th>NOREPINEPHRINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PULSE RATE</th>
<th>EPI</th>
<th>LEVO</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td></td>
<td></td>
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(10 micrograms / min IV infusion)

Goodman & Gilman's 1996
Selecting a Vasopressor

- **Epinephrine** for Hypertensive Patients
- **Levonordefrin** if Tachycardia is Concern
- Both **Increase** Myocardial Oxygen Demand

- ✓ **Epinephrine** ➤ Heart Rate
- ✓ **Levonordefrin** ➤ Blood Pressure
Vasoconstrictors

B. When anesthetizing children – do not use epinephrine. Use a plain non-epi containing solution

True or False?
Dentists are responsible for safety!

Parents are responsible for lip / tongue biting
Vasoconstrictors

Why?

Epinephrine delays absorption, reduces toxicity and safely allows for 1 ½ X maximum dose!
### “MRD” or Maximum Recommended Doses

<table>
<thead>
<tr>
<th>DRUG</th>
<th>Vasoconstrictor</th>
<th>No Vasoconstrictor</th>
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<tbody>
<tr>
<td>Articaine 4%</td>
<td>500 mg</td>
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</tr>
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<td>Lidocaine 2%</td>
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<td>300 mg</td>
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<td>400 mg</td>
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<tr>
<td>Bupiva 0.5</td>
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<td>75 mg</td>
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*For healthy 70 Kg adult – must adjust for age and weight*

Hawkins, M - various sources, 2017
How many ‘carps’ ?
# Maximum Doses

<table>
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<th>Drug</th>
<th>Maximum Dose</th>
<th># “Carps”</th>
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Hawkins, M - various sources, 2017
Vasoconstrictors

C. Epinephrine and antidepressants do not interact (except POSSIBLY with tricyclics?)

True or False?
### 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>Tranyleypromine sulfate</td>
<td>Parnate®</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: TRICYCLICS

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>TRADE NAME</th>
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<tbody>
<tr>
<td>Maprotiline hydrochloride</td>
<td>Ludiomil® Novo-Maprotiline®</td>
</tr>
<tr>
<td>Trimipramine maleate</td>
<td>Apo-Trimip® NovoTrimipramine®</td>
</tr>
<tr>
<td></td>
<td>NuTrimipramine®</td>
</tr>
<tr>
<td></td>
<td>Rhotrimine®, Surmontil®</td>
</tr>
</tbody>
</table>

**Local Anesthetic/Vasoconstrictor Precautions:**

Use with caution; epinephrine and levonordefin have been shown to have an increased pressor response in combination with tricyclics. Clinically may only be seen in higher doses.
### 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®</td>
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<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>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
D. Non-selective $\beta$-blocked patients are a *relative* precaution only. All other $\beta$-blocker categories are fine.

**True or False?**
Vasoconstrictor Considerations

Adrenergic alpha receptor functions and non-selective β blockade (e.g. Inderal®)

α Vasoconstriction

β² Vasodilation + Bronchial dilation

β₁ Cardio-tropic

Veins and Submucosal Arteries

Deep Arteries
<table>
<thead>
<tr>
<th></th>
<th>Sympathomimetics epinephrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Cardioselective</td>
<td>“alright” β 1 blocked only</td>
</tr>
<tr>
<td>Atenolol</td>
<td>Tenormin®</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>Betaloc® Lopressor®</td>
</tr>
<tr>
<td>(b) Noncardioselective</td>
<td>“beware” β 1,2 both blocked</td>
</tr>
<tr>
<td>Nandolol</td>
<td>Corgard®</td>
</tr>
<tr>
<td>Propranolol</td>
<td>Inderal®</td>
</tr>
<tr>
<td>Sotalol</td>
<td>Sotacor®</td>
</tr>
<tr>
<td>(c) Noncardioselective and alpha blocker</td>
<td>“cool” all blocked</td>
</tr>
<tr>
<td>Labetalol</td>
<td>Trandate®</td>
</tr>
</tbody>
</table>
Non-Beta Blocked Patients
(15 ug Epinephrine I.V.)

% Change From Baseline

Time (sec.)

Pulse | SBP | DBP

Mulroy MF, Regional Anesthesia 1989
Beta Blocked Patients
(15 ug Epinephrine I.V.)

% Change From Baseline

Time (sec.)

Pulse  SBP  DBP

Mulroy MF, Regional Anesthesia 1989
Case Report #1
Case Report #1

NOW WHAT?
Managing Beta Blocked Patients

No issue with cardioselective agents, (a) category BUT
Propranolol and others in the non-selective, (b) category

**WHAT TO DEFINITELY DO!**

1. Look it up on line
2. Wait *5 minutes* after each cartridge and reassess vitals
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

Syncope Protocol

Reassess BP / Perfusion

Nitroglycerin

Nifedipine

EMS transport if symptomatic
Vasoconstrictor Summary:

A. Epinephrine is **safe** for the hypertensive patient

B. When anesthetizing children - use epinephrine. It delays absorption, reducing toxicity

C. Non-selective $\beta$-blocked patients are a **relative** precaution only

D. Epinephrine and antidepressants do **not** interact (tricyclics?)
Questions
Looking at the “Drug”

Local Anesthetic DOSAGES
Any “%” solution needs to be expressed as:

mg/cc (ml)
In 2 % lidocaine, for example:

\[ \text{2\%}, \text{ add 0} = \frac{20 \text{ mg}}{\text{cc}} \]

a cartridge of \( \frac{1.8 \text{ cc}}{} \)

= 36 mg
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Hawkins, JM: various sources compiled 2017
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* For healthy 70 Kg adult – must adjust for age and weight
Factors:

3% mepivacaine PLAIN

Adult: 7 mg./kg = 490 mg. = 9 cartridges
Age 12-18 yrs: 6 mg./kg = 330 mg. = 6
Age 6-12 yrs: 5 mg./kg = 200 mg = 3.5
Age < 6 yrs: 4 mg./kg = 100 mg = < 2

Hawkins, JM: various sources compiled 2017
Factors:

2% lidocaine 1:100,000 epi

Adult: 7 mg./kg = 490 mg. = 13 cartridges
Age 12-18 yrs: 6 mg./kg = 330 mg. = 8.5
Age 6-12 yrs: 5 mg./kg = 200 mg = 5.5
Age < 6 yrs: 4 mg./kg = 100 mg = 3

Hawkins, JM: various sources compiled 2017
Scenario:

1. Good child 😊
2. Financial
3. L.A. is just “water”
4. Bell curve

Dr. Norman Treiger, DDS, MD Montefiore Hospital, the Bronx, NY
CASE REPORT

Case: @ 55 lb 7 y.o. ♂ (25 k.g.)

Administered:
11 CART 2% LIDO 1:100,000 EPI

or

@ 400 mg!

How ..... Does This Happen???

Dr. Norman Treiger, DDS, MD Montefiore Hospital, the Bronx, NY
Factors:

1. Size: 1/3 of adult
2. Physiology of a child vs. adult
3. M.R.Dose = 133 mg.
   or no more than
   ~ 3.5 cartridges!
4. **BUT** adjust for physiology to 4 mg./kg.
   So...M.R.D. = 100 mg. or < 3 cartridges

Dr. Norman Treiger, DDS, MD Montefiore Hospital, the Bronx, NY
RESULTS:

Dr. Norman Treiger, DDS, MD Montefiore Hospital, the Bronx, NY
QUESTIONS?
Defibrillation,
Drugs and
Diagnosis
CARDIAC ARREST
Racketball…
Readiness?..
and
Rescue Attempt…
MONITOR THE VITAL SIGNS

Pulse
Pupils
Breathing
CONSTRICTED

DILATED
Victim Must Be On "Firm" Surface ???
Resusitation: Floor Resusci-Anne (n = 50)

Hawkins, M JODA. Jul/Aug Vol 6:28
Dental Chair Resusitation
Resusci-Anne (n = 50)

Hawkins, M JODA. Jul/Aug Vol 6:28
A.E.Ds

One-Touch

$1245.00

CPR Savers and First Aid Supply®
AED Philosophy
AED + ECG

Simple but Sophisticated

$1999.00
CPR Savers and First Aid Supply®
Let’s Do Drugs
What do you need?

DO NOT even THINK of using a drug you know nothing about!
Emergency Medications
Responsible Auxiliary:

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

• Review correct method for preparation in emergency periodically.
OXYGEN
Epinephrine

Various injectors available for anaphylaxis (severe allergy; bee stings, peanuts) and bronchospasm

CHILD / ADULT:
Packs of 1 or 2 vary in price

child: 0.15 mg.

adult: 0.3 mg.

*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
Epinephrine HCl Solution, CSD

Each ml contains:
EPINEPHRINE 1 mg;
HCl, to dissolve epinephrine and adjust pH; sodium chloride, for isotonicity; citric acid and sodium citrate, as buffers; and sodium bisulfite, as antioxidant, 2.5 mg. Protect from light.

Store at controlled room temperature (15°C to 30°C).

Note: Do not use the injection if it is brown or contains a precipitate.

Guaranteed sterile in original, intact package.

For subcutaneous use — adrenergic.

Usual Adult Dose: 0.3 ml to 0.5 ml. Discard any remaining solution. See package insert for full prescribing information.

Caution: Federal (U.S.A.) law prohibits dispensing without prescription.

Manufactured by IMS Ltd., St. Elmo, CA 91733, USA.

International Medication Systems of Canada Ltd., St. Laurent (Montreal), Quebec, Canada.
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.
**Nitroglycerin**

**Action is unclear:** SL administration ⇒ vasodilation result in a reduced venous return, or preload reduction, lowering myocardial $O_2$ 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
$9.00 / 100

Expiration date must be “Sharpied” to 8-10 weeks from “today’s seal breaking”
$32.00

Nitrolingual® Pumpspray

but . . .

. . . expiry date IS the expiry date
ASA

Giving the maximum as a 325 mg. tablet is OK but...
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
ASA (for MI)

325 mg. = peak effect

Action: Keeps # of platelets from increasing, which could lead to further coronary artery blockage or if cerebral blockage, STROKE!
Albuterol - β2 agonist

**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
Diphenhydramine

• 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! Can they get a ride?
ALL dental offices have a massive sugar availability in house!
Questions ?
Diagnosis
Dependent Treatments
Syncope

• Sudden, transient loss of consciousness

• Common immediately pre- or post injection

• Most common procedure – extraction

• Often recovery before advanced treatment can be implemented
Syncope Profile of Prevalence

• Male » Female
• Never in children
• Average age? 35 years old
• Scenario:
  Male, 35 y.o., anxious, “macho” guy, “needlephobic”
Syncope Signs/Symptoms

- Pallor
- Nausea
- Disorientation
- Loss of Consciousness
- Blood pressure
- Pulse thready, may arrest 30-45 sec.
- Low blood sugar
Syncope Causes

• Anxiety, Pain
• Sit up too fast
• Inject too fast
• Intraosseous injections
• Hypoglycemia (prolonged NPO)
Syncope Algorithm

Position, ABC’s

Time, Time, Time

Always!

$\text{O}_2$ by nasal cannula

4 litres/minute

+ Glucose
Nausea / Vomiting

...associated with syncope
Hyperventilation

Signs / Symptoms:

• Rapid, shallow breaths, “air hunger”
• Impaired inspiration / expiration
• Sense of panic
• Disorientation
• $O_2$ saturation = 100%
Hyperventilation

It’s Showtime!
Hyperventilation Treatment

- Rebreathe from paper bag?
- Do nothing and leave room?

*Nobody has ever died from a 100% oxygen saturation!*
Angina

• Pallor, chest pain in “waves”
• “Indigestion?”
• Denial
• Midsternal pain, left arm, left mandible
• Nausea, diaphoresis
• Rapid, shallow breathing,
• \( R_x \) 1 nitroglycerine tablet or 2 sprays
Myocardial Infarction

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

Syncope Protocol

Nitroglycerin q. 5 min x 3

Assume MI / Call EMS
Cardiac Arrest

• Marked hypotension
• Rapid, shallow breathing $\Rightarrow$ LOC
• Apnea $\Rightarrow$ cyanosis = respiratory arrest
• Fibrillation = no pulse
• AED gives diagnosis and action
Cardiac Arrest Algorithm

Syncope Protocol

↓

CPR

100% Oxygen

→ 1 - 2 mg epinephrine
Asthma

Asthma and Severe Allergy

Signs/Symptoms
Bronchospasm Algorithm

ABC’s & Position

↓

Oxygen

↓

B-2 inhaler

BUT if not exchanging air: epinephrine 0.3 mg
Seizures / Convulsions

DEFINITIONS:

• Seizure: “Fibrillation of the CNS”

• Convulsion: “Fibrillation of the CNS” with Motor Nerve activity added
Seizure Algorithm

Protect Patient, Protect **Yourselves**!

Syncope Protocol Following Seizure

If status seizure: EMS/PPV
Seizure Algorithm

Not practical
Flumazenil

Romazicon® (flumazenil) Injection

0.5 mg/5 mL

5 mL Multiple-Use Vials (0.1 mg/mL)

For I.V. Use
Sterile
Rx only

10 Vials
(5 mL Size)

Genentech
In The **Dental Office** or **Witnessed at home**

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

*It is still A, B, C*
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

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
Questions
Medical Emergencies in the Dental Office, Medical Emergencies in Life!

The New Hampshire Dental Society

Concord, NH
Friday, November 9th, 2018

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