London Health Sciences Centre

Southwest Ontario Regional Base Hospital Program

Southwest Ontario Regional Base Hospital Program Update

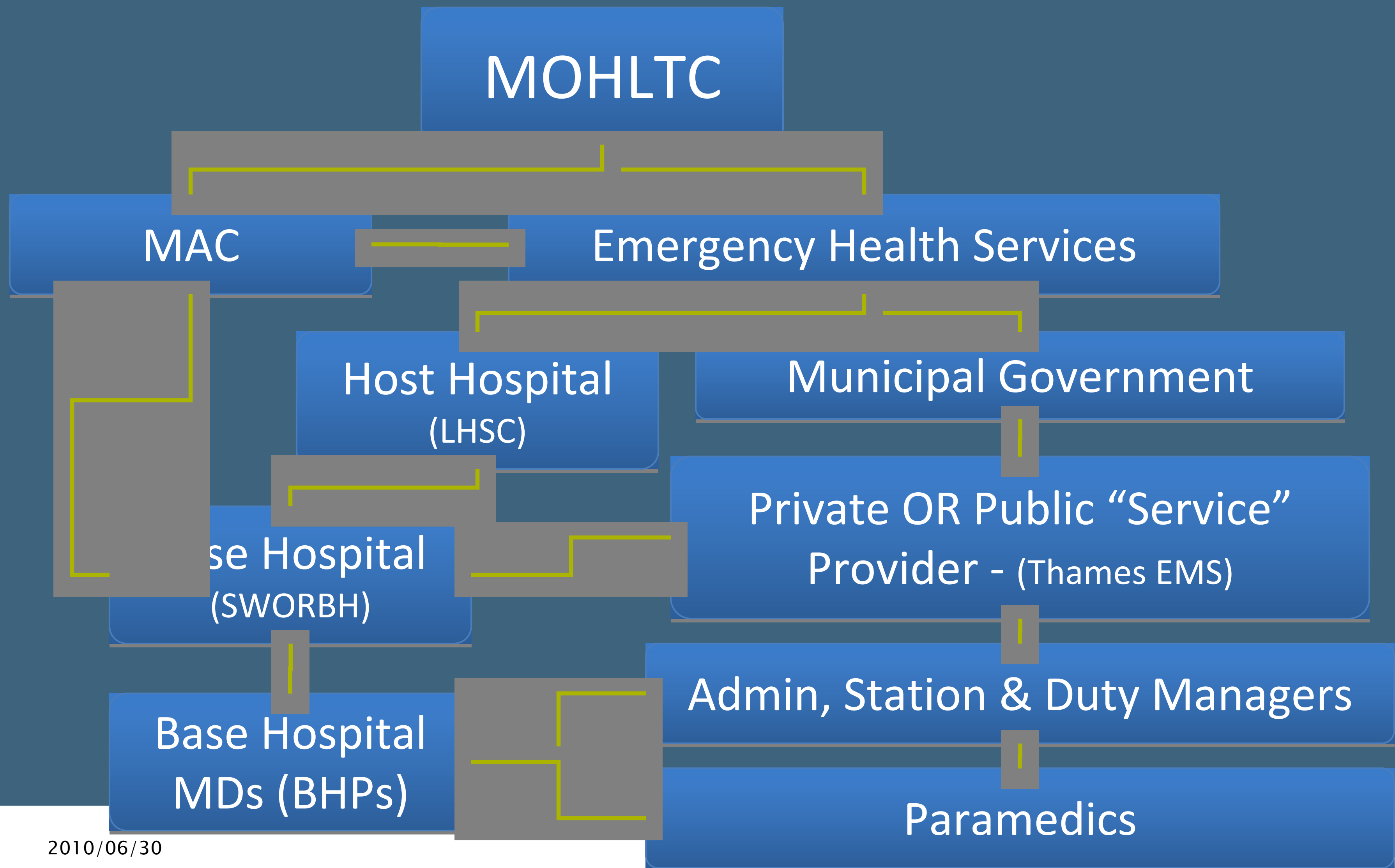
The Patch Phone and You

Dr Dukelow
Dr Lewell

Outline

- Overview of EMS in Ontario
  - What is Base Hospital?
  - SWORBH Structure
  - MAC & EHS
- Paramedic Training & Skill Levels
- Education & Quality Roles of SWORBHP
  - Re-certification
  - ACR Audits
  - Activation / Deactivation Procedures
- The Patch Phone
- New Equipment / Procedures
- On the Horizon....

EMS Services in Ontario



Provincial MAC and EHS

- 7 Regional Medical Directors form MAC
- Meetings quarterly (at least) in Toronto
- Review literature
- Create, Review & Revise “Protocols”
- Recommend Equipment changes / additions
- Make decisions for Medical Directives
    - These are then submitted to MOHLTC EHS
    - Also approved at the municipal level via AMEMSO
- Various sub-committees (education, ethics)

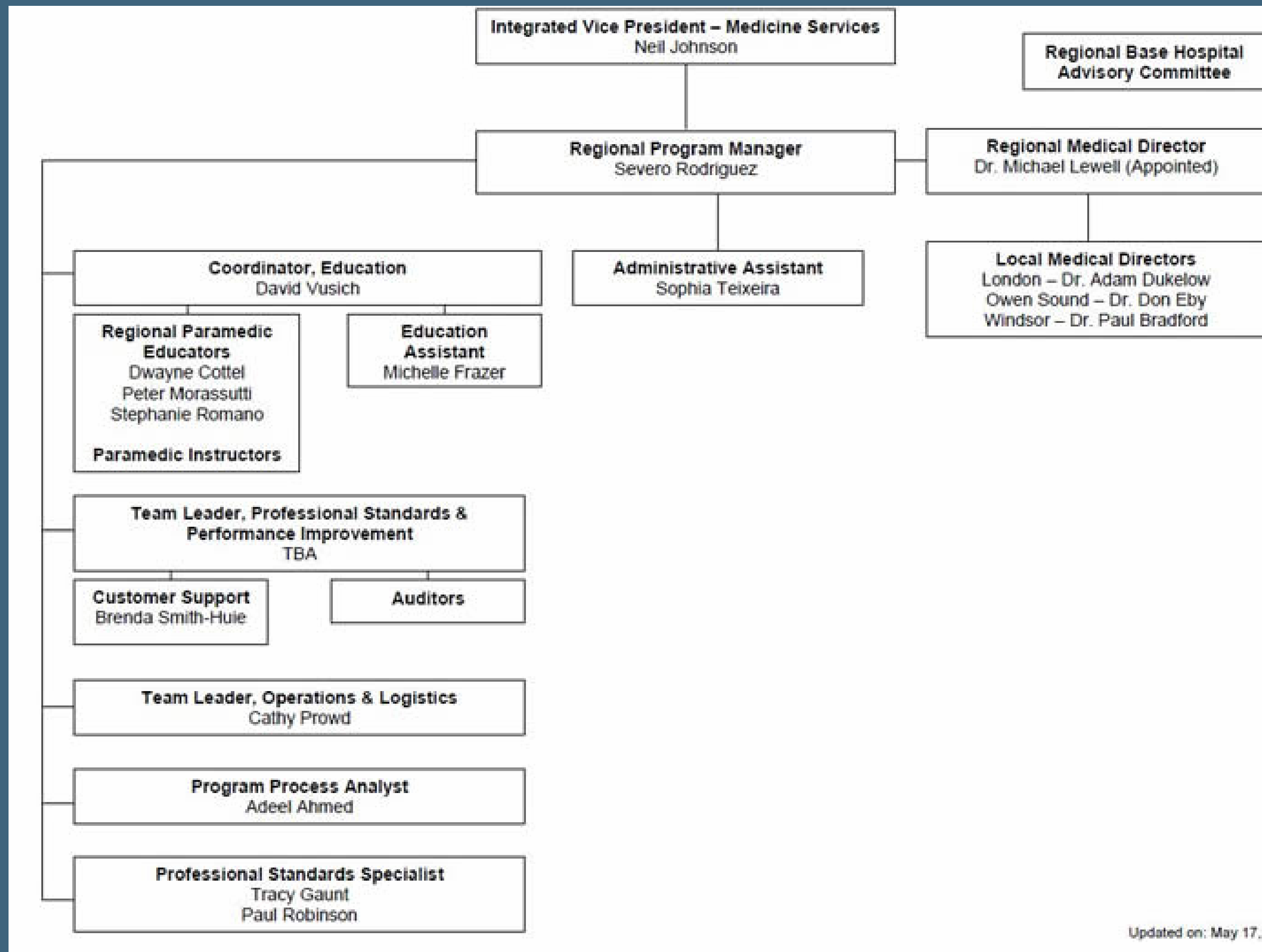
Role of a Base Hospital

- Direction & Oversight of delegated medical acts
  - Creation / Revision of Protocols
  - Electronic, Peer and MD Audits of calls
  - Action Based on Audits
  - Yearly Recertification
  - Continuing Medical Education
  - Education of Residents etc.

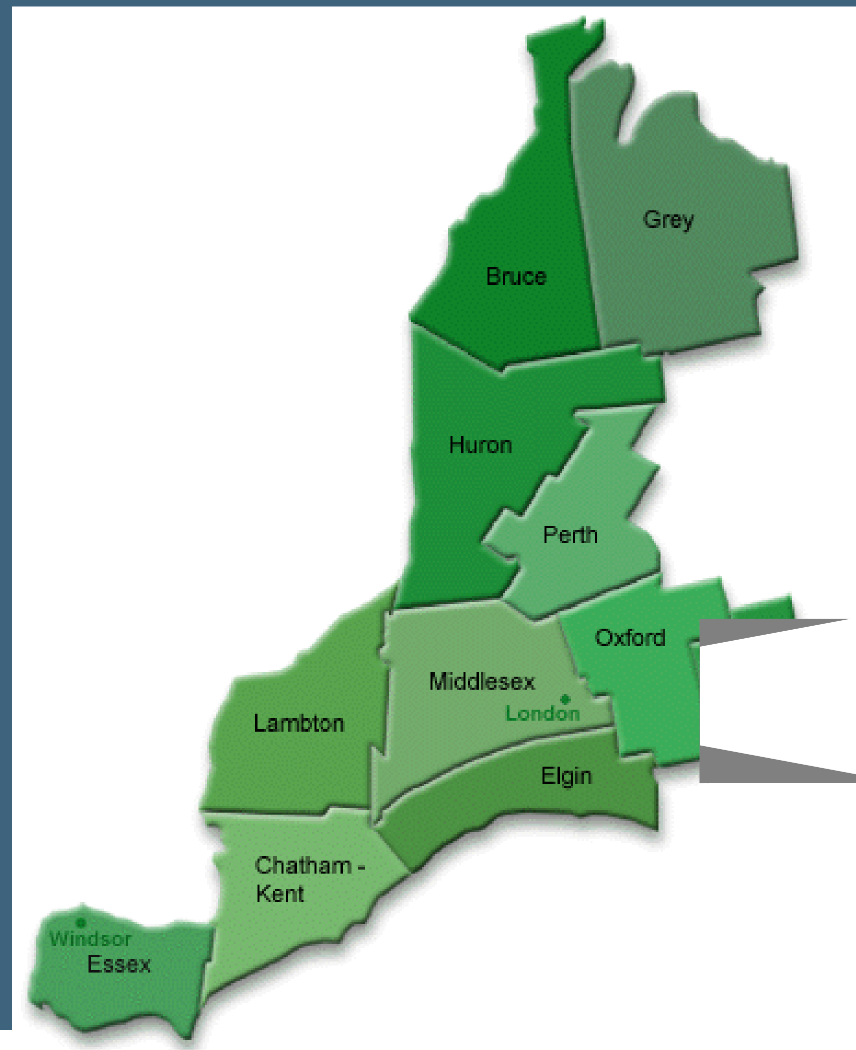
Base Hospital Facilities

REAL Base Hospital Facilities

SWORBHP– Structure



SWORBH – Geography



SWORBHP– What Is The Region?

- Regionally:
  - 1400 paramedics
  - 11 Services
  - 1.65 million population
  - 238 K Patient contacts / year

- Locally:
  - PCP Only – Elgin, Perth, Oneida
  - ACP and PCP – Oxford, Middlesex
  - 490 Paramedics (60 ACP, 430 PCP)

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PCP vs. ACP

- PCP
  - 2 year College program
  - Ministry Exam (EMCA)
  - Orientation Period (Service Dependent)
  - Certified by local Base Hospital
- ACP
  - 8 months – 1 year College program
  - Approximately 50% practical
    - *6 weeks hospital, 10 weeks preceptorship*
  - Local Base Hospital Certification

PCP – Primary Care Paramedic

- All procedures in province of Ontario BLS Patient Care Standards
  - Semi-Automated External Defibrillation (SAED)
  - Basic Cardiac and O2 Sat monitoring
  - Oral airway & BVM

- Base Hospital patching (specific / unusual circumstances)

- Symptom Relief drug administration and procedures
    - ASA
    - Nitroglycerin
    - Salbutamol
    - Blood glucometry / Glucagon
    - Epinephrine 1:1,000 (SC / Nebs)
    - Oral Airway and BVM

- "PCP + Skills"
  - IV access & fluid administration
  - 12-lead ECG acquisition

ACP – Advanced Care Paramedic

- Advanced patient assessment
- Base Hospital patching (medic's discretion)
- Procedures:

- Advanced cardiac monitoring
- Rhythm interpretation
- 12-lead ECG acquisition
- AED/manual defibrillation
- Valsalva Maneuver
- Synchronized cardioversion
- TC pacing
- IO Access
- IV access & fluid administration
- Laryngoscopic removal of FBs
- Nasal & oral tracheal intubation
- End Tidal CO_2 monitoring
- Cricothyrotomy
- Needle Thoracostomy
- IM/IN drug administration

SWORBHP– ACP Drugs…..

- Adenosine
- Amiodarone
- Atropine
- Dextrose
- Diazepam
- Dopamine
- Epinephrine 1:10K & 1:1K
- Furosemide
  - (on the order of a BHP only)
- Lidocaine
- Midazolam
- Morphine
- Naloxone
- Sodium Bicarbonate
- Fentanyl

Medical Procedures List

Primary Care	Advanced Care	Critical Care
2-Way patch	Advanced Care scope of practice includes all of the skills from the Primary Care scope of practice and in addition:	Critical Care scope of practice includes all of the skills from the Primary and Advanced Care scope of practice and in addition:
Ambu Pefit ACE adjustable cervical collar	12, 15 & 18-lead Electrocardiogram interpretation	Arterial line monitoring
Asherman chest seal	3-way patch	Balloon tampenade of gastroesophageal varices monitoring (ie. Blakemore tubes)
Broselow Tape®	Accessing central venous catheters	Bimanual uterine massage
Cardiac Monitoring (LP12) Lead II	Addition of medication to IV bag or bottle	BiPAP
Finger/Heel-stick glucometer evaluation	Alaris Medsystem III™ Multi-channel infusion pump	Brandt maneuver (delivery of placenta)
Hi-Ox 80 disposable High FiO2 mask	Blood product transfusion	HELPER maneuvers for Shoulder Dystocia
Infant Trans-Warmer mattress & warming gel	Capnography EtCO2 (Intubated & Non-intubated patients)	Intra-aortic balloon pump monitoring
Intramuscular injection	Cardiac Monitoring (LP 12) all leads	Intracranial Pressure Monitoring
IV Bag pressure infuser	Chest drainage systems	Peripheral umbilical vein catheterization
Metered-Dose Inhaler (MDI)	Cricoid pressure	Pulmonary artery catheter monitoring
Nasopharyngeal airway insertion	Crossvent-4 mechanical ventilation	Pulmonary artery catheter removal
Oropharyngeal airway insertion	Disposable Colorimetric EtCO2	Reverting uterine inversion
Pulse oximetry	Doppler ultrasound assessment	Transport Isolette
Semi-automatic external defibrillation	Endotracheal suctioning	Transvenous pacing
Subcutaneous injection	External jugular vein cannulation	Umbilical Vein Catheterization
	Field Extubation	
	Foreign body removal with McGill forceps	
	Gastric intubation	
	Gum Elastic Bougie	
	Infant scalp vein cannulation	
	Intraosseous access with EZ-IO™ device	
	Intraosseous access with screw-type device	
	ISTAT Analyzer	
	Laryngeal Mask Airway (LMA)	
	Lighted stylet transillumination intubation	
	LTV 1000 Mechanical Ventilation	
	Manual defibrillation	
	Nasotracheal intubation	
	Needle thoracostomy	
	Orotracheal intubation	
	Pediatric defibrillation	
	Pediatric IO access (EZ-IO™ device)	
	Pediatric IO access (screw-type device)	
	Pediatric needle cricothyrotomy	
	Pediatric orotracheal intubation	
	Pediatric peripheral vein access	
	Peripheral intravenous cannulation	
	Pre-load syringe use	
	Quicktrach® Needle Cricothyrotomy	
	Rapid Sequence Intubation	
	Synchronized cardioversion	
	Transcutaneous pacing	
	Urinary catheterization	
	V.E.I.D Vein Entry Indicator Device	

Primary Care Flight Paramedic	Advanced Care Flight Paramedic	Critical Care Paramedic
Acetylsalicylic Acid (ASA)	**In addition** to the medications in the column to the left, the Advanced Care Flight Paramedic may administer the following medications:	**In addition** to the medications in the **two** left columns, the Critical Care Paramedic may administer any medications, given that they are familiar with the drug and comfortable with its administration. The following is a list of medications that may be available on Critical Care Land vehicles and aircraft.
Epinephrine (SC, IM, or Nebulized)		
Glucagon (IM or SC)		
Gravol (PO)	IIB/IIIA Platelet Inhibitors	
Nitroglycerin (SL)	Acetaminophen	
Oxygen	Acetylcysteine Sodium	
Salbutamol (nebulized and MDI)	Activated Charcoal	
	Adenosine	
	Amiodarone	3% Saline
	Antizol	Digitalis
	Atropine	Diltiazem
	Bivalirudin (Angiomax)	Dobutamine
	Calcium Chloride	Ergonovine
	Cefazolin	Esmolol Hydrochloride
	Ceftriaxone	Etomidate
	Dexamethasone	Hemabate
	50% Dextrose in Water	Hydralazine
	Diazepam (IV and PR)	Ketamine
	Dimenhydrinate (IV)	Milrinone
	Diphenhydramine	Norepinephrine
	Dopamine	Phenobarbitol
	Epinephrine (IV)	Procainamide
	Fentanyl	Propofol
	Flumazenil	Salbutamol, IV
	Furosemide	Stemetil
	Haloperidol	
	Heparin	
	Insulin	
	Ipratropium Bromide	
	Lidocaine (IV and Topical Spray and IV Preparation)	
	Labetolol	
	Lorazepam	
	Magnesium Sulfate	
	Mannitol 20%	
	Methylprednisolone	
	Metoprolol	
	Midazolam	
	Morphine Sulfate	
	Naloxone	
	Nitroglycerin (IV and Topically)	
	Oxytocin	
	Pantoprazole (Pantaloc)	
	Pentaspan	
	Phenytoin	
	Potassium Chloride	
	Rocuronium	
	Sodium Bicarbonate	
	Succinylcholine	
	Thiamine	
	TNKase	
	Vecuronium	
	Xylometaxoline HCl	

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Quality Assurance

- Audits
  - All calls with a delegated medical act & VSA Calls
  - Percentage of non delegated calls
- Categories for level of variance assigned
  - Mild, Moderate, Critical
    - Minor may be audit to file
    - Major – meeting with MD +/- deactivation
- Remediation plan implemented
- Re-evaluation & Re-Activation

Education

- Mandatory 8 hours CE for PCP per year
- Mandatory 24 hours CE ACP per year
- Annual Recertification (8 Hours)
  - Protocol review
  - New directives
  - Quiz
    - Medical Math
    - Drug Dosing
    - Protocols

Education – Special Projects

- 12 Lead ECG
- STEMI Protocol
- Stroke Bypass Protocols
- PHTLS
- CPAP
- MCI
- Combat Casualty Care

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SWORBHP– Patching

- What is with the black phone?
- Why do I hear the red phone ring?
- "Can I have a physician for a paramedic patch"

- What do they want from me?
  - Series of built in patch points
  - Usually at a place where MD input needed

- What is in it for me?
  - SWORBHP contributes financially to the EMA
  - Unique Medical Challenges
  - Interaction with energetic group of colleagues

SWORBHP– Patching

- What do they want from me on the phone?
  - Pronouncement (ACPs or TOR in Trauma)
  - Medications
  - Unusual circumstances
    - medical knowledge vs. operational advice
  - Direction in dynamic arrest / very sick patient

Patching – Pronouncement

- No one wants a *LAZARUS….*
- Be wary of pronouncing if:
  - PEA – ? Profound hypotension
  - No public places
  - Patient is in the ambulance
  - Not all procedures complete?
- Should usually be ACP
- When in doubt……Transport!

Patching – Medications

- Consider transport time for all….

- Adenosine
  - Stable, 12 lead first, narrow vs wide...
- Bicarb
  - TCA, DKA, Crush, Renal failure/ dialysis unit
- Midaz / Fentanyl
  - Sedation for cardioversion or pacing
- Morphine
  - Usually for isolated extremity injury
  - Be wary of the undifferentiated abdominal pain..

Patching – Medications

- Narcan
  - Be wary the violent patient
  - Single medic in moving truck – can it wait?
- Amiodarone
  - Post arrest or stable wide complex
- Epi
  - Ischemic heart disease in anaphylaxis
  - Croup, Asthma, Anaphylaxis, Arrest

Patching – Medications

- Dopamine
  - Post arrest– often forgotten
  - Symptomatic bradycardia

- Atropine
  - Symptomatic bradycardia
  - Don't forget pacing or dopamine...
  - Very difficult for medic to sedate and pace

Patching – Unusual circumstances

- Essence of off line (protocol based) control is that it is impossible to have protocol for every circumstance
- Medic trained to patch for direction
  - Often will identify options for you
  - Usually answer is clear, just need your OK
  - Use common sense
- DNR often an issue.....recent case

Patching –TOR – Blunt Trauma

- PCP and ACP

- Allows for pronouncement if multisystem & non-shockable VSA with MD order
  - PCP will patch
  - Must establish patient contact and analyze once

- Always can transport at MD discretion!

Patching – TOR – Penetrating

- ACP and PCP
  - VSA & NO pupil response & NO spontaneous movement
    - Asystole Patch for TOR
    - PEA >20min away – Patch for TOR
    - PEA <20min – Transport
  - Remember – always can transport but low survival and not without risk to rescuer and public.

Patching – Dynamic Arrest

- Usually 3 “rounds” & patch
- Paramedic sometimes patch early for bicarb
- Common sense approach
  - If everything done and asystolic....
  - Is arrest to your standard
  - Are they
    - Still shockable
    - Young / PEA
    - Public Place
    - Paramedic / family overwhelmed

Pediatric Specifics

- Arrest Protocols are the same
- TOR – does not apply to < 16
- Pediatric Specific Protocols
  - Croup
  - Neonatal Resus
  - Defib < 8 yo – later

Pediatric Defibrillation

- EHS has given direction to MAC to create protocols for PCP medics to defibrillate pediatric patients via 1 of the following options:
  - Pediatric Attenuator Cables
  - Manual Defib with Education
  - Adult Cables and Energies

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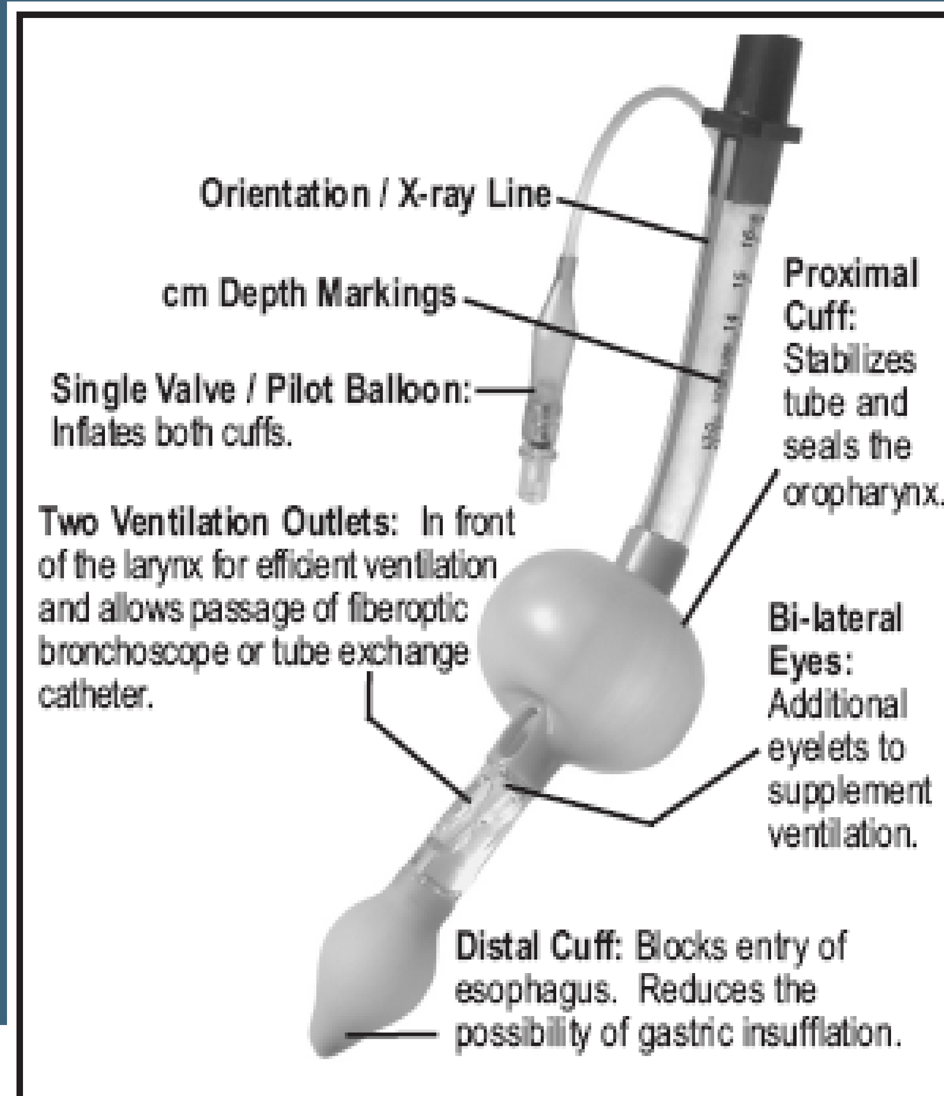
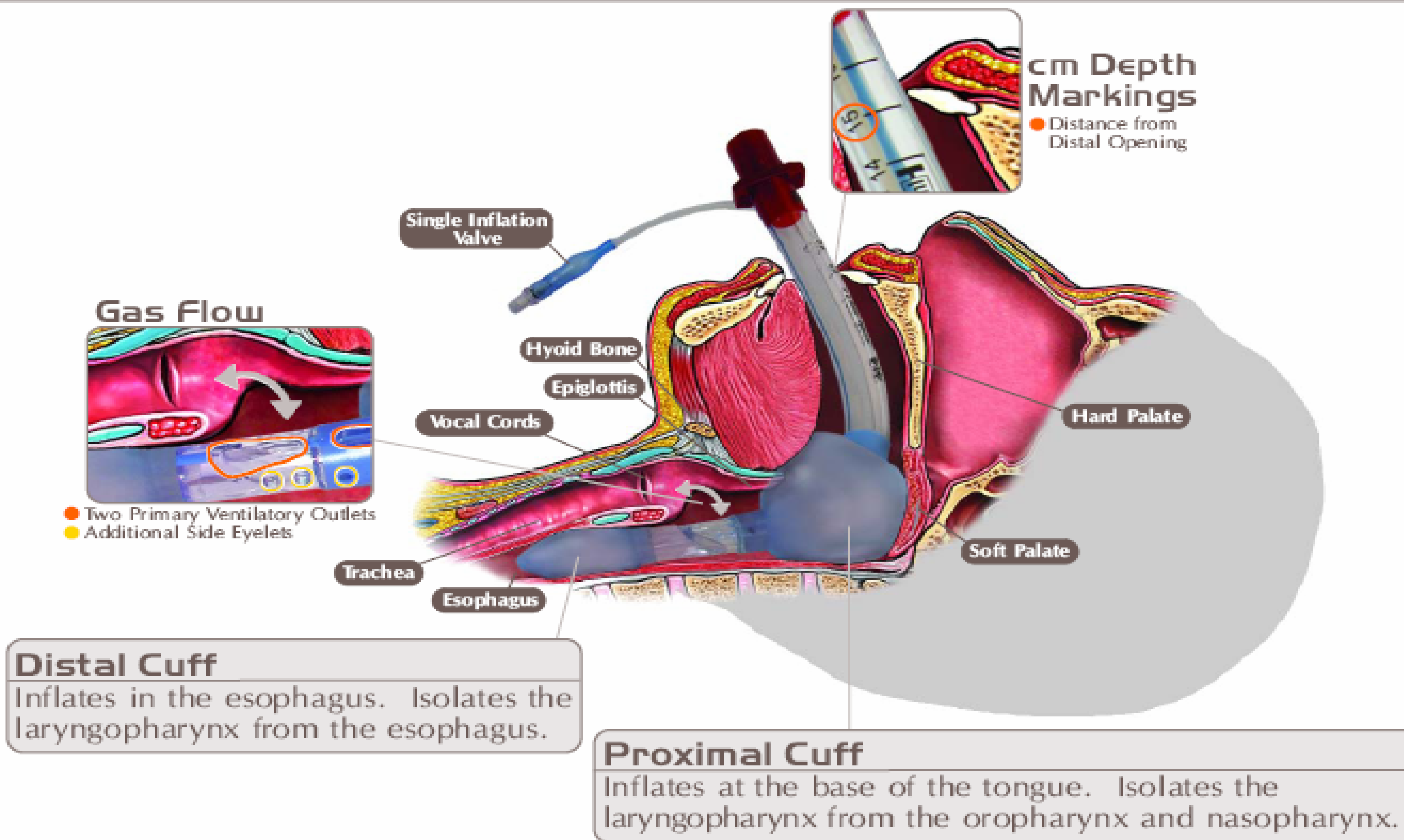
What's New in Local EMS – KING LT

- A "supra-glottic" airway
- PCP medics
  - VSA patients
- ACP Medics
  - Rescue airway OR
  - Arriving on scene and already inserted by PCP

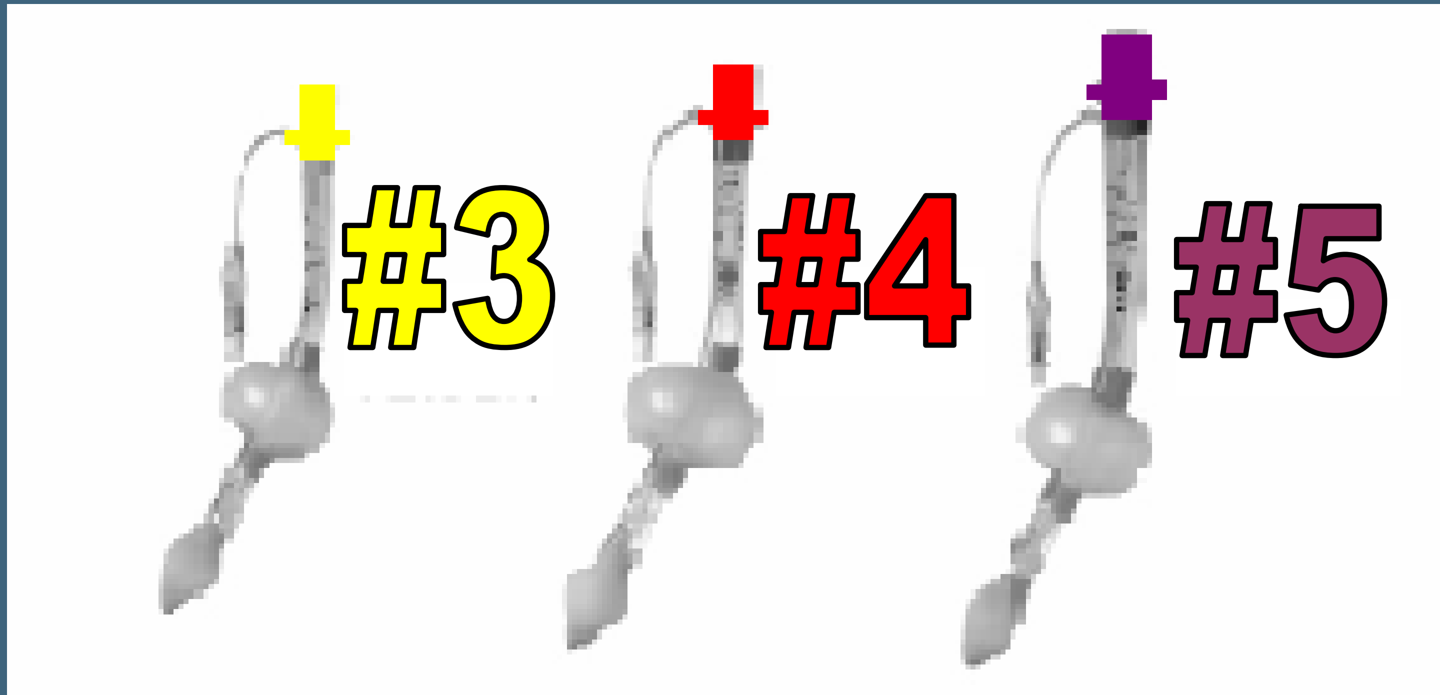
King LT – Anatomy



King LT In Situ



King LT Sizing



Height 4-5 feet	Height 5-6 feet	Height >6 feet
14 mm OD	14 mm OD	14 mm OD
10 mm ID	10 mm ID	10 mm ID
Cuff Vol.- 45-60 ml	Cuff Vol.- 60-80 ml	Cuff Vol.- 70-90 ml

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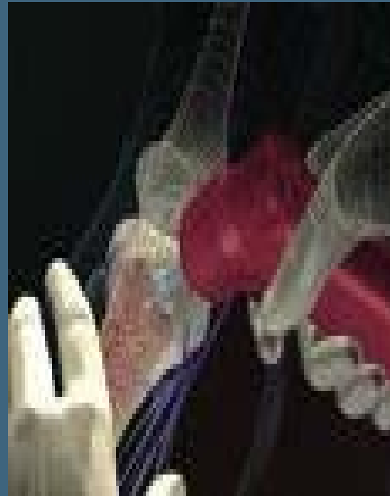
KING LT Insertion

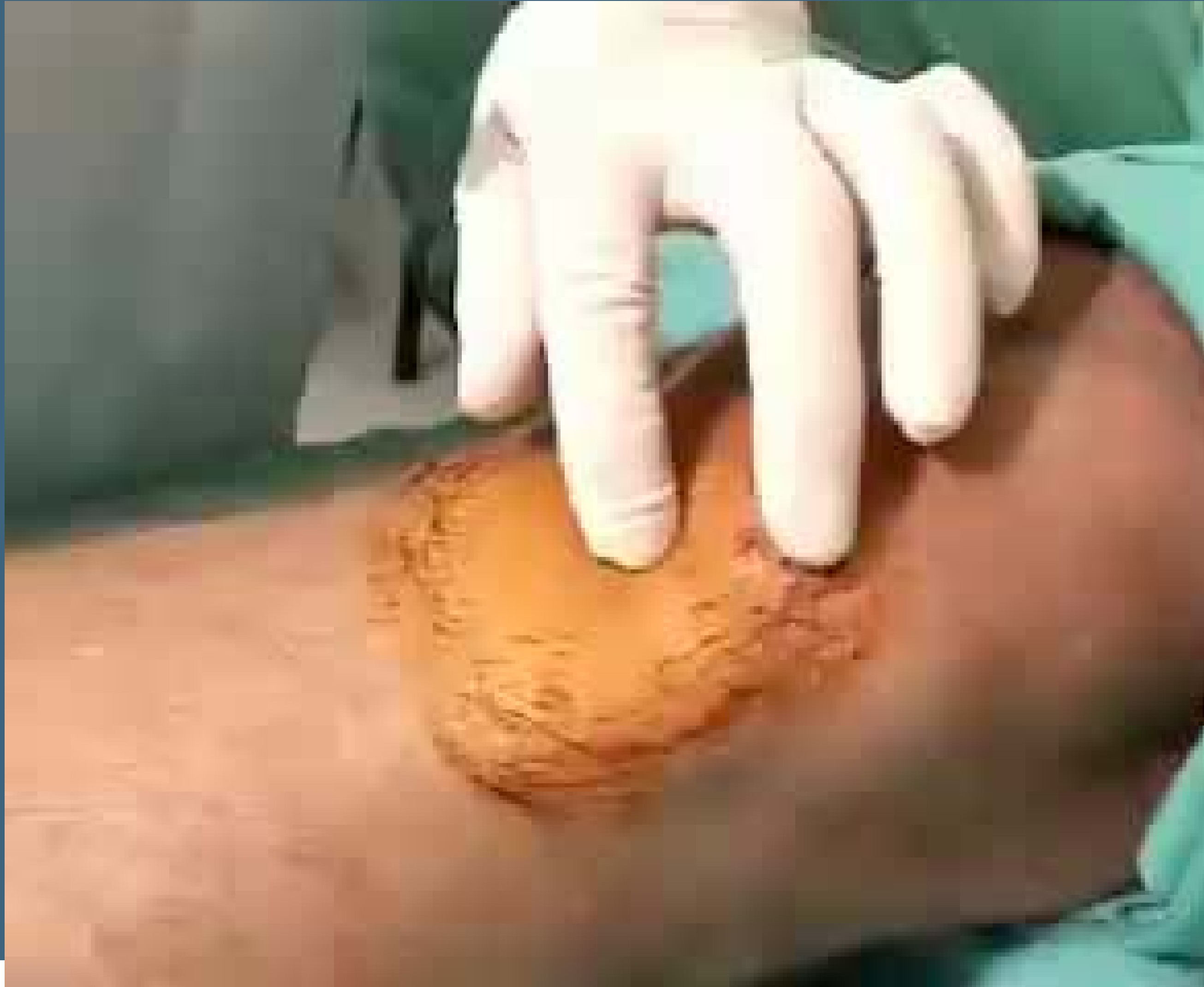
New Equipment – Adult IO



- Adults - 2 Peripheral IV attempts then to IO
-Pediatrics - VSA

- May use for 24 hours after insertion
- Easier to Remove with insertion "cap"

Easy IO insertion Video



New Horizons.....

- STEMI Redirect
  - Multiple issues – transmit, no transmit
  - ER overcrowding
  - After hours cath lab
  - ER MD work load
  - Over triage and under triage
  - Collaborative approach ER/ EMS/ Cardiology
  - The time has come.....

New Horizons....

- CPAP
  - Controversial
  - In multiple sites already
  - Compelling small trials
  - Not soon to local areas
    - Lambton and Grey closest

New Horizons….

- Research
  - At the local level
    - Recently discharged patients who undergo out of hospital cardiac arrest
    - Use of the Auto Pulse Automated CPR device
    - STEMI Times and QA
  - Huge potential for more projects with QA slant
    - Ex. Agreement of CTAS scoring

Other organizations and resources

- ROC
  - Resuscitation Outcomes Consortium (ROC)
  - Crystallized out of OPALS
    - Ontario Pre-hospital ALS
  - Dr Dreyer chief investigator locally
  - Multiple current projects
    - ITD
    - Hypertonic Saline
    - Quality of CPR
    - Analyze Early vs Late

Other organizations and resources

- AMEMSO
  - Association of Municipal EMS Operators
  - Strong voice at the MAC
  - Provides balance between what is best evidence practice and implications for operations
- NAEMSP
  - National Association of EMS Physicians
  - US based organization with excellent on line resource for position papers, research, courses, publishes *Prehospital Emergency Care*
  - Large EMS conference annually attended by most.

Other organizations and resources

- CACC
  - Central Ambulance Communication Center
  - "Dispatch"
  - Operated by the MOH-EHS
  - Uses DPCI II
    - Dispatch Priority Card Index system
  - MOH proprietary software
    - Controversial since most (including Toronto) use MPDS for which there is some evidence…
      - *Medical Priority Dispatch System*

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Other organizations and resources

- OBHAG
  - Ontario Base Hospital Advisory Committee
  - Formed of the Base Hospital Program Directors
  - Similar to the medical side MAC yet deals with policy and negotiates with MOH and MAC with an administrative view point
- NREMT
  - National Registry of EMT
    - US based private company that has created adaptive testing
    - Many/most paramedics are evaluated by this in the US in an ongoing basis to maintain certification
    - May be brought to Ontario as part of competency/recert assessment/ return to practice evaluations

Opportunities for involvement..

- Base Hospital Rounds
- Ride outs
- Research
- Teaching
  - Recertification Day
  - Observerships
  - Case by case

Discussion?