

**PROVINCIAL MEDICAL DIRECTOR'S
MEDICAL OVERSIGHT QUARTERLY UPDATE
JULY 2006**

1.0 REVISED POLICIES, PROTOCOLS, PROCEDURES AND MEDICATIONS

- 1.1 The following have been revised. Please update your manuals (copies attached).
- 1.1.1
 - ▶ Policy 6154.02: Developing Protocol Proposal
 - ▶ Policy 6174.00: PCPs and ICPs Administering “ACP” Medications
 - ▶ Procedure 6647.02: 12 Lead ECGs - Acquisition - Transmission
 - ▶ Medication 6933.03: Furosemide (Lasix)
 - ▶ Medication 6948.04: Lidocaine (Xylocaine)
 - ▶ Medication 6957.03: Morphine
 - ▶ Medication 6963.03: Nitroglycerin (N/G)
 - ▶ Revised Table of Contents
 - 1.1.2 The “Revisions” section at the end of each Policy/Procedure/Medication provides you with a detailed explanation of changes.

2.0 GENERAL INFORMATION

2.1 Thank You.

- 2.1.1 It has been an honor and a privilege to serve as the EHS Provincial Medical Director for the past 11 years. I want to thank all of you for your patience and help in developing one of the top EMS services anywhere. I would especially like to thank the Medical Oversight Physicians and the Quality Control Medics for their support and trust as we all learned and developed together - and continue to do so. I owe a great deal to a great many. I hope you realize how much I have valued your guidance and support over the years. Thank you very much.

2.2 Cardiac Arrest Protocols

I realize things are confusing at this time because the new protocols have not been programmed into the new defibrillators - hopefully this will be done soon. Even more importantly, I hope this contributes to an increased number of lives saved. The emphasis is now on good chest compressions with minimal interruptions. I would ask that you pay attention to the quality of chest compressions being done by bystanders or MFRs on your arrival and throughout the resuscitation. Remember if there have been no chest compressions and the time from dispatch to your arrival is greater than four (4) minutes, perform CPR for five (5) cycles (two [2] minutes) before delivering the first shock. There is no immediate need to intubate, nor insert an IV, as neither has been shown to improve survival.

2.3 Role of QCMs

I recently saw a discussion of this on the Pulse. It was generated because of feedback regarding the choice of which Medic should attend a patient during transport. The decision as to who attends and who drives must be made by both paramedics with the severity and care of the patient the crucial factors in the decision making. Often times this decision would not be the same had the outcome of the patient been known. Hindsight usually provides 20:20 vision. The QCM, who is reading a PCR and noting only what has been written, may feel a different decision should have been made. Feedback to you should be to clarify what factors were evaluated in making the decision as to who would attend. If there is a difference of opinion then it may be necessary to have a meeting with the medical oversight physician and supervisor to come to a resolution and help form policies/ best practices. The way in which feedback is given is often more important than the content of the feedback. The purpose of PCR audits is twofold: (1) to collect data on performance indicators and; (2) to provide constructive feedback to you.

2.4 Airway Protocols

Dr. Petrie and I are in the process of revising the airway protocols given the number of papers recently published on the negative effects of endotracheal intubation, especially on the outcomes of Pediatric and head injured patients. These will emphasize airway management, not just endotracheal intubation and will encourage critical thinking based on several criteria outlined in the protocols. It would appear that the emphasis has been on attaining an ETT even at the expense of hypoxia, and not the avoidance of hypoxia and hyper and hypocarbia. I will also attempt to involve the schools on this approach as well as try to establish an AIME for EMS Course that would be mobile. To complete the change in emphasis I have asked that continuous monitoring and recording of the oxygen saturation on the LP XII be enabled and that EHS look to budget for capnography next fiscal year.

An ongoing concern of all EMS systems is the lack of exposure to pediatric patients and in particular patients under the age of 3 yrs. Surprisingly our intubation success is very good but again this does not equate with good airway management of outcome. There are approximately 350 – 400 medics who intubate in our system. Intubation was attempted on 80 pediatric patients in the last 2.5 years (32 per year). This means that each of the above paramedics might get the chance to intubate a pediatric patient once every 10.9 – 12 years. This emphasizes the need to have annual (at least) airway refresher sessions, despite our high success rate, or rethink our airway management in non arrested peds patients given the recent literature.

The CPAP Study that just ended in Central appears to show a marked benefit in terms of avoidance of ETI. If the recent claims of salespeople that CPAP can now be delivered using 15 lpm of oxygen then I will ask my successor to look at adding CPAP to our list of Airway Adjuncts.

I am yet to be convinced of the need for either the LMA or the Combitube as it appears that our most frequent cause of missed intubation is a clenching patient. However we are re-looking at sedation facilitated intubation and a rescue airway's role.

I'm also attempting to unify the present for transfer protocols into one.

2.5 Cardiac Arrest Report

This was released a few months ago and I have not received any feedback? Unfortunately 2005 had the lowest Cardiac Arrest survival rate of the past eight years. Breaking the data down revealed a much lower than expected survival rate of patients with a call response interval of < four minutes. I am looking at this group now. Many were unwitnessed and therefore their downtime until defib arrival is unknown rather than < 4 mins. On the positive side, bystander CPR was up to 46% which is as good as anywhere in Canada and ranks up there with the best in the USA.

2.6 QA 2005 Annual Report

The QA Report has just been released and again shows excellent compliance with protocols and procedural skills. One of the reasons to change the CQI program is that we have measured the same things for the past 8 years and each year there is excellent documentation, assessment, protocol compliance, etc. as a result it makes no sense to continue to monitor these as long as there is no major changes to our system (we have reached a steady state). I believe we should change to occasional, random evaluation of documentation, assessment, protocol compliance and scene time as well as monitoring these processes for the 1st 2 – 3 months for “new hires”.

2.7 Quality Assurance 2nd Quarter 2006 Report

Attached.

2.8 CQI

As you may be aware, we are changing from a system that looked at paramedic performances to a system that will look at tracer conditions and their key indicators. On Oct 1st the responsibility for auditing will transition to EMC with EHS performing random audits and concentrating on outcomes. We are hoping to expand our outcome indicators from cardiac arrest to include major trauma and STEMI patient outcomes. The former will be done by partnering with the provincial trauma program and the latter will be accomplished by partnering with the safer health-care now project. The QCM's role will change from being one of purely review and evaluation to one that will include teaching and facilitation. The standardization of megacodes and M&Ms will also be attempted.

2.9 Medications

Attached you'll find 2 tables of the top three medications for the past six years for which there was a concern about the dosage or a concern that they were "given when not indicated". Under dosage concerns Bicarb and Lidocaine are consistently seen while under "given when not indicated", Narcan use is again a concern.

Another concern is the use of Versed to sedate head injured patients –to help control them as opposed to using it to assist in obtaining an AW. Versed was meant to be used for psychiatric unsafe and uncontrollable patients. The main concern in using it for head injured patients is its potential to cause hypotension – something that is deadly in head injured patients.

I see Thiamine has surfaced on the Pulse. Wernicke's encephalopathy can be triggered by giving a patient Glucose as this drives the Krebs cycle - the cycle where ATP (energy) for cells is produced. Driving the cycle faster speeds up the use of the very small amount of Thiamine (a cofactor used by the Kreb's cycle) that malnourished patients have left - grinding the cycle (and the production of energy in cells) to a halt. There have been no cases of Wernicke's reported to me in 11 years. That does not mean there haven't been any as this condition is not often recognized. Thiamine is traditionally given IM as there is a very small chance of profound hypotension and arrhythmias if given IV – this appears to be more related to the speed at which the Thiamine is given. It would make sense – at least theoretically – to add Thiamine to the ICP essential competencies and when IVs are added to the PCP competencies to add IV D50 and Thiamine IM.

There was an article in Prehospital Emergency Care 2006 Apr - June.10(2) p194-7 on the appropriate pre hospital use of Lasix. Furosemide was considered appropriate in 58%, inappropriate in 42% and potentially harmful in 17%. In 1998 David Petrie and a medical student looked at the accuracy of the diagnosis of CHF in the field. Six (6)

of twenty-five (25) patients in CHF were correctly identified. However only nine (9) of 178 patients were misdiagnosed as being in failure. The findings in both these studies beg for a well controlled, prospective study to determine our accuracy in diagnosing CHF and the additive effect of Lasix to nitroglycerin in these patients.

2.10 Twelve Leads

Hopefully, you are all getting a chance to run 12 leads and soon we should have the capability of transmitting the ECG to a receiving hospital. It is hoped that these two measures will markedly decrease the door to needle [drug] time. If all goes well, and we get buy in from the DHA's and the Emergency Docs as well as support from the Department of Health, we hope to be able to start giving pre hospital TNK in Central and Industrial Cape Breton in the fall and the rest of the province sometime in the new year.

2.11 Mental-Health Mobile Crisis Team

This service has just started in parts of the Central region. I have not received any reports as to its activity or impact on EHS. I am interested in hearing about any encounters paramedics or the dispatchers have had with this team.

2.12 College of Paramedics of Nova Scotia

A group of paramedics and EHS personnel are developing the regulations for the College. I am hoping to be part of a group that will travel around the province to explain the role of the College and its function. Please watch for the College's web site (www.cpns.ca) opening soon.

2.13 Turnaround Times

Unfortunately these appear to be getting worse at the QEII and the DGH. This despite presentations to the Minister and Deputy Minister of Health, the Senior Leadership Team at Health, the CEO of DHA 9 and several divisions within Health – Acute and Tertiary Care and Long Term Care. To summarize this is a DHA/Health (as in Department of) problem – it cannot be solved at our level nor the Emergency Department. The Department of Health needs to open more long term care beds to free up acute care beds that are now occupied by alternative level of care patients. The DHA needs to improve the admission of patients from Emergency as there are numerous anecdotal stories of wards with empty or potentially empty beds not taking patients in a timely manner from Emerg.

2.14 Adverse Events Policy

Tom Dobson and I have been working on this. As the result of several major studies on mistakes in the Health Care Industry, all DHAs and EHS/EMC were asked to develop a policy that would guide the process of disclosing adverse events to patients

and their families, detailing when, who and what would be disclosed.

2.15 Tissue Donation

This cutting edge (for an EMS System) program is steadily moving along. Without benchmarks it is difficult to know just how we are doing. There is no doubt that asking the next of kin about whether they ever discussed tissue donation immediately after pronouncement is extremely tough. However it is very important to the patients on the waiting lists. Please try to remember to ask.

2.16 Things not accomplished - Unfortunately this list is quite long so I will only mention the major ones I can think of and let you add your own.

- 2.16.1 Establishment of paramedic education in a College or University where credits earned could be used towards a bachelor degree: not only might this allow for multi-professional education but also, if a paramedic chose to do so, he or she could transfer from the paramedic program into another program and use the credits earned in paramedic course towards a degree. They could also practice as a paramedic for several years and then choose to return to University to complete a degree program using the credits earned in the paramedic program. Australia amongst other countries has instituted a Paramedic degree program.
- 2.16.2 Multi-Site M&Ms: this would involve one base and the medical oversight physician in that area hosting a session that would be broadcast to other sites using videoconferencing which is available in every hospital in NS. This would allow real time interaction.
- 2.16.3 The Long and Brier project: after a lengthy maturation this appeared to be working. Residents of the two (2) islands appear to have embraced the team of 2 Paramedics and a Nurse Practitioner with a collaborating physician. However, there has been no expansion to other areas of Nova Scotia despite the large interest in the project internationally. I am at a loss to know why as this model makes a great deal of sense both from a service delivery and economic sense.
- 2.16.4 I would liked to have seen more integration with other healthcare organizations and departments such as public health, homecare, palliative care and acute and tertiary care.
- 2.16.5 The standardization of megacodes: Major concerns and patterns could be incorporated into the annual education curriculum for the following years.
- 2.16.6 Turn around Times – see 2.13.

3.0 FAQs (Most of these I get from the Pulse or direct email)

- 3.1 IVs for PCP's: I have discussed this on several occasions. Though I have yet to receive evidence that these will improve patient outcomes, I have put this on the agenda of the group that looks at how the 20 hrs/FTE is allocated. It will not be given this year and perhaps not next year as well because ePCR training will consume a great deal of those hours.
- 3.2 I will encourage my successor, to look at adding a second narcotic, perhaps Fentanyl, which can be given intranasally as well as IV.
- 3.3 As long as the budget will allow it, I am proposing that EHS look to buy capnography this year or next. Capnography is the monitoring of CO₂ levels in expired air by continuous waveform in both intubated and non-intubated patients. It will be of great value in monitoring assisted ventilations as well as detecting dislodgement of the endotracheal tube during transport.
- 3.4 Budget permitting I am hoping to add a straight blade to the AW kit in this or next fiscal year.
- 3.5 Transfers: There continues to be confusion as to what level of paramedic can transfer which patient. A general rule to follow is if you do not know the medication or equipment that may be required for the patient, you shouldn't be doing the transfer. I am attempting to unify our different transfer polices into one. As well I am hoping EHS can work with the DHAs to have anyone requesting a transfer to call the Comm Center and state they have a transfer. The call taker will suggest a crew level based on the patient's condition, anticipated medications and equipment needs and urgency of the transfer. We will work with Lifelight to identify triggers that would direct the call taker to have the caller talk with the AMT On Line Physician regarding air transport.
- 3.6 Accidental arterial line: Hopefully this will never happen to you (as it did to me on my first patient on my first shift (nights) at the VG ED many years ago). The senior surgical resident asked if I would start an Internal jugular on a shocky patient secondary to a GI bleed. In I go and presto blood return and I think this isn't so hard! Then as I watched bright red blood pump its way up the IV tubing I turned to one of the veteran nurses and confirmed this was not supposed to happen. As with all accidental art lines, pull the "IV" and use local pressure for at least 5 minutes.
- 3.7 Continuous Bladder Irrigation (CBI): I have included this as a patient that any level of medic can transfer. You need to establish with the sending Physician or Nurses just what they want you to do if the patient complains of pain and/or the catheter stops draining. As we are not adding this to the essential competencies, the actions should be one of stop the inflow, either stop at the nearest hospital or provide pain management and observe.

- 3.8 Transfers with drugs you know little about. There will always be new drugs that you may never have heard of until asked to transfer a patient with it. Ask the nurse or physician about it and what might be some of the reactions/side effects you might see and what they want you to do. If you are unable to manage the more frequent side effects or reactions or comply with the physician's orders then contact your supervisor and, if necessary the OLMOP. All the Essential competencies are on the EHS website. For emergency calls (non transfers) you must follow your essential competencies and our protocols. For transfers you must follow your essential competencies but you can either follow our protocols or receive orders from the sending physician (remember they will be held liable/responsible for the patient's health as well as ourselves and therefore need input on the management of the patient during the transport).

4.0 RESEARCH

I'll keep this short as we now have a research division [formerly ERCEC) who are sending out more detailed reports monthly.

4.1 C-Spine Study

- 4.1.1 This study will continue until September 30th in several areas. We have been able to enroll over 200 patients and nationally almost 4000 patients. Originally it was hoped that nationally 8000 patients would be enrolled. We will have to wait and see if they can draw any firm conclusions from the study

Sincerely,

Ed Cain, MD

Provincial Medical Director

Provincial Medication Usage - Trending

Top 3 Problems Each Year- Doseage

	2000	2001	2002	2003	2004	2005
Lidocaine	6%	3%		3%		5%
Narcan	4%				11%	8%
Bicarb	3%	5%	7%	3%	7%	
D50		3%				
Adenosine			4%			
Versed			3%			
Gravol				3%	5%	
Mg Sulphate						67%

Top 3 Problems Each Year - Not Indicated but Given

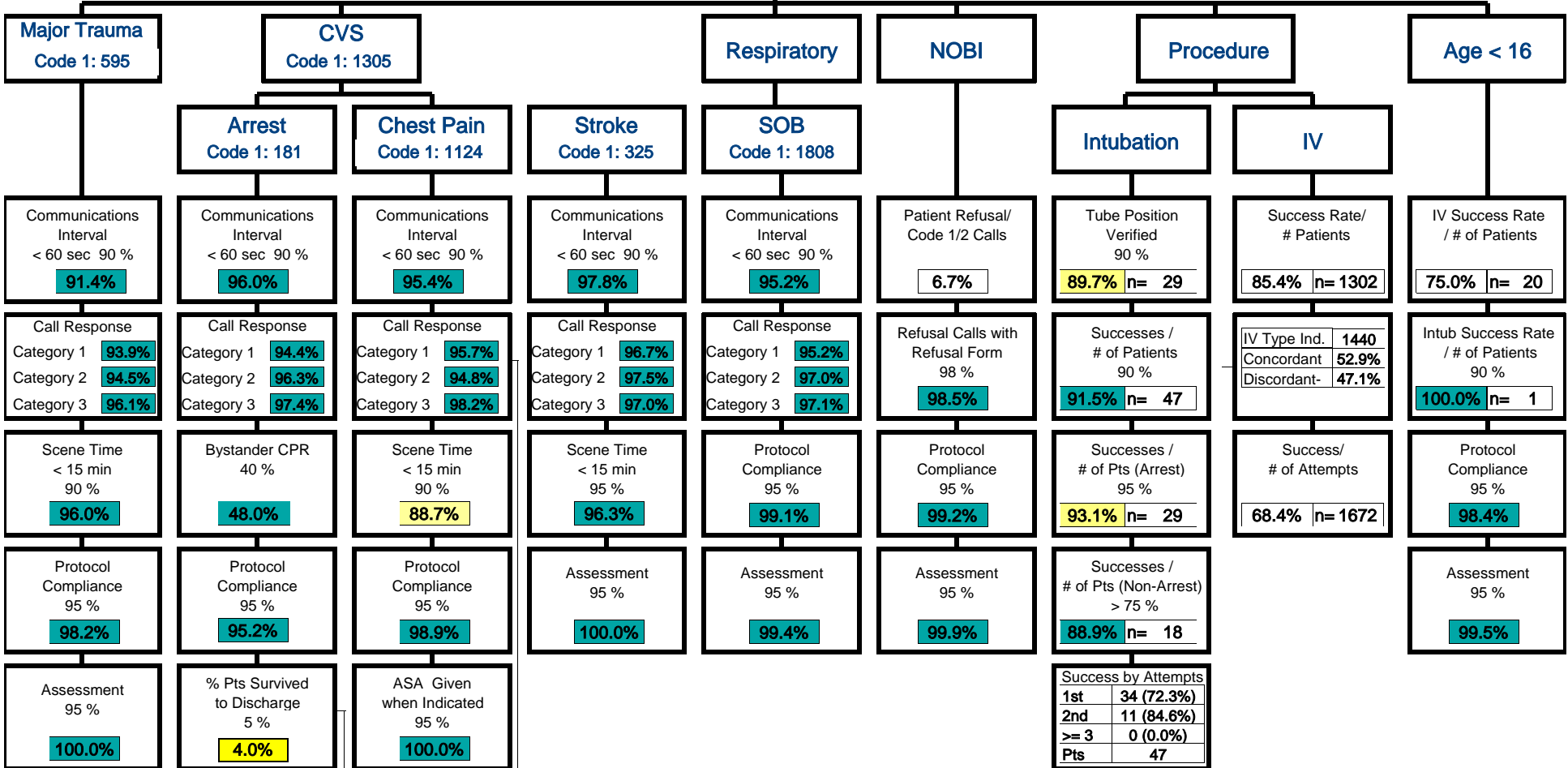
	2000	2001	2002	2003	2004	2005
Narcan	3%	9%	13%	20%		8%
Epinephrine SQ	3%					
Nitroglycerin	1%					
Thiamine		33%			7%	
Lasix		25%				
Adenosine			16%	9%		8%
Haldol			9%	8%		
Bicarb					14%	15%
Versed					5%	

Period 2nd Quarter 2006
 Provincial
 Total Calls: Code 1: 10,484

Nova Scotia Emergency Health Services

Medical Quality Performance Measure Report

■	Achieved or above target
■	Within 10% of target
■	Below target by more than 10%
■	No data available



% Patients...
 * Arrest Confirmed
 * Resuscitation attempted
 * Etiology Confirmed

Call Response Interval (call recieved 'til unit arrive scene)
 Category 1 - Response interval <9 min. - 90 %
 Category 2 - Response interval <15 min. - 90 %
 Category 3 to 5 - Response interval <30 min. - 90 %

* (Concordant) - Actual method is the same as the indicated method.
 * (Discordant +) - Actual method is greater than the indicated method.
 * (Discordant -) - Actual method is less than the indicated method.

Program Document No.: 6154.02	Document Title: Developing Protocol Proposal	Type: Policy
Effective Date: February 1, 2001	Revision Date 01: July 10, 2003	
Approval Date: January 15, 2001	Revision Date 02: May 1, 2006	
Review Date: November	Revision Date 03:	
Replaces: 6154.01	Revision Date 04:	
Signature of Program Director:		Signature of Program Document Coordinator:

1.0 Purpose

- 1.1 To provide a specific mechanism for paramedics to propose new or revised protocols, drugs and/or interventions.

2.0 Guiding Philosophy

- 2.1 Emergency Medical Services (EMS) systems should adopt pre-hospital devices, medications and procedures only after unbiased research has demonstrated their pre-hospital benefit, safety and cost effectiveness.

3.0 Definitions

- 3.1 **Medline Search:** a computerized literature search of the National Library of Medicine in Bethesda, Maryland. This library consists of several million citations from over three thousand (3,000) journals since 1966.

4.0 Policy

- 4.1 Identify the medication/intervention/protocol.
- 4.2 Provide examples of where the proposed medication/intervention may have been helpful to the patients that you have cared for in the previous year. It would also be advantageous to include a letter of support for the proposed medication/intervention from the physician who attended the patient in the health care facility.
- 4.3 Include the results of a Medline literature search. To obtain a Medline search, use the Internet to access www.ncbi.nlm.nih.gov/PubMed/ Follow the instructions on the page.
 - 4.3.1 **Title to be searched** - This should be done by using key words such as EMS, EHS, pre-hospital, ambulance, paramedic and the name of the drug (use only generic names, **not** trade names) or the type of intervention to be searched.
 - 4.3.2 What language you wish the search to be done in (usually English).
 - 4.3.3 **The years you want searched** - This can go as far back as 1966, although a search going back to ten years is usually reasonable as information previous to this is usually outdated.

PDN: 6154.02	Subject: Developing Protocol Proposal		
Effective Date: February 1, 2001	Replaces: 6154.01	Revised: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (please check)	

- 4.2 Any supporting information from standard pre-hospital and medical textbooks, especially those in the field of emergency medicine, will also be useful. Hospital pharmacies will also provide useful information regarding medications.
- 4.3 Include a draft protocol as it would appear in the Policies & Procedures Manual.
- 4.4 It is essential that any proposal contain not only the possible benefits but the possible risks in order to provide a balanced view of the medication/intervention.
- 4.5 Proposals should be sent to:
- 4.5.1 Provincial Medical Director
Emergency Health Services Nova Scotia
Suite 200, 239 Brownlow Avenue
Dartmouth, NS B3B 2B2
- 4.6 The proposal will be discussed by the Registration Committee and the Medical Oversight Physicians (MOP) of EHS. If approved, the proposal will be forwarded to the College of Physicians and Surgeons of Nova Scotia for approval. You will be informed by the Provincial Medical Director (PMD) of EHS as to whether the proposal was accepted or rejected.
- 4.7 The evidence (references and supporting information) will be evaluated along with the present evidence in our Protocol Database by the editor for that section. If a change to the protocol is recommended, this will be sent in draft to the Medical Oversight Physicians (MOP)s, Quality Control Medics (QCM)s, Quality and Learning Department (Q&L) and, where necessary, to at least one (1) expert in the area of medicine concerned. Where it also involves a change to the Essential Competencies, the evidence will be tabled at a Registration Committee meeting.
- 4.8 Any change requiring education or training will be prioritized against other education requirements. Any change requiring funding will be prioritized against other endeavors.

5.0 Appendices

None

6.0 Reports

- 6.1 Quality Assurance Reports

7.0 References

- 7.1 Protocol 6400: Research Within EHS
- 7.2 Protocol 6401: PICO Generation
- 7.3 Protocol 6402: Evidence Review
- 7.4 Protocol 6403: Finer Review

PDN: 6154.02	Subject: Developing Protocol Proposal	
Effective Date: February 1, 2001	Replaces: 6154.01	Revised: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (please check)

8.0 Outcome Measurement

None

9.0 Revisions

9.1 Revision Number: 02

9.2 Sections and sub-sections that have been changed:

- 4.5.1 - *Current Address Added*
- 4.7 - *Added*
- 4.8 - *Added*
- 6.1 - *Added*
- 7.1 - *Added*
- 7.2 - *Added*
- 7.3 - *Added*
- 7.4 - *Added*

Program Document No.: 6174.00	Document Title: Primary Care Paramedics (PCP) and Intermediate Care Paramedics (ICP) Administering “Advanced Care Paramedic (ACP)” Medications	Type: Policy
Effective Date: July 25, 2006	Revision Date 01:	
Approval Date: July 25, 2006	Revision Date 02:	
Review Date: November	Revision Date 03:	
Replaces:	Revision Date 04:	
Signature of Program Director:	Signature of Program Document Coordinator:	

1.0 Purpose

- 1.1 To detail the circumstances and procedures allowing PCPs and ICPs to draw up and administer medication in the ACPs’ scope of practice.

2.0 Guiding Philosophy

- 2.1 To ensure timely and appropriate management of critically ill patients.

3.0 Definitions

- 3.1 **ACP Medications:** Drugs that are not in the essential competencies of a PCP or ICP.

4.0 Policy

- 4.1 ACP/CCP must be attending to the same patient as the PCP/ICP but be unavailable to administer medication indicated by protocol because s(he) is managing a higher priority concern.
- 4.2 ACP/CCP will decide if and when to enact this policy.
- 4.3 ACP/CCP may refuse to have ICP/PCP draw up or administer the medication.
- 4.4 PCP/ICP may decline to draw up or administer the medication.
- 4.5 ACP/CCP must be able to clearly see and hear the PCP/ICP.
- 4.6 Right Drug:
 - 4.6.1 ACP/CCP asks ICP/PCP for a specific drug;
 - 4.6.2 PCP/ICP confirms the name of the drug and obtains it;
 - 4.6.3 PCP/ICP confirms name of drug and shows label to ACP/CCP;
 - 4.6.4 ACP/CCP confirms correct drug.

PDN: 6174.00	Subject: Primary Care Paramedics (PCP) and Intermediate Care Paramedics (ICP) Administering “Advanced Care Paramedic (ACP)” Medications	
Effective Date: July 25, 2006	Replaces:	Revised: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (please check)

4.7 Right Dose:

- 4.7.1 ACP/CCP advises PCP/ICP as to the dose/amount to be drawn up/given;
- 4.7.2 ACP/CCP confirms dose/amount.
- 4.7.3 PCP/ICP shows syringe to ACP/CCP and confirms dose/amount.

4.8 Right Route:

- 4.8.1 ACP/CCP advises PCP/ICP of route and duration of injection;
- 4.8.2 PCP/ICP confirms route and duration of injection.

4.9 PCP/ICP documents time, amount and route on PCR:

- 4.9.1 PCP/ICP writes his/her registration number on PCR as giving the medication;
- 4.9.2 ACP/CCP initials beside PCP/ICP’s registration number on medication line of PCR.

4.10 All cases will be reviewed.

4.11 Concerns identified on review will be addressed with both paramedics.

5.0 Appendices

None

6.0 Reports

6.1 Annual - CQI Reports

7.0 References

None

8.0 Outcome Measurement

8.1 Annual report will look at the number and percentage of concerns regarding each medication administered.

9.0 Revisions

None

Program Document No.: 6647.02	Subject: 12 Lead ECGs - Acquisition - Transmission	Type: Procedure
Effective Date: December 3, 2003	Revision Date 01: May 12, 2006	
Approval Date: December 2, 2003	Revision Date 02: August 1, 2006	
Review Date: November	Revision Date 03:	
Replaces: 6647.01	Revision Date 04:	
Signature of Program Director:	Signature of Program Document Coordinator:	

1.0 Purpose

- 1.1 To detail the use of 12 Lead ECGs.

2.0 Guiding Philosophy

- 2.1 To decrease morbidity and mortality in patients with Acute Myocardial Infarctions (AMI).

3.0 Indications

- 3.1 Patients with suspected acute coronary syndrome.
- 3.2 Patients who are older than 65 years, are diabetics or women and who present with syncope, presyncope, SOB or weakness.

4.0 Contraindications

- 4.1 Patients < 16 years old.

5.0 Registration Level Required

- 5.1 PCP

6.0 Equipment

- 6.1 Cardiac monitor capable of recording and transmitting a 12 Lead ECG.
- 6.2 12 Lead monitoring electrodes.
- 6.3 10 non-sterile 4 x 4 gauze.
- 6.4 Razor.
- 6.5 Alcohol preps.
- 6.6 Charged cell phone & data-connection cable.

PDN: 6647.02	Subject: 12 Lead ECGs - Acquisition	
Effective Date: August 1, 2006	Replaces: 6647.01	Revised: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (Please Check)

7.0 Technique

- 7.1 Prepare skin (shave excessive hair at electrode contact sites and clean and roughen skin with towel. If diaphoretic can wipe site with alcohol preps).
- 7.2 Insert the precordial lead attachment into the main cable.
- 7.3 Attach main cable to monitor.
- 7.4 Attach limb lead electrodes as follows (order is not important):
 - 7.4.1 Connect the right arm (white) electrode to the anterior surface of the right forearm.
 - 7.4.2 Connect the left arm (black) electrode to the anterior surface of the left forearm.
 - 7.4.3 Connect the left leg (red) electrode to the anteromedial tibial surface of the left leg.
 - 7.4.4 Connect the right leg (green) electrode to the anteromedial tibial surface of the right leg.
- 7.5 Attach the precordial lead electrodes as follows:
 - 7.5.1 V1: Fourth intercostal space to the right of the sternum.
 - 7.5.2 V2: Fourth intercostal space to the left of the sternum.
 - 7.5.3 V3: Directly between leads V2 and V4.
 - 7.5.4 V4: Fifth intercostal space at left midclavicular line.
 - 7.5.5 V5: Level with lead V4 at left anterior axillary line.
 - 7.5.6 V6: Level with lead V5 at left midaxillary line.
- 7.6 Select "OPTIONS" to enter patient's name on the 12 Lead records. If name is unknown, enter ambulance unit number. (Repeat 12-Leads will automatically re-print the name/number).
- 7.7 Ensure the patient remains still and any external sources of artifact (ie: large appliances or vehicles) are eliminated.
- 7.8 Press **12 LEAD** and use the selector to enter the patient's age in years.
- 7.9 T - P Intervals should ideally be flat (ie: STEMI measurements in mm). If the monitor detects signal noise (such as patient motion, loose or disconnected electrode), the 12-Lead is interrupted until noise is removed. Take action to eliminate the source of noise or press **12 LEAD** again to override. If override is used to acquire a 12-Lead, the monitor will not attempt interpretation.

PDN: 6647.02	Subject: 12 Lead ECGs - Acquisition	
Effective Date: August 1, 2006	Replaces: 6647.01	Revised: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (Please Check)

- 7.10 After two (2) attempts, if unable to obtain or transmit the ECG, transport patient.
- 7.11 Leave the precordial electrodes in place until care is transferred in receiving hospital.
- 7.11.1 Electrodes must be removed to allow the placement and use of Quick-Combo pads.
- 7.12 Paper copies of first and subsequent 12 Leads taken in the field can be retrieved from “Archives”, for the hospital or PCR records.
- 7.13 Transmission (**NOTE: STEMI ECGs Only**):
- 7.13.1 Ensure a LP12 data cable - cell phone connection & turn phone on.
- 7.14 Push “Transmit” button on front panel.
- 7.15 Select “Data”.
- 7.16 Select “Site”.
- 7.17 Select “Prefix” 1 for the long distance prompt (outside HRM).
- 7.18 Select “Send” to transmit. Screen depicts data ‘Connecting’ with Lifenet server. ‘Transmission complete’ signals and printout follows.
- 7.19 Cellular reception absent or weak at scene:
- 7.19.1 Keep Lifepak and phone on (can disconnect leads from patient). Transport patient. Enroute, select “Send” to re-transmit in a cellular-reception area.

8.0 Complications

- 8.1 Improper lead placement may render tracing un-usable.
- 8.2 Incorrect treatment based on an incorrectly interpreted 12 Lead.

9.0 Revisions

- 9.1 Revision Number: 02
- 9.2 Sections and sub-sections that have been changed:
- 3.2 **Revamped**
 - 6.3 **#10** non-sterile 4 x 4 gauze.
 - 7.10 ...obtain or ~~transport~~ **transmit** the ECG, transport ...
 - 7.13 Transmission (**NOTE: STEMI ECGs Only**):
 - 7.19 Cellular reception absent or weak **at scene**:
 - 7.19.1 Keep Lifepak and phone on (can disconnect leads from patient). ~~It will automatically re-transmit until reception is found.~~ **Transport patient. Enroute, select “Send” to re-transmit in a cellular-reception area.**

Medication: Furosemide (Lasix)	PDN: 6933.03	Last Updated: July 25, 2006	PMD:	PDC:	Page 1 of 2
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FUROSEMIDE (LASIX)

1.0 Definitions

None

2.0 Classification

2.1 Sulfonamide Diuretic

3.0 Mechanism of Action

3.1 Diuresis.

3.2 Vasodilation.

4.0 Indications

4.1 CHF/Pulmonary Edema (as a “second line” drug after nitrates).

5.0 Contraindications

5.1 Pregnancy.

5.2 Allergy.

5.3 Hypovolemia or hypotension (SBP < 100mm/Hg)

5.4 Patient not on a diuretic.

6.0 Dosage

6.1 Patient must already be on a diuretic.

6.2 Pediatric:

6.2.1 1 mg/kg.

6.3 Adult:

6.3.1 IV:

6.3.1.1 40 mg if patient on diuretic other than Furosemide.

6.3.1.2 # of mg = double the patient’s oral dose of Furosemide (to a maximum of 120 mg.).

Medication: Furosemide (Lasix)	PDN: 6933.03	Last Updated: July 25, 2006	PMD:	PDC:	Page 2 of 2
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7.0 Supplied

7.1 2 cc vials of 10 mg/cc.

8.0 May Be Given By

8.1 Advanced Care Paramedic (ACP).

8.2 Critical Care Paramedic (CCP).

9.0 Precautions

9.1 Increase mortality in patients with pneumonia.

9.2 As Furosemide is a sulfonamide diuretic, it should be used with caution in patients with known sulfonamide sensitivity.

10.0 Side Effects

10.1 CVS:

10.1.1 Hypotension.

11.0 Directive

None

12.0 Reports

12.1 Quarterly and Annual QA Report

13.0 References

None

14.0 Revisions

14.1 Revision Number: 03

14.2 Sections and sub-sections that have been changed:

- 5.3 - Hypovolemia or hypotension (SBP < 100mm/~~kg~~**Hg**)
- 9.2 - As Furosemide is a sulfonamide diuretic, it should be used with caution in patients with known sulfonamide sensitivity *but it is not contraindicated.*

Medication: Lidocaine (Xylocaïne)	PDN: 6948.04	Last Updated: July 25, 2006	PMD:	PDC:	Page 1 of 3
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LIDOCAINE (XYLOCAINE)

1.0 Definitions

None

2.0 Classification

2.1 Type I B Anti-arrhythmic.

3.0 Mechanism of Action

3.1 Suppresses ventricular arrhythmias.

3.2 May elevate the fibrillation threshold.

4.0 Indications

4.1 VF/VT Cardiac Arrest.

4.2 Post VF/VT Cardiac Arrest.

4.3 VT with pulse.

5.0 Contraindications

5.1 HR < 60.

5.2 2° or 3° heart block.

5.3 Idioventricular rhythm.

6.0 Dosage

6.1 **Adult:**

6.1.1 VF or pulseless VT:

6.1.1.1 IV 1.0mg/kg then 0.5mg/kg q 10 minutes if required* to a maximum total dose of 3mg/kg.

6.1.1.2 ETT: 2.0 mg/kg then 1.0mg/kg q 10 minutes if required* to a maximum total dose of 3mg/kg (flush with 5cc NS).

Medication: Lidocaine (Xylocaine)	PDN: 6948.04	Last Updated: July 25, 2006	Page 2 of 3
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6.1.2 VT with a pulse:

6.1.2.1 1.0mg/kg IV. Then 0.5mg/kg q 10 minutes if required* to a maximum total dose of 3mg/kg.

6.1.3 Post VF or VT (patient now has a perfusing rhythm):

6.1.3.1 Do not give unless runs of VT. Follow 6.1.2.1.

6.2 **Pediatrics:**

6.2.1 VF or pulseless VT:

6.2.1.1 IV 1.0mg/kg then 0.5mg/kg q 10 minutes if required*, to a maximum total dose of 3mg/kg.

6.2.1.2 ETT: 2.0 mg/kg then 1.0mg/kg q 10 minutes if required* to a maximum total dose of 3mg/kg (flush with 5cc NS).

6.2.2 VT with a pulse:

6.2.2.1 1.0mg/kg IV/IO then .5mg/kg q 10 minutes if required*, to a maximum total dose of 3mg/kg.

6.2.3 Post VF or VT (patient now has a perfusing rhythm):

6.2.3.1 Do not give unless runs of VT. Follow 6.2.2.1.

* If runs of VT.

7.0 Supplied

7.1 Pre-loaded 5cc syringes of 20mg/cc for a total of 100mg/syringe.

8.0 May Be Given By

8.1 Intermediate Care Paramedic (ICP) in the non-arrested patient **on order** from On Line Medical Oversight (OLMO).

8.2 Advanced Care Paramedic (ACP).

8.3 Critical Care Paramedic (CCP).

9.0 Precautions

9.1 Halve the loading dose (to 0.15mg/kg) and the subsequent doses (to .25mg/kg) in patients with:

9.1.1 CHF.

9.1.2 Liver failure.

9.1.3 Age > 70 yrs.

Medication: Lidocaine (Xylocaine)	PDN: 6948.04	Last Updated: July 25, 2006	Page 3 of 3
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9.1.4 Evidence of shock.

10.0 Side Effects

10.1 May cause agitated delirium and seizures if given to a toxic level.

11.0 Directive

None

12.0 Reports

12.1 Quarterly and Annual QA Report

13.0 References

13.1 Protocol 6220: Cardiac Arrest Overview

13.2 Protocol 6223: VF/Pulseless VT (shock advised)

14.0 Revisions

14.1 Revision Number: 04

14.2 Sections and sub-sections that have been changed:

- 7.2 - ~~Also pre-mixed IV bags of 2gm in 500cc for a concentration of 4mg/cc~~
- 9.1 - Halve the ~~post-arrest~~ loading dose (to ~~0.25~~ **0.15mg/kg**) **and the subsequent doses [to .25mg/kg]** in patients with:

Medication: Morphine	PDN: 6957.03	Last Updated: July 25, 2006	PMD:	PDC:	Page 1 of 3
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MORPHINE

1.0 Definitions

None

2.0 Classification

2.1 Narcotic (Opiate).

3.0 Mechanism of Actions

3.1 Analgesia.

3.2 Vasodilation.

3.3 Sedation.

3.4 IV:

3.4.1 Onset: Immediate.

3.4.2 Peak: 20 minutes.

3.4.3 Duration: 2 - 7 hours.

4.0 Indications

4.1 Pain

4.2 Pulmonary Edema.

5.0 Contraindications

5.1 Allergy.

5.2 BP <100 systolic.

5.3 Any decreased LOC.

5.4 HR < 60 if treating suspected ischemic chest pain..

6.0 Dosage

6.1 Adults:

6.1.1 2.5 - 5.0 mg IV q 10 minutes prn . ICPs may exceed a maximum of 10 mg with On Line Medical Oversight (OLMO) approval. ACPs/CCPs may exceed a maximum of 15mg with OLMO approval.

6.2 Pediatric:

6.2.1 .1 mg/kg at 1mg/min.

6.3 To give, draw up 1 cc in a 10 cc syringe and dilute with 9 cc of N/S for a concentration of 1 mg/cc. Label your syringe as soon as possible, eg. Morphine, 1 mg/cc.

6.4 If unable to establish an IV, Morphine may be given subcutaneously in same amounts buy undiluted.

7.0 Supplied

7.1 10 mg/1 cc vial.

8.0 May Be Given By

8.1 Intermediate Care Paramedic (ICP):

8.1.1 For MSK or flank pain.

8.1.2 Contact OLMO Physician if need to exceed a total dose of 10 mg.

8.1.3 For interfacility transfers, ICPs may give Morphine for any pain according to the orders of the sending physician. There is no need to contact OLMO Physician if dose exceeds 10mg.

8.2 Advanced Care Paramedic (ACP).

8.2.1 Contact OLMO Physician if need to exceed a total dose of 15mg.

8.3 Critical Care Paramedic (CCP).

8.3.1 Contact OLMO Physician if need to exceed a total dose of 15mg.

9.0 Precautions

None

10.0 Side Effects

10.1 CVS:

10.1.1 Decreased BP.

Medication: Morphine	PDN: 6957.03	Last Updated: July 25, 2006	Page 3 of 3
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10.2 CNS:

10.2.1 CNS depression.

10.2.2 Respiratory depression.

10.3 Other:

10.3.1 Suppress cough and corneal reflex.

10.3.2 Nausea, vomiting, urine retention.

10.3.3 Pupil constriction.

11.0 Directive

11.1 Each paramedic, at shift change, must sign off and on respectively, the number of vials of Morphine present. All medication must be accounted for.

11.2 Any discrepancy in the number of vials present and used must be reported to your immediate supervisor verbally and in writing within 24 hours.

12.0 Reports

12.1 Quarterly and Annual QA Report

13.0 References

13.1 Protocol 6215: Burns (fire/flame)

13.2 Protocol 6228: Chest Pain (NYD)

13.3 Protocol 6282: Pulmonary Edema (CHF)

14.0 Revisions

14.1 Revision Number: 03

14.2 Sections and sub-sections that have been changed:

- 5.4 - HR < 60 *if treating suspected ischemic chest pain.*

Medication: Nitroglycerin (N/G)	PDN: 6963.03	Last Updated: August 1, 2006	PMD:	PDC:	Page 1 of 3
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NITROGLYCERIN (N/G)

1.0 Definitions

None

2.0 Classification

2.1 Vascular smooth muscle relaxant.

3.0 Mechanism of Action

3.1 A systemic vasodilator, which decreases blood return to the right heart return (pre-load) by venous pooling, therefore, decreasing myocardial workload and oxygen consumption.

4.0 Indications

4.1 Ischemic chest pain.

4.2 Congestive Heart Failure/Pulmonary Edema:

4.2.1 Intermediate Care Paramedics (ICP).

4.2.2 Advanced Care Paramedics (ACP).

5.0 Contraindications

5.1 BP < 90 systolic.

5.2 Brachycardia (<50bpm) or Tachycardia (> 100 bpm).

5.3 Known hypersensitivity to N/G.

5.4 Allergy.

5.5 In patients who have used a phosphodiesterase inhibitor for erectile dysfunction (Viagra ® within previous 24 hours or one of the long acting medications - Cialis ® or Levitra ® in the previous 36 hours).

6.0 Dosage

6.1 1 puff of spray Sublingual (S/L) - may repeat in 3 - 5 prn.

6.2 When used as an ointment, effects begin in 15 minutes and last 3 - 8 hours.

6.3 Patches release .2 - .4 mg/hour.

Medication: Nitroglycerin (N/G)	PDN: 6963.03	Last Updated: August 1, 2006	PMD:	PDC:	Page 2 of 3
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7.0 Supplied

7.1 .3 mg tablets or canisters of spray of .4 mg/spray.

8.0 May Be Given By

8.1 All paramedics in the chest pain patient.

8.2 ICP in the CHF/Pulmonary Edema patient.

8.3 ACP in the CHF/Pulmonary Edema patient.

8.4 Critical Care Paramedic (CCP) in the CHF/Pulmonary Edema patient.

9.0 Precautions

9.1 Inferior wall MI.

9.2 Patient should be sitting or lying.

9.3 IV placement should not delay transport.

9.4 If patient becomes hypotensive lay them flat, give high flow O₂. If BP does not rise above 100 mm Hg Systolic within 5 mins, BLS crews call for ALS intercept, ICP/ACP give fluid bolus of N/S until systolic BP >100 or 250 cc given. If still no improvement, contact On Line Medical Oversight (OLMO).

9.5 N/G treatment must not delay transport.

9.6 Always check BP before and after administration. Hypotension may be more pronounced in a patient who has not previously taken nitroglycerin.

9.7 Therapeutic effect is enhanced but adverse effects are increased when the patient is upright.

10.0 Side Effects

10.1 Hypotension, weakness.

10.2 Temporary pulsating headache and facial flushing.

10.3 Dizziness, decreased LOC.

11.0 Directive

None

12.0 Reports

12.1 Quarterly and Annual QA Report

13.0 References

13.1 Protocol 6228: Chest Pain (NYD)

Medication: Nitroglycerin (N/G)	PDN: 6963.03	Last Updated: August 1, 2006	PMD:	PDC:	Page 3 of 3
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13.2 Protocol 6282: Pulmonary Edema (CHF)

14.0 Revisions

- 5.1 BP < ~~100~~ **90** systolic.
- 5.2 ***Brachycardia (<50bpm) or Tachycardia (> 100 bpm).***
- 5.5 In patients who have used ***a phosphodiesterase inhibitor for erectile dysfunction*** (Viagra® within previous 24 hours or one of the long acting ~~erectile dysfunction~~ medications - Cialis® or Levitra® in the previous 36 hours).
- 6.1 ...Sublingual (S/L) - may repeat in 3 - **5** minute ***intervals*** PRN.
- 6.2 ~~Nitroglycerin usually takes effect within 1 to 4 minutes after administration S/L.~~
- 9.1 ***Inferior wall MI.***

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	6287.01	Trauma Shock	2003-08-06
	6285.03	Cardiogenic Shock	2003-08-06
	6286.02	Nontrauma Shock	2003-08-06
<i>Stroke-CVA-TIA</i>			
	6288.03	Stroke/CVA/TIA	2003-08-06
<i>Toxicologic Emergency</i>			
	6292.01	Radiation Injury	2003-08-06
	6291.01	Pesticide Poisoning	2003-08-06
<i>Trauma (ABCs/Major)</i>			
	6294.01	C-Spine Clearance	2003-08-06
	6295.01	General Trauma Care	2003-08-06
<i>Trauma Major</i>			
	6296.01	Abdominal Trauma	2003-08-06
	6297.01	Amputation	2003-08-06

<i>Category</i>	<i>PDN</i>	<i>Title</i>	<i>Released</i>
	6298.01	Chest Trauma	2003-08-06
	6299.01	Extremity Trauma	2003-08-06
	6300.01	Head Injury	2003-08-06
	6301.01	Pelvic Trauma	2003-08-06
	6302.02	Spinal Injury	2003-08-06
<i>Trauma Minor</i>			
	6303.01	Back Pain	2003-08-06

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Medical Procedures

<i>Procedure</i>	<i>Title</i>	<i>Released</i>
6600.01	Blood Glucose Monitoring	2003-10-14
6601.01	Pulse Oximetry	2003-10-31
6602.01	Salbutamol Metered Dose Inhaler (MDI) Adapter	2003-10-14
6603.01	Meconium Suctioning	2003-10-14
6604.02	Deep Suctioning	2003-10-14
6605.02	Magill Forceps	2003-10-14
6606.02	Orotracheal Intubation	2003-10-31
6607.01	Nasotracheal Intubation	2003-10-31
6608.01	Digital Intubation	2003-10-31
6609.04	Melker Cricothyrotomy	2005-02-18
6610.01	Needle Decompression	2003-10-14
6612.01	Electrocardiogram Monitoring/Assessment 3 Lead	2003-10-14
6613.02	Emergency Synchronized Cardioversion	2004-04-01
6614.03	Transcutaneous Pacing	2006-03-20
6615.01	Intraosseous Infusion	2003-10-14
6616.01	Saline Lock	2003-10-14
6617.01	Venous Access	2003-10-14
6618.02	Restraints	2004-04-01
6620.02	Esophageal Detector Device - Toomy Syringe	2003-10-14
6621.01	Splinting Extremity	2003-10-14
6622.01	Splinting - Cervical Spine	2003-10-14
6623.01	Spine Immobilization	2003-10-14
6624.02	Helmet Removal	2003-10-14
6625.03	Medication Administration - Endotracheal	2006-05-12
6626.01	Medication Administration - Intraosseous	2003-10-31
6627.01	Medication Administration - Intramuscular	2003-10-14
6628.01	Medication Administration - Intravenous	2003-10-14

<i>Procedure</i>	<i>Title</i>	<i>Released</i>
6629.01	Medication Administration - Nebulization	2003-10-14
6630.02	Medication Administration - Rectal	2003-10-14
6631.01	Medication Administration - Subcutaneous Injection	2003-10-14
6632.01	Medication Administration - P.O. (Oral)	2003-10-14
6633.05	Manual Defibrillation	2006-03-20
6634.04	Automated External Defibrillation	2006-03-20
6635.01	External Jugular Intravenous Technique	2003-10-14
6636.01	End Tidal CO2 Detection	2003-10-31
6637.01	Decontamination	2003-10-14
6638.02	Intravenous Pumps (Baxter)	2003-10-14
6639.02	Vagal Manoeuvres	2003-10-14
6641.04	Semi-Automated External Defibrillation - Pediatric	2006-03-20
6642.03	Semi-Automated Post First Response Defibrillation	2006-05-12
6644.01	End Tidal CO2 Detector (Easy Cap II, Pedi Cap)	2003-12-12
6645.01	Needle Cricothyrotomy - Pediatric	2003-10-31
6646.00	Positive End Expiratory Pressure (PEEP) Valve	2003-12-12
6647.02	12 Lead ECGs - Acquisition	2006-08-01
6648.00	Central-Venous-Catheter Access	2003-12-12

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<i>Medication</i>	<i>Title</i>	<i>Released</i>
6900.03	Adenosine	2006-03-20
6903.01	Acetylsalicylic Acid (ASA)	2003-10-14
6906.02	Atropine	2005-02-18
6909.03	Bicarb (Sodium Bicarbonate)	2004-07-15
6912.01	Calcium Chloride (CaCL ₂)	2003-10-14
6915.01	D50	2003-10-14
6918.01	Diazepam (Valium)	2003-10-14
6921.02	Dimenhydrinate (Gravol)	2006-03-20
6924.01	Diphenhydramine (Benadryl)	2003-10-14
6927.01	Dopamine	2003-10-14
6930.03	Epinephrine (Adrenaline)	2006-03-20
6933.03	Furosemide (Lasix)	2006-08-01
6936.01	Glucagon	2003-10-14
6939.02	Haloperidol (Haldol)	2005-07-20
6942.01	Heparin	2003-10-14
6945.01	Ipratropium (Atrovent)	2003-10-14
6948.04	Lidocaine (Xylocaine)	2006-08-01
6951.01	Magnesium Sulphate	2003-10-14
6954.04	Midazolam (Versed)	2006-05-12
6957.03	Morphine	2006-08-01
6960.02	Naloxone (Narcan)	2004-10-25
6963.02	Nitroglycerin (N/G)	2006-08-01
6966.01	Oxygen	2003-10-14
6969.01	Oxytocin (Syntocinon)	2003-10-14
6972.02	Racemic Epinephrine	2004-04-01
6975.01	Salbutamol	2003-10-14
6978.01	Thiamine	2003-10-14
6981.01	Topical Anaesthetic Eye Drops	2003-10-14