MEDICAL DIRECTIVE
Rapid Response System (RRS) – Respiratory Distress

Approved by/Date: February 26, 2013 (For LHB Pilot Only)

GENERAL PREAMBLE:

The purpose of the Rapid Response System (RRS) is to assist in the early recognition of patients at risk of developing critical illnesses. It is well known that greater than 80% of in-hospital cardiac arrests are preceded by a period of abnormal vital signs. There is evidence that 41% of Critical Care Unit admissions may be avoidable if care is provided within this deterioration period. Therefore, the expected results of the RRS is to improve patient outcomes and safety, by quickly identifying patients at risk of becoming critically ill and decreasing the number of in-hospital cardiac arrests.

The RRS will be specially trained group of individuals who apply clinical medical directives when a patient's condition appears to be deteriorating. The RRS will provide additional monitoring as needed and will determine if additional levels of care and treatment are required. If the patient needs to be transferred to Critical Care, the RRS will assist with this and will communicate with the Rapid Response System Physician and / or Most Responsible Physician (MRP).

AUTHORIZING PHYSICIANS:

These Medical Directives are applicable to the Lakeridge Health. The Authorizing Physicians are all Physicians at Lakeridge Health.

"Appropriately Educated Registered Respiratory Therapists (RRT) and Registered Nurses (RN) Responders" will refer to those employees of Lakeridge Health who have successfully attained certification by a course of self-study supplied by the Intensivist – Educators appointed by the Authorizing Physicians, participated in a Didactic and Simulation Day, completed orientation with an established Critical Care Response Team, and have successfully passed both oral and written examinations. The content of the Educational package will be approved by the Medical Department - Critical Care.

The Authorizing Physicians expect that only appropriately educated RRTs and RNs; who are employees of Lakeridge Health: with the specific professional qualifications as outlined in each medical directive will implement these medical directives. The Authorizing Physicians also expect that the responders performing the medical directives will adhere to the specific clinical

conditions/circumstances and contraindications. Deviation from these medical directives is not permitted.

The Authorizing Physicians expect that the appointed Intensivist-Educators will provide the initial and ongoing education and ongoing continuous quality improvement of these medical directives as directed by the section - Critical Care.

PURPOSE:

1. To define the diagnostics and interventions that may be performed by the responders of the RRS for any patient seen by the team.
2. All calls to a physician responsible to the RRS, by a RRS responder are deemed a medical consult from the patients Most Responsible Physician (MRP) / Nurse Practitioner (NP).
3. To comply with the professional standards and guidelines of the College of Physicians and Surgeons of Ontario, the College of Respiratory Therapists of Ontario and the College of Nurses of Ontario.
4. Documentation of the use of the Medical Directive will be made with a notation in the space provided on the Physician orders. SBAR communication will be used to report all interventions.

Inclusion Criteria:

1. Any adult in-patient that is referred to the RRS.

Exclusion Criteria:

1. Any out-patient
2. Any pediatric patient.

Early Recognition:

Traditional vital signs have been used to assess at-risk patients. In most circumstances, physiologic abnormalities in the vital signs occur well before a cardiac arrest takes place. These activation criteria are used to mobilize the Rapid Response System. This is the “Lakeridge Health - Medical Early Warning System (MEWS)” which will be used as activation criteria.

This will apply to the 2013 Rapid Response System (RRS) Directives listed:

Respiratory Distress

RESPIRATORY DISTRESS MEDICAL DIRECTIVE

Authorized to whom:

Appropriately educated RRS responders (RRTs and RNs) working within Lakeridge Health may initiate the following therapies for in- patients, who present with symptoms of airway compromise, tachypnea, dyspnea, orthopnea, cyanosis, shortness of breath, accessory muscle use, stridor, crackles, wheezes and /or cyanosis.

Medical Directive Description:

- Manage airway including support of oxygenation and ventilation (intubation if necessary)
- Oxygen therapy as required to maintain oxygen saturation above or equal to 92%; patients who have COPD 88-92%
- Initiate monitoring including cardiac, blood pressure and pulse oximetry.
- Vital signs including temperature Q 5-30 minutes and prn
- Review patient history and diagnosis
- Perform an assessment and follow the standardized bronchodilator treatment guidelines below.
- Stat ABG (pH, pO2 and pCO2)
- STAT Portable Chest X-ray – upright if possible
- Stat Blood Work (CBC, electrolytes, glucose, urea, creatinine, Magnesium, Phosphorus, Corrected calcium) – See Appendix
- Insert a large (16 if possible) gauge IV of 0.9% sodium chloride at 30mL/hr.
- Intraosseous access may be attained when it is a very unstable, life threatening situation and when IV access has not been successful after 2 attempts or 90 seconds of searching for a suitable vein.
- **If on auscultation CRACKLES** - Position patient in Semi to high Fowlers
- Continuous Positive Airway Pressure (CPAP)/Bi-level Positive Airway Pressure (Bipap) initiation:
    - ***NOTE: patients who require ongoing CPAP/Bipap must be transferred to a Critical Care Unit***
    - If severe respiratory distress (respiratory rate greater than 30) and/or oxygen saturation less than 90% on 100% oxygen by non-rebreather or high-flow/Optiflow
    - Contraindications: systolic pressure less than 90 mmHg systolic, suspected pneumothorax, decreased level of consciousness leading to compromise of airway patency, inability to sit upright, unable to cooperate with CPAP, abdominal surgery within 7 days
    - Start at 5 cm H20 and increased by 5 cm H20 to maximum 15 cm H20 as required to relieve symptoms/hypoxia and as tolerated by patient

- May initiate Bipap if ongoing respiratory distress despite CPAP or evidence of hypercapnea (PaCO2 greater than 50 and pH less than 7.3 OR EtCO2 greater than 50 and no ABG available)
- Initiate inspiratory pressure 5 cm H20 above CPAP setting and titrate up as required to maximum 25 cm H20 inspiratory pressure

Assessment and Treatment Guidelines			
	MILD	MODERATE	SEVERE
Assessment	• Dyspnea or cough on exertion, wheezing • Fine crackles heard • +/- nocturnal symptoms • Increased use of β-agonist to control symptoms • good response to β agonist	• Dyspnea at rest • Cough, congestion, chest tightness • Fine / coarse crackles • +/- pink frothy sputum • Nocturnal symptoms • Partial relief β-agonist • β-agonist required greater than every q4h • **Decreased breath sounds, may have exp wheeze**	• Laboured respirations • Agitated, confused • Diaphoretic, cyanotic • Difficulty speaking • No relief with β-agonist • Decreased breath sounds**, may have insp/exp wheeze** • Initial tachycardia • Silent chest • Oxygen saturation less than 90%
Treatment	• Increase oxygen to achieve and maintain Oxygen Saturation equal to or greater than 92% • Monitor vital signs • salbutamol puffer (100 mcg/puff) 4-9 puffs q15min x 3 (MDI **+** spacer device) or equivalent nebulized salbutamol* (up to 27 puffs)	• Increase oxygen to achieve and maintain Oxygen Saturation equal to or greater than 92% • Monitor vital signs • Salbutamol (100 mcg/puff) 4-9 puffs q15min x 3 sets (MDI + spacer) or equivalent nebulized salbutamol* (up to 27 puffs) • Vital signs after each med. administration	• Notify physician Stat • 100% oxygen • monitor vitals continuously • continuous Salbutamol (100 mcg/puff) / Ipratopium(20 mcg/puff) 20 puffs then reassess) or nebulized salbutamol (5 mg in 3 mL saline) and Ipratropium (0.25 mg in 3 mL saline)

Salbutamol Solution (5 mg/mL)	Salbutamol Inhaler via MDI (100 mcg/puff)
1.25 mg (0.25 mL)	2 puffs
2.5 mg (0.5 mL)	3 puffs
3.75 mg (0.75 mL)	4 puffs
5 mg (1 mL)	6-9 puffs
Maximum dose is 15 mg	**Maximum dose is 27 puffs**

Ipratropium Solution (0.5 mg/mL)	Ipratropium Inhaler via MDI (20 mcg/puff)
0.125 mg (0.5 mL)	2 puffs
0.25 mg (1 mL)	3 puffs
0.375 mg (1.5 mL)	4 puffs
0.5 mg (2 mL)	6-9 puffs

Table 1 Dosage Conversion Chart

Patient Description/Population:

Patients who present with symptoms of shortness of breath and exhibit respiratory distress.

Identify relevant Controlled Act, Delegated Control Act or Expanded/ Added Skill associated with this Directive:

Administering a substance by injection or inhalation.
Performing a procedure below the dermis. – IV Insertion Certificate
- IO Insertion Certification
Putting an instrument beyond the larynx

Specific conditions/circumstances that must be met before the Directive can be implemented:

- Patient must be assessed and placed into a severity category by the RRS responder.
- The patient must have symptoms of crackles, wheezing, shortness of breath, cyanosis, dyspnea, tachypnea, orthopnea, and/or accessory muscle use.
- Each intervention will be explained to the patient and/or family and verbal consent will be obtained.
- Medications given by hospital personnel or taken by the patient just prior to the event must be included in the calculation of maximum doses.
- Personal protective equipment (mask, protective eyewear or face shield) must be used by staff when within two metres of any patient on CPAP/Bipap, with or without symptoms of an acute respiratory infection

Contraindications to the implementation of the Directive:

- Patient refuses therapy – no consent.
- Allergy to salbutamol, ipratropium or MDI propellant will prevent use of the specific agent.
- Patient is in pre-morbid state (silent chest, cyanosis, confusion) – code blue must be activated.
- Patient is incapable of cooperating with the procedure
- Patients exhibiting signs and symptoms of acute respiratory infection must be managed with Contact/Droplet isolation in a private room to have CPAP/Bipap initiated on the floor

Documentation requirements:

- Implementation of the Medical Directive must be documented on the chart under physician orders
- Vital signs pre and q15 to 30 minutes post medication
- Response to bronchodilator medication must be documented in the RRS note

Review/Evaluation Process (how often/by whom): every 2 years by Medical Department -Emergency Medicine and Critical Care Council.

Related Documents:

Canadian Asthma Consensus Report – Canadian Medical Association Journal 1999; 161:S1-S12.

ORNGE Medical Directives and Standing Orders. Airway-Airway Protocol – Crash. April. 2005. Pg. 33-34.

Ontario Provincial Primary Care Paramedic Medical Directives - Bronchoconstriction Medical Directive. Waterloo Region, Ontario, Canada. Base Hospital Program Jan 1, 2007 pg. 8-9

Ontario Provincial Primary Care Paramedic Medical Directives – Sever Asthma Exacerbation Medical Directive. Waterloo Region, Ontario, Canada. Base Hospital Program Jan 1, 2007 pg. 10.

Ontario Provincial Primary Care Paramedic Medical Directives – Pulmonary Edema Medical Directive. Waterloo Region, Ontario, Canada. Base Hospital Program Jan 1, 2007 pg. 13.

Lakeridge Health Corporation. Emergency Medical Directives: Adult Asthma. Sept 2009.

Lakeridge Health Corporation. Emergency Medical Directives: Adult COPD. Sept 2009.

APPENDIX A: LAB REFERENCES

"BIO10.08F Testing Menu for Vitros Analyzer at all Lakeridge Sites Version 1.0" in the Laboratory QMS

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13. London Health Sciences, Ontario Canada. UWO Program in Critical Care Document. Educational Objectives for the Critical Care Outreach Teams July 2009. Pg. 1-4.

14. Gentofte Hospital. Full-scale simulation training of MET and staff from general ward. June 14, 2009.

15. Bell M et al. Prevalence and sensitivity of MET – criteria in a Scandinavian University Hospital. Resuscitation 2006; 70:66-73.

16. Aneman A et al. The ERC Guidelines for Resuscitation 2005 and the Medical Emergency Team. Scand J Trauma Resusc Emerg Med. 2006; 14:74-77.

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18. Credit Valley Hospital, Ontario Canada. RACE Team – Preliminary Diagnostics and Interventions. Jan. 2007.

19. Hodder, Rick. Critical Care Response Team Provider Manual; Canadian Resuscitation Institute 2006.

20. Faculty of Medicine, Liverpool Health Science, Liverpool, Australia. Medical Emergency Team, 2005, pg. 1-3.

21. North York General Hospital, Toronto, Canada. Adult Cardiac Arrest Medical Directives. Oct. 2005 pg. 1-7.

22. Institute for Healthcare Improvement: Establish a Rapid Response Team - Getting Started Kit: Rapid Response Teams - How-to Guide. Cambridge, Massachusetts, USA. Oct. 2005.

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