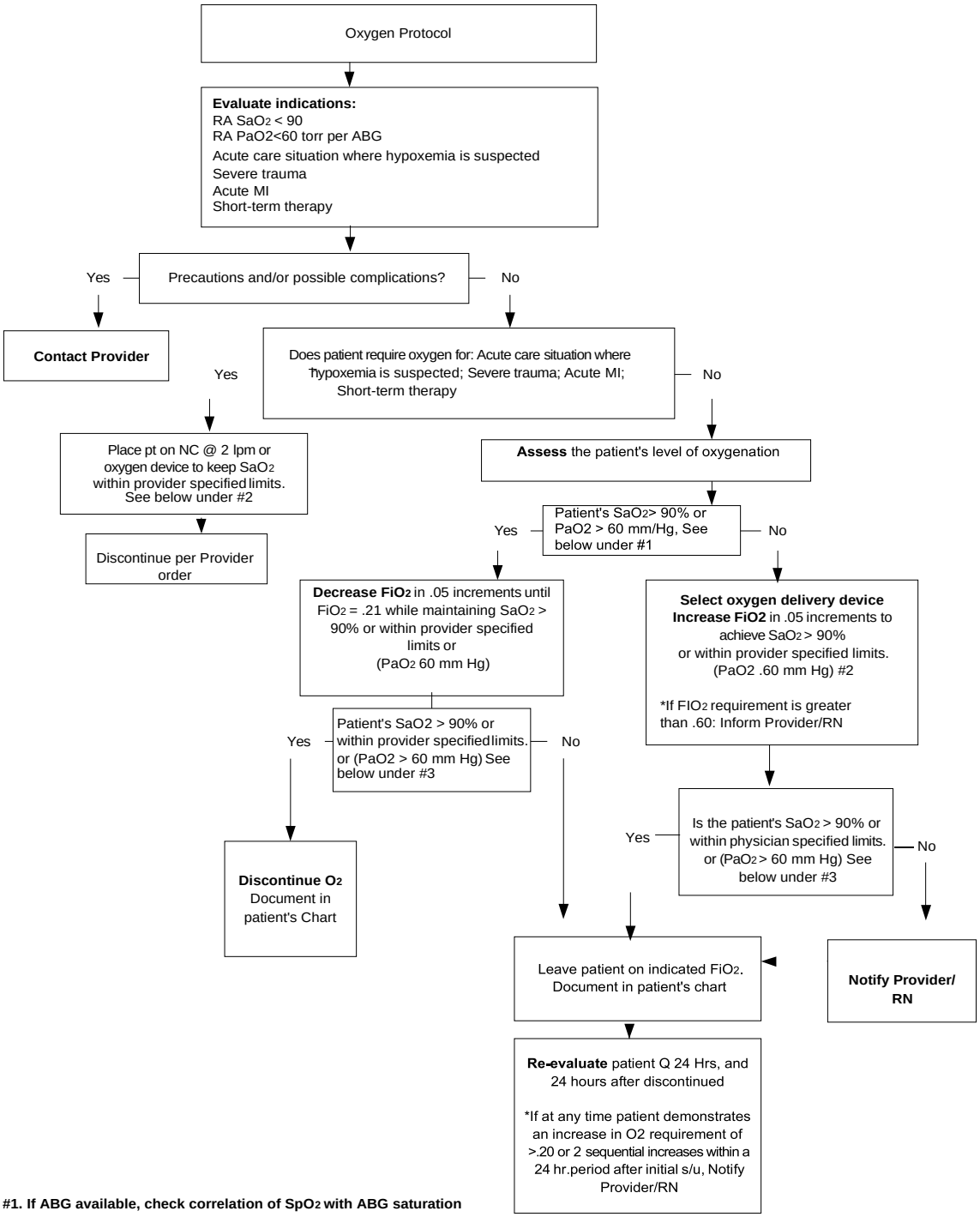
COHESIVE HEALTHCARE
MANAGEMENT & CONSULTING
MANGUM REGIONAL MEDICAL
CENTER

OXYGEN PROTOCOL



#1. If ABG available, check correlation of SpO_2 with ABG saturation

#2. Oxygen device should be appropriate for patient's pathophysiology

#3. Acceptable FiO_2 may vary with the clinical situation or physician

Nurse Signature: _____ Date:_____/_____/_____ Time: _____

Provider Signature: _____ Date:_____/_____/_____ Time: _____

References for the Oxygen Protocol

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20. U.S. Department of Health and Human Services, Public Health Services, Centers for Disease Control. Guideline for prevention of nosocomial pneumonia and guideline ranking scheme. Atlanta: CDC; 1982.

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AARC Clinical Practice Guideline

Oxygen Therapy for Adults in the Acute Care Facility -- 2002 Revision & Update

OT-AC 1.0 PROCEDURE:
The procedure addressed is the administration of oxygen therapy in the acute care facility other than with mechanical ventilators and hyperbaric chambers.

OT-AC 2.0 DEFINITION/DESCRIPTION:
Oxygen therapy is the administration of oxygen at concentrations greater than that in ambient air with the intent of treating or preventing the symptoms and manifestations of hypoxia.(1)

OT-AC 3.0 SETTING:
This Guideline is confined to oxygen administration in the acute care facility.

OT-AC 4.0 INDICATIONS:

4.1 Documented hypoxemia. Defined as a decreased PaO_2 in the blood below normal range.(2) PaO_2 of < 60 torr or SaO_2 of < 90% in subjects breathing room air or with PaO_2 and/or SaO_2 below desirable range for specific clinical situation.(1)

4.2 An acute care situation in which hypoxemia is suspected(1,3-6) substantiation of hypoxemia is required within an appropriate period of time following initiation of therapy.

4.3 Severe trauma(5,6)

4.4 Acute myocardial infarction(1,7)

4.5 Short-term therapy or surgical intervention (eg, post-anesthesia recovery(5,8), hip surgery(9,10))

OT-AC 5.0 CONTRAINDICATIONS:
No specific contraindications to oxygen therapy exist when indications are judged to be present.

OT-AC 6.0 PRECAUTIONS AND/OR POSSIBLE COMPLICATIONS:

6.1 With PaO_2 > or = 60 torr, ventilatory depression may occur in spontaneously breathing patients with elevated $PaCO_2$.(6,11-14)

6.2 With FIO_2 > or = 0.5, absorption atelectasis, oxygen toxicity, and/or depression of ciliary and/or leukocytic function may occur.(12,15,16)

6.3 Supplemental oxygen should be administered with caution to patients suffering from paraquat poisoning(17) and to patients receiving bleomycin.(18)

6.4 During laser bronchoscopy, minimal levels of supplemental oxygen should be used to avoid intratracheal ignition.(19)

6.5 Fire hazard is increased in the presence of increased oxygen concentrations.

6.6 Bacterial contamination associated with certain nebulization and humidification systems is a possible hazard.(20-22)

OT-AC 7.0 LIMITATIONS OF PROCEDURE:
Oxygen therapy has only limited benefit for the treatment of hypoxia due to anemia, and benefit may be limited with circulatory disturbances. Oxygen therapy should not be used in lieu of but in addition to mechanical ventilation when ventilatory support is indicated.

OT-AC 8.0 ASSESSMENT OF NEED:
Need is determined by measurement of inadequate oxygen tensions and/or saturations, by invasive or noninvasive methods, and/or the presence of clinical indicators as previously described.

OT-AC 9.0 ASSESSMENT OF OUTCOME:
Outcome is determined by clinical and physiologic assessment to establish adequacy of patient response to therapy.

OT-AC 10.0 RESOURCES:
For other types of oxygen delivery devices used outside of the acute care facility, reference the AARC

Clinical Practice Guideline: Oxygen Therapy in the Home or Extended Care Facility for further description. Respir Care 1992;37(8):918-922.

10.1 Equipment

10.1.1 Low-flow systems deliver 100% (ie, FDO_2 = 1.0) oxygen at flows that are less than the patient's inspiratory flowrate (ie, the delivered oxygen is diluted with room air) and, thus, the oxygen concentration inhaled (FIO_2) may be low or high, depending on the specific device and the patient's inspiratory flowrate.(23,24)

10.1.1.1 Nasal cannulas can provide 24-40% oxygen with flowrates up to 6 L/min in adults (depending on ventilatory pattern).(1) Oxygen supplied via nasal cannula at flowrates < or = 4 L/min need not be humidified.(25,26) Care must be taken when assigning an estimated FIO_2 to patients as this low-flow system can have great fluctuations.(27)

10.1.1.2 Simple oxygen masks can provide 35-50% FIO_2, depending on fit, at flowrates from5-10 L/min. Flowrates should be maintained at 5 L/min or more in order to avoid rebreathing exhaled CO_2 that can be retained in the mask.(1,20,28) Caution should be taken when using a simple mask where accurate delivery of low concentrations of oxygen is required.(29) Long-term use of simple mask can lead to skin irritation and pressure sores.(30)

10.1.1.3 Partial rebreathing mask is a simple mask with a reservoir bag. Oxygen flow should always be supplied to maintain the reservior bag at least one third to one half full on inspiration. At a flow of 6-10 L/min the system can provide 40-70% oxygen. It is considered a low-flow system. The non-rebreathing mask is similar to the partial rebreathing mask except it has a series of one-way valves. One valve is placed between the bag and the mask to prevent exhaled air from returning to the bag. There should be a minimum flow of 10 L/min. The delivered FIO_2 of this system is 60-80%.

10.1.1.4 Patients who have been receiving transtracheal oxygen at home may continue to receive oxygen by this method in the acute care facility setting provided no problems present. If difficulties related to the transtracheal route of administration appear, oxygenation should be assured by other means.

10.1.2 High-flow systems deliver a prescribed gas mixture -- either high or low FDO_2 at flowrates that exceed patient demand.(23,24,31)

10.1.2.1 Currently available air-entrainment masks can accurately deliver predetermined oxygen concentration to the trachea up to 40%. Jet-mixing masks rated at 35% or higher usually do not deliver flowrates adequate to meet the inspiratory flowrates of adults in respiratory distress.(7,24,31,32)

10.1.2.2 Aerosol masks, tracheostomy collars, T-tube adapters, and face tents can be used with high-flow supplemental oxygen systems. A continuous aerosol generator or large-volume reservoir humidifier can humidify the gas flow. Some aerosol generators cannot provide adequate flows at high oxygen concentrations.(1)

10.2 Personnel

10.2.1 Level I personnel -- ie, any person who has adequately demonstrated the ability to perform the task -- may check and document that a device is being used appropriately and the flow is as prescribed.

10.2.2 Level II personnel -- licensed or credentialed respiratory care practitioners or persons with equivalent training and documented ability to perform the tasks -- may assess patients, initiate and monitor oxygen delivery systems, and recommend changes in therapy.

OT-AC 11.0 MONITORING:

11.1 Patient

11.1.1 clinical assessment including but not limited to cardiac, pulmonary, and neurologic status

11.1.2 assessment of physiologic parameters: measurement of PaO_2s or saturation in any patient treated with oxygen. An appropriate oxygen therapy utilization protocol is suggested as a method to decrease waste and to realize increased cost savings.(33) Consider need/indication to adjust FDO_2 for increased levels of activity and exercise.

11.1.2.1 in conjunction with the initiation of therapy; or

11.1.2.2 within 12 hours of initiation with FIO_2 < 0.40

11.1.2.3 within 8 hours, with FIO_2 > or = 0.40 (including postanesthesia recovery)

11.1.2.4 within 72 hours in acute myocardial infarction7

11.1.2.5 within 2 hours for any patient with the principal diagnosis of COPD

11.2 Equipment

11.2.1 All oxygen delivery systems should be checked at least once per day.

11.2.2 More frequent checks by calibrated analyzer are necessary in systems
11.2.2.1 susceptible to variation in oxygen concentration (eg, high-flow blending systems)
11.2.2.2 applied to patients with artificial airways
11.2.2.3 delivering a heated gas mixture
11.2.2.4 applied to patients who are clinically unstable or who require an FIO_2 of 0.50 or higher.
11.2.3 Care should be taken to avoid interruption of oxygen therapy in situations including ambulation or transport for procedures.

OT-AC 12.0 FREQUENCY:

Oxygen therapy should be administered continuously unless the need has been shown to be associated only with specific situations (eg, exercise and sleep).

OT-AC 13.0 INFECTION CONTROL:

Under normal circumstances, low-flow oxygen systems (including cannulas and simple masks) do not present clinically important risk of infection and need not be routinely replaced.1 High-flow systems that employ heated humidifiers and aerosol generators, particularly when applied to patients with artificial airways, can pose important risk of infection. In the absence of definitive studies to support change-out intervals, results of institution-specific and patient-specific surveillance measures should dictate the frequency with which such equipment is replaced.

Revised by Thomas J Kallstrom RRT FAARC, Fairview Hospital, Cleveland, OH, and approved by the 2002 CPG Steering Committee.

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