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## Clinical considerations for long-term oxygen therapy

The **S.A.V.E.** acronym for oxygen therapy outlines the four essential steps that can help ensure respiratory patients are properly screened, assessed and treated for hypoxemia. These steps may be used in the hospital, out-patient clinic or home settings.

### The 4-step process consists of:

- S** **Screening** for hypoxemia in every patient with a respiratory or cardiac disorder
- A** **Assessing** the patient, including clinical history and physical examination
- V** **Validating** the need for oxygen therapy
- E** **Educating** the patient on the use of oxygen therapy

### Screen for hypoxemia in every patient with a respiratory or cardiac disorder

1. Use arterial blood gas analysis and/or pulse oximetry to screen for hypoxemia.<sup>1</sup>
2. Determine if long-term oxygen therapy is indicated for a patient with stable chronic obstructive pulmonary disease:

#### Test - at rest and breathing room air<sup>1</sup>

PaO<sub>2</sub> 55 mm Hg or less, or SaO<sub>2</sub> 88% or less

Or PaO<sub>2</sub> 56-59 mm Hg or SaO<sub>2</sub> = 89% with qualifying secondary diagnosis (evidence of pulmonary hypertension or cor pulmonale, dependent edema suggesting congestive heart failure or erythrocythemia with a hematocrit greater than 56%)

3. Determine whether long-term oxygen therapy may be indicated in specific persons who have hypoxemia only at night or during exercise. If PaO<sub>2</sub> 56 mm Hg or higher, or SaO<sub>2</sub> 89% or higher during the day while awake and at rest:

#### Test - with activity on room air and on oxygen (demonstrate recovery)<sup>1</sup>

PaO<sub>2</sub> 55 mm Hg or less, or SaO<sub>2</sub> 88% or less during exercise, but demonstrates hypoxemia improves when wearing oxygen with activity, the patient will qualify for ambulatory oxygen. **There must be documentation in the medical record that patient is mobile at home.**

#### Test - during sleep<sup>1</sup>

PaO<sub>2</sub> 55 mm Hg or less, or SaO<sub>2</sub> 88% or less; or a greater than normal fall in oxygen level during sleep associated with symptoms or signs reasonably attributable to hypoxemia (e.g., impairment of cognitive processes and nocturnal restlessness or insomnia), the patient will qualify for a nocturnal stationary unit only.

## Assess the patient, including clinical history and physical examination

1. Inquire about any diagnosis of respiratory, cardiac or neurologic disorders.
2. Look for signs and symptoms that suggests the presence of respiratory impairments, including breathlessness, wheezing, tachypnea, palpitations, cyanosis, irritability, fatigue, reduced alertness, chronic headaches or leg swelling.<sup>2</sup>
3. Review pulmonary and cardiac test results, such as prior laboratory tests (polycythemia, elevated bicarbonate levels), ABGs, pulmonary function testing, electrocardiography, echocardiography, stress testing, polysomnography and lung or heart imaging.
4. Create a patient-centered oxygen prescription that meets the oxygen requirements at rest, with activity and during sleep. Some patients may require different oxygen levels for each indication.<sup>3</sup>
5. Periodically reassess the adequacy of oxygen therapy using pulse oximetry (at rest, with ambulation and during sleep).

## Validate the need for oxygen therapy

1. Determine which of the various oxygen delivery methods will meet the needs of the patient. There are four ways whereby long-term oxygen supplementation can be delivered, namely (a) *continuous* (given for at least 15 hours daily), (b) *ambulatory* (given only during exercise or daily activities that have been shown to be associated with hypoxemia), (c) *sleep or nighttime* (given overnight) or (d) *palliative* (given to relieve breathlessness during end-of-life care).
2. Use the three “P” approach (patient, purpose and performance) when selecting among the different stationary and portable oxygen systems. Does a patient need a stationary or portable system, or both? Is the device intended to provide continuous or intermittent flow or both? How much oxygen can the device deliver and is the fraction of inspired oxygen (FiO<sub>2</sub>) delivery consistent, or can it vary with changing respiratory patterns. Other criteria to consider with portable oxygen concentrators are size, weight and battery life.
3. Consider each patient’s preferences, lifestyle and capabilities. Determine if the patient and/or caregivers have any limitations, such as restricted dexterity, cognitive deficits or poor strength and endurance, and assess how these might affect the use of an oxygen system. Is the patient confident about using the device? In patients who need continuous or ambulatory oxygen therapy, ask how often and for how long they are typically away from home, and what activities do they plan to participate in (e.g., flying in an airplane, shopping, etc.).<sup>4</sup>
4. Determine which oxygen system is covered by a patient’s insurance plan and what are the out-of-pocket costs, if any.

## Educate the patient on the use of oxygen therapy

1. Customize education based on the specific needs of each patient and address every question or concern.
2. Discuss the features, advantages and limitations of the various oxygen delivery methods.
3. Advise patients to stop smoking before starting oxygen therapy. Provide counseling on smoking cessation to patients who continue to smoke.
4. Discuss expected benefits of use as well as potential adverse effects of therapy.
5. Explain that oxygen needs may change over time based on the course of the underlying respiratory or cardiac conditions.<sup>5</sup>
6. Instruct the patient and caregivers on how to use of equipment effectively and safely.
7. Provide contact information on who to call with questions and equipment issues.
8. Evaluate effectiveness of therapy, need for continuing oxygen therapy, and need for retitrating oxygen levels, if indicated.
9. Assess adherence to therapy and discuss possible risks of non-use.<sup>5,6</sup>

### References

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