Pts. needing $O_2$ supplementation found in *all* settings

Majority of evidence supports use of supplemental $O_2$ to improve ex tolerance
  - Supplemental $O_2$ is usually well tolerated even for pts. with $CO_2$ retention

$O_2$ supplement, *short-term*, improves breathlessness with activity
  - Improved minute ventilation
  - Less hypoxia
  - Less dynamic hyperinflation
  - Better ventilatory mm function
  - Better ♥ function
  - Less mortality etc.
Small subset of pts. may not tolerate increases in $O_2$ ($FiO_2$) with activity. Stop if you see:

- Decrease in respiratory rate and depth
- Disorientation/confusion/personality change

This pt. is probably NOT a candidate for $O_2$ supplementation
You are treating a patient with COPD (RLD) who becomes SOB and stumbles during ambulation (or dressing). SpO$_2$ is 86% on 2 L/min NC at this time. What should you do?

- How do I go about this?
- What is considered safe?
Figure 1. Guide to decision making regarding supplemental oxygen.

Abbreviation: O₂, supplemental oxygen

1. Correct use of oxygen monitoring requires individual to palpate pulse and compare to reading of pulse rate on pulse oximeter
2. Order examples: *These oxygen levels are in %: SpO₂ > 85%
3. Oxygen delivery system needs to be changed to maintain or improve oxygenation
<table>
<thead>
<tr>
<th>Device Name</th>
<th>Picture of Device</th>
<th>General Information</th>
<th>Approximate FiO₂</th>
</tr>
</thead>
</table>
| Nasal Cannula (NC)   | ![Nasal Cannula](image) | Delivers flows from 0.25 to 6 l/min  
Generally recommended low flow NCs **not** used for flows > 6 l/min due to patient discomfort | O₂ Tank Flow:  
1 L/min 0.24  
2 L/min 0.28  
3 L/min 0.32  
4 L/min 0.36  
5 L/min 0.40  
6 L/min 0.44 |
| High Flow Nasal Cannula | ![High Flow Nasal Cannula](image) | Best for patients needing > 6 l/min NC  
More comfortable, can eat/drink/talk easier than with mask | Highest % O₂ is up to 0.75 FiO₂ at 15 l/min |
| Oxymizer (Reservoir can also be incorporated into tubing sitting below the nasal prongs) | ![Oxymizer](image) | Specialized NC with O₂ reservoir that conserves O₂  
Uses 25-75% less O₂ (the less O₂ needed by the patient, the higher savings of O₂)  
Good way to deliver O₂ at home. | O₂ Tank Flow:  
1 l/min 0.28  
2 l/min 0.32  
4 l/min 0.41  
8 l/min 0.64  
12 l/min 0.82 |
<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>O₂ Tank Flow</th>
<th>Approximate FiO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Face Mask</td>
<td>Covers mouth and nose, useful for patients unable to breathe through nose</td>
<td>6-10 l/min</td>
<td>0.35-0.50 (can vary)</td>
</tr>
<tr>
<td>Venturi System</td>
<td>O₂ system providing more specific O₂ concentration than other O₂ devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easy system for mobilizing patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can provide O₂ via face mask or tracheostomy tube</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-rebreather Mask</td>
<td>Mask with O₂ reservoir (bag) providing higher FiO₂</td>
<td>6 l/min</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>Advantage – requires a lower flow of O₂ from the tank for the FiO₂ needed</td>
<td>7 l/min</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-10 l/min</td>
<td>0.80+</td>
</tr>
</tbody>
</table>
Currently accepted SpO₂ values for long-term O₂ supplementation:

- **Absolute SpO₂ value**
  - ≤88%

- **In presence of Cor Pulmonale**
  - ≤89%
  - (includes right atrial enlargement, CHF)

- **Normal rest but not with activity or sleep**
  - ≤88%
APTA CVP Oxygen Task Force Recommendation Summary

O₂ should be provided to improve quality of life & functional activity for pts. with CP disease experiencing O₂ desaturation during activity

MD prescription for titration of supplemental O₂ with activity e.g. “Keep SpO₂ ≥90%”
  - LEGAL issues
Assess & document VS and s/s of patient
  ◦ s/s e.g. hypoxemia/respiratory mm fatigue (vs. only relying on pulse ox!)
  ◦ Check pulse rate and compare to pulse oximeter

Be sure to turn down the O₂ flow rate back to resting level
  ◦ If pt. cannot maintain SpO₂ and especially if has s/s of hypoxemia after a few minutes, contact MD

If pt. not showing improvement or has s/s of CO₂ retention, not candidate