**Patient-ventilator asynchrony reference card**

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<td>Flow asynchrony</td>
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<td><strong>Termination asynchronies - during the end of inspiration</strong></td>
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| Double triggering           | Two (or more) mechanical breaths are delivered during one single inspiratory effort | **Flow** waveform: look for two assisted breaths without expiration between them or with an expiration interval of less than half of the mean inspiratory time (often visually displayed as a waveform with two inspiratory peaks) | ![Flow waveform example](image1) | - Cycling criteria (ETS) set too high  
- Pressure support too low  
- P-ramp too short  
- Flow starvation  
- High respiratory drive  
- Time constant too short  

Double triggering can be an effect of and/or promoted by reverse triggering or early cycling |
| Early cycling               | The duration of the mechanical breath is shorter than the duration of the patient’s inspiratory effort | **Flow** waveform: look for a small bump at the beginning of expiration (after peak expiratory flow) followed by an abrupt initial reversal in the expiratory flow | ![Flow waveform example](image2) | - In pressure support ventilation:  
  - Cycling criteria (ETS) set too high  
  - Low levels of ventilator pressure support  
  - Time constant too short  

In time-cycled ventilation:  
- Short inspiratory time setting |
| Delayed cycling             | The duration of the mechanical breath is longer than the duration of the patient’s inspiratory effort | **Flow** waveform: look for a change in the slope of the inspiratory flow: a fast decrease followed by an exponential (less steep) decline | ![Flow waveform example](image3) | - In pressure support ventilation:  
  - Cycling criteria (ETS) set too low  
  - Pressure support too high  
  - P-ramp too long  

In pressure control ventilation:  
- Cycling criteria (ETS) set too low  
- Inspiratory time too long  

In volume control ventilation:  
- Low flow  
- High inspiratory time  
- High tidal volume |

References: