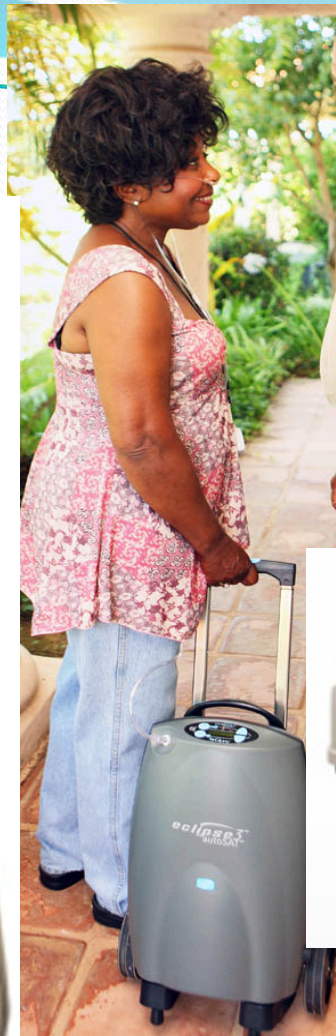


Oxygen at Home and Away

Nancy Davis, RRT, AE-C



PULSE DOSE ONLY



PULSE DOSE AND CONTINUOUS FLOW



2 Different Types of O₂ Delivery

- Continuous Flow (CF)

Steady flow of oxygen throughout inhalation and exhalation

CF = Liters of oxygen/minute

- On Demand/Pulse Dose (PD)

Oxygen is only delivered during inhalation

- Fixed bolus volume-mL/breath
- Fixed minute volume-mL/minute
- PD setting of 2 does NOT = 2L/min
- PD setting of 2 on POC A does NOT = PD setting of 2 on POC B

Intermittent or Pulse Dose

- **Fixed Bolus Volume – mL/breath**

A **predetermined bolus size** is delivered regardless of breathing rate.

At very high respiratory rates, there may be a drop in oxygen purity because the total volume of O₂ being delivered in the course of each minute exceeds the production capacity of the POC.

Intermittent or Pulse Dose

- **Fixed Minute Volume**

A **predetermined volume** of O₂ is produced for each POC setting over the course of a minute. The bolus size is determined by respiratory rate (minute volume/respiratory rate).

At higher respiratory rates, bolus size decreases, but **total** amounts of oxygen delivered per minute and oxygen purity remain the same.

Continuous Flow vs. Pulse Dose

Continuous Flow

- Most tolerate CF and maintain better oxygenation levels
- Works well with mouth breathers
- POC's are larger, heavier, batteries don't last as long


Pulse Dose

- Must breathe through nose for POC to sense inhalation
- Lighter, smaller, batteries last 2-5 times longer with PD
- Some small models are very noisy

Keep in mind

- The higher a person's oxygen requirement, the less likely pulse dose will work effectively for them
- Currently the highest continuous flow from a POC is 3 LPM
- The pulse dose settings of 7-9 on the larger POC's are "rescue" settings-they can only be used for a brief period of time
- Travel rentals are not covered by insurance
- Only POC's can be taken on flights
- Oxymizers can **only** be used with continuous flow

| <u>Portable Oxygen Concentrators</u> | <u>Dimensions</u> | <u>Bolus Size</u> | | | | | | <u>Continuous Flow</u> | <u>Battery Duration</u> | <u>Max.O2 Capacity</u> | <u>Weight</u> |
|--------------------------------------|-------------------|-------------------|-----------|----------|----------|----------|----------|------------------------|---|------------------------|---------------|
| | | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | | | | |
| AirSep Focus | 6.4 x 4.8 x 2.5 | | 333ml/min | | | | | | 3 hrs @ 2PD* | 333ml/min | 2.8#* |
| Invacare XPO2 | 10 X 7 X 4 | 15 | 23 | 31 | 37 | 42 | | | 2.5 hrs @ 2PD | 900ml/min | 7# w/bag |
| Inogen One G2 | 9.5 x 10.7 x 3.9 | 12 | 25 | 37 | 49 | 62 | | | 3.5 hrs @2PD | 750ml/min | 7# |
| Respironics Simply Go | 11.5 x 10 x 6 | 12 | 24 | 36 | 48 | 60 | 72 | 0.5 - 2L/min | 3.5 hrs @ 2PD 0.9 hrs @ 2CF | 2000ml/min | 10# w/cart |
| SeQual Equinox | 13.6 x 10.6 x 7.4 | 16 | 32 | 48 | 64 | 80 | 96 | 0.5 - 3L/min | 2.7 hrs @ 2PD 5.9 hrs @ 2PD** 1.2 hrs @ 2CF 2.75 hrs @ 2CF** | | 14# w/cart |
| SeQual Eclipse | 19.3 x 12.3 x 7.1 | 16 | 32 | 48 | 64 | 80 | 96 | 0.5 - 3L/min | 5.2 hrs @ 2PD*** | 3000ml/min | 20# w/cart |



| <u>Portable Liquid Containers</u> | <u>Dimensions in inches</u> | <u>Flow Settings</u> | <u>Duration</u> | <u>Weight</u> |
|-----------------------------------|-----------------------------|----------------------|--|---------------|
| Marathon | 15"H | 2 - 6L/min | 3 hours @ 4L/min 2 hours @ 6L/min | 5.6# |
| Companion C1000 | 13.8"H | 0.25 - 6L/min | 4 hours @ 4L/min 2.8 hours @ 6L/min | 8.1# |
| Companion C1000T | 14.5"H | 0.5 - 15L/min | 2 hours @ 8L/min 1.7 hours @ 10L/min 1.2 hours @ 15L/min | 8.7# |

E Tank – Continuous Flow

3000 psi 7 hours @ 2L/min

3.5 hours @ 4L/min

2.3 hours @ 6L/min

1.7 hours @ 8L/min

1.4 hours @ 10L/min

2200 psi 5 hours @ 2L/min

2.5 hours @ 4L/min

1.7 hours @ 6L/min

1.2 hour @ 8L/min

1 hour @ 10L/min

O2 Tank Delivery Chart: These times are estimates!

| Flow Rate: | Use Times (Shown In Hours) | | | | | | | |
|-----------------|----------------------------|------|------|------|------|-----|-----|-----|
| | 1 | 1.5 | 2 | 2.5 | 3 | 4 | 5 | 6 |
| M4 | | | | | | | | |
| Pulse Dose | 5.7 | 3.8 | 2.9 | 2.3 | 1.9 | 1.4 | 1.1 | .9 |
| Continuous Flow | 1.9 | 1.3 | .9 | .7 | .6 | .5 | .4 | .3 |
| M6 | | | | | | | | |
| Pulse Dose | 8.3 | 5.5 | 4.1 | 3.3 | 2.8 | 2.1 | 1.7 | 1.4 |
| Continuous Flow | 2.7 | 1.8 | 1.4 | 1.1 | .9 | .7 | .6 | .4 |
| ML6 | | | | | | | | |
| Pulse Dose | 8.6 | 5.7 | 4.3 | 3.4 | 2.9 | 2.1 | 1.7 | 1.4 |
| Continuous Flow | 2.8 | 1.9 | 1.4 | 1.1 | .9 | .7 | .6 | .4 |
| C | | | | | | | | |
| Pulse Dose | 12.1 | 8.1 | 6.1 | 4.9 | 4.0 | 3.0 | 2.4 | 2.0 |
| Continuous Flow | 4.0 | 2.7 | 2.0 | 1.6 | 1.3 | 1.0 | .8 | .7 |
| D | | | | | | | | |
| Pulse Dose | 21.0 | 14.0 | 10.5 | 8.4 | 7.0 | 5.2 | 4.2 | 3.5 |
| Continuous Flow | 6.9 | 4.6 | 3.5 | 2.8 | 2.3 | 1.7 | 1.4 | 1.2 |
| E | | | | | | | | |
| Pulse Dose | 34.4 | 23.0 | 17.2 | 13.8 | 11.5 | 8.6 | 6.9 | 5.8 |
| Continuous Flow | 11.4 | 7.6 | 5.7 | 4.6 | 3.8 | 2.8 | 2.3 | 1.9 |

How does one qualify for home oxygen?

If $\text{SpO}_2 \leq 88\%$ at rest, patient qualifies

If $\text{SpO}_2 > 88\%$ at rest, the following saturations must be documented:

- $\text{SpO}_2\% = \underline{\hspace{2cm}}$ resting on RA
- $\text{SpO}_2\% = \underline{\hspace{2cm}}$ ambulating on RA
- $\text{SpO}_2\% = \underline{\hspace{2cm}}$ ambulating on $\underline{\hspace{2cm}}$ LPM oxygen

Home equipment

- If patient only needs O₂ at night – determined by overnight oximetry – stationary concentrator
- If patient requires O₂ with activity or 24/7 –
Stationary concentrator and
1 form of portable oxygen
 - Portable concentrator
 - OR
 - Multiple Tanks

If patient requires a high liter flow of oxygen:

Testing must be done on 4 LPM

- SpO₂ on 4 LPM at rest
- SpO₂ on 4 LPM with ambulation
- SpO₂ on ____LPM with ambulation

If patient qualifies, they will be upgraded to a high flow stationary concentrator with a maximum flow of 10 LPM

Oxymizer Reservoir Cannula



Oxymizer – Reservoir Cannula

- Larger bore and tubing to accommodate higher flows
- Can be used at flows as high as 10 LPM
- Can only be used with continuous flow devices
- Reservoir stores oxygen during exhalation and delivers bolus as well as set flow during inhalation
- Increases oxygenation
- In some cases, enhances patient comfort

Remember

- The higher the patient's oxygen requirement the less likely they will tolerate pulse dose
- Oxymizers can only be used with continuous flow systems