“Fraction of Inhalable Aerosol”
A common-sense approach to assessing nebulizer performance

Definition: FIA is the amount of aerosol available to the patient for inhalation. It is expressed as a percentage of the tidal volume and is dependent on the presence or absence of room air entrainment.

Air-Entraining Devices:
- Monaghan AeroEclipse™ II
- Pari LC® Sprint, LC® Star, LC® Plus
- Philips Respironics Sidestream®
- Salter NebuTech® HDN®
- “Tee”-type Nebulizers

Conserver Device:
Westmed Circulaire® II
High-Efficiency Aerosol Drug Delivery System

When Your Care Is Critical
How does your nebulizer perform?

<table>
<thead>
<tr>
<th>Conditions for All Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
</tr>
<tr>
<td><strong>Flow</strong></td>
</tr>
<tr>
<td><strong>f</strong></td>
</tr>
<tr>
<td><strong>V_T</strong></td>
</tr>
<tr>
<td><strong>V_E</strong></td>
</tr>
</tbody>
</table>

**BAN**

- **V_T** 500 mL
- **IF** 133 mL

**RAE = Room Air Entrainment**

Breath-enhanced nebulizers, sometimes called “vented” nebulizers, perform similarly to the breath-actuated nebulizer (BAN), because they also deliberately entrain room air in order to assist evacuation of aerosol from the device. This does not increase aerosol drug delivery because entrainment of room air dilutes the aerosol.

**AeroEclipse™ II**

- **Target V_T** 500 mL
- **Nebulizer** 133 mL
- **Reservoir** 0 mL
- **RAE** 367 mL
- **Aerosol/V_T** 133/500
- **FIA** 26.6%

**‘Tee’ w/Reservoir**

- **Target V_T** 500 mL
- **Nebulizer** 133 mL
- **Reservoir** 50 mL
- **RAE** 317 mL
- **Aerosol/V_T** 183/500
- **FIA** 36.6%

**Westmed Circulaire II**

- **Reservoir** 367 mL
- **V_T** 500 mL
- **IF** 133 mL

**RAE 0 mL**

**Circulaire™ II**

- **Target V_T** 500 mL
- **Nebulizer** 133 mL
- **Reservoir** 367 mL
- **RAE** 0 mL
- **Aerosol/V_T** 500/500
- **FIA** 100%

The higher the FIA … the higher the drug delivery.

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