Helps Reduce Ventilator-Associated Pneumonia
MALLINCKRODT™ TAPERGUARD™ EVAC ORAL ENDOTRACHEAL TUBE
Subglottic secretion drainage (SSD)

Subglottic secretion drainage (SSD) helps remove oral and/or gastric secretions from above the endotracheal tube cuff before they can be aspirated. Aspiration of oral and/or gastric secretions is directly linked to the development of ventilator-associated pneumonia (VAP). Subglottic secretion drainage (SSD) helps reduce ventilator-associated pneumonia by 50%.

SSD must be done with a specialized endotracheal tube with a separate dorsal suction lumen, as shown below.

Based on clinical evidence, the following organizations recommend use of SSD to reduce the incidence of ventilator-associated pneumonia:

- American Thoracic Society/Infectious Diseases Society of America (ATS/IDSA) – Level I
- Centers for Disease Control (CDC) – Category II
- American Association of Critical Care Nurses (AACN)
- Agency for Healthcare Research and Quality (AHRQ)

Contaminated secretions enter the large evacuation port near the cuff and are removed through the suction lumen, which connects to wall suction.
TaperGuard™ Cuff Technology: The Low-Impact, Low-Pressure Endotracheal Tube

Endotracheal tubes with TaperGuard™ cuff technology have features that may help reduce the tracheal impact of intubation with a unique, taper-shaped cuff design that provides a smaller area of contact with the patient's airway than traditional barrel-shaped cuffs.⁹

**TAPERED-CUFF ADVANTAGES**

Unique TaperGuard cuff design:

- Exerts 29% less pressure on the trachea.¹⁰*
- Reduces intracuff pressure required to obtain an adequate seal compared to Mallinckrodt™ Hi-Lo cuffs¹¹
- Provides more uniform pressure distribution than Mallinckrodt Hi-Lo cuffs at equivalent intracuff pressures¹²
- Reduces microaspiration by as much as 90% compared to Mallinckrodt™ Hi-Lo cuffs¹³

“Proper control of [cuff] pressure…helped reduce…postprocedural respiratory complications such as cough, sore throat, hoarseness, and blood-streaked expectoration even in procedures of short duration (1-3 hours).”²

— Liu et al., 2010¹⁴

* Compared to Mallinckrodt™ Hi-Lo endotracheal tube. Testing conducted on Mallinckrodt™ TaperGuard™ and Mallinckrodt™ TaperGuard™ Evac endotracheal tubes.
The Mallinckrodt™ TaperGuard™ Evac oral endotracheal tube

With its integral suction lumen and evacuation port, Mallinckrodt™ Evac technology provides a safe, convenient way to suction the subglottic area above the cuff.

The Mallinckrodt™ TaperGuard™ Evac oral endotracheal tube incorporates Mallinckrodt Evac technology. It has been shown to reduce VAP by an average of 50% in multiple studies over the last decade.
### Clinical Literature

<table>
<thead>
<tr>
<th>Author and Publish Date</th>
<th>Patient Profile</th>
<th>Percent VAP Rate Study</th>
<th>Percent VAP Rate Control</th>
<th>Relative Risk Reduction</th>
<th>Additional outcome improvements</th>
<th>VAP interventions already in place during study</th>
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| Hudson 2014<sup>16</sup> | Cardiac ICU patients requiring mechanical ventilation | 1.9% | 5.6% | 66.1% | The CASS group had lower 30-day in-hospital mortality (2.1% v. 3.3%; p < 0.007), median ventilation time (8.42 v. 7.3 hours; p < 0.0001), and shorter median ICU LOS (1.77 v. 1.17 days; p < 0.0004) compared to the control group. | • Semirecumbent positioning  
• Daily evaluation of readiness for extubation  
• Oral care and decontamination with chlorhexidine  
• Initiation of safe enteral nutrition within 24 to 48 hours of ICU admission |
| Perez Granda 2013<sup>17</sup> | Cardiac ICU patients requiring mechanical ventilation | 16.46% | 23.92% | 31.2% | The Mallinckrodt™ TaperGuard™ Evac endotracheal tube group had a decreased cost of antimicrobials, €71,384 vs €63,446 (P < 0.002); and days of mechanical ventilation, 507.5 vs 377.5 (P < 0.009) compared to the control group. | |
| Lacherade 2010<sup>18</sup> | ICU patients expected to require mechanical ventilation for >48 hours | 14.8% | 25.6% | 42.2% | |
| Bouza 2008<sup>19</sup> | Patients expected to be ventilated >48 Hours | 26.7% | 47.5% | 44% | In patients intubated >48 hours, use of CASS reduced ICU length of stay by 9.5 days, and reduced duration of mechanical ventilation by 4 days. Hospital antibiotic use in daily defined doses (DDD) was less in the CASS group: (1213 vs 1932, P<.001, and 1392 vs 1932, P<.001) | • All patients received stress ulcer prophylaxis.  
• In patients intubated >48 hours, all patients but one were maintained in a semirecumbent position when possible |
| Lorente 2007<sup>20</sup> | Med/Surg ICU patients expected to be ventilated >24 Hours | Early-Onset VAP (<4 Days) | 10.7% | 66% | • Semirecumbent body position of 40 degrees  
• Periodic verification every 4 hours of intracuff pressure of 25 cm H₂O  
• Oral care with chlorhexidine every 8 hours |
| Liu 2006<sup>21</sup> | Patients expected to be ventilated >48 Hours | 6% | 20% | 70% | |
| Smulders 2002<sup>22</sup> | Surgical ICU patients expected to be ventilated >72 Hours | 4% | 6% | 75% | • All patients received stress ulcer prophylaxis with sucralfate |
| Bo 2000<sup>23</sup> | Surgical ICU patients expected to be ventilated >72 Hours | 23% | 45% | 49% | |
| Kollef 1999<sup>24</sup> | Cardio-thoracic patients (average ventilation 1.5 Days) | 5% | 8.2% | Not statistically significant | |
| Valles 1995<sup>25</sup> | Med/Surg ICU patients expected to be ventilated >72 Hours | 18.4% | 32.5% | 43% | |
| Mahul 1992<sup>26</sup> | Med/Surg ICU patients expected to be ventilated >72 Hours | 13% | 29% | 55% | • Stress ulcer prophylaxis |

Clinical studies referenced in the table above were conducted comparing Mallinckrodt TaperGuard Evac vs. the Mallinckrodt™ Hi-Lo Evac endotracheal tube. The Mallinckrodt TaperGuard Evac endotracheal tube incorporates the same subglottic secretion drainage technology as the Mallinckrodt Hi-Lo Evac endotracheal tube.<sup>15</sup>
HELP REDUCE VENTILATOR-ASSOCIATED PNEUMONIA BY 50%¹

Specifications

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LEARN MORE

The Mallinckrodt™ TaperGuard™ Evac oral endotracheal tube

1. Cuff Inflation Valve
2. Magill Curve
3. Suction Lumen
4. Low-Impact®, Low-Pressure TaperGuard™ Cuff
5. Evacuation Port
6. Hooded Murphy Tip with Eye
References


14. Mallinckrodt™ TaperGuard™ Evac endotracheal tube 510(k)#090352 benchtop testing.


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