

References

1. Persson M, van der Linden J. Intraoperative CO₂ insufflation can decrease the risk of surgical site infection. *Medical Hypotheses*. 2008;71(1):8-13.
2. Persson M, Svenarud P, Flock J-I, van der Linden J. Carbon dioxide inhibits the growth rate of *Staphylococcus aureus* at body temperature. *Surgical Endoscopy*. 2005 Jan;19(1):91-4.
3. van der Linden J, Persson M, Svenarud P. Carbon dioxide insufflation on the number and behavior of air microemboli in open-heart surgery - Response. *Circulation*. 2004 Aug;110(5):E55-56.
4. Persson M, van der Linden J. Wound ventilation with ultra-clean air for prevention of direct airborne contamination during surgery. *Infection Control & Hospital Epidemiology*. 2004 Apr;25(4):297-301.
5. Persson M, Svenarud P, van der Linden J. What is the optimal device for carbon dioxide de-airing of the cardiothoracic wound and how should it be positioned? *Journal of Cardiothoracic & Vascular Anesthesia*. 2004 Apr;18(2):180-4.
6. Svenarud P, Persson M, van der Linden J. Effect of CO₂ insufflation on the number and behavior of air microemboli in open-heart surgery. *Circulation*. 2004 Mar;109(9):1127-32.
7. Persson M, van der Linden J. Wound ventilation with carbon dioxide: a simple method to prevent direct airborne contamination during cardiac surgery? *Journal of Hospital Infection*. 2004 Feb; 56(2):131-6.
8. Svenarud P, van der Linden J. Carbon dioxide de-airing techniques. *Proceedings of the European Association for Cardio-thoracic Surgery*. 2004 Sep; 103-5.
9. Persson M, van der Linden J. A simple system for intraoperative antiseptic wound ventilation. *Journal of Hospital Infection*. 2003 Oct;55(2):152-3.
10. Persson M, Flock J-I, van der Linden J. Antiseptic wound ventilation with a gas-diffuser: a new intraoperative method to prevent surgical wound infection? *Journal of Hospital Infection*. 2003 Aug;54(4):294-9.
11. Persson M, van der Linden J. De-airing of a cardiothoracic wound cavity model with carbon dioxide: theory and comparison of a gas diffuser with conventional tubes. *Journal of Cardiothoracic & Vascular Anesthesia*. 2003 Jun;17(3):329-35.
12. van der Linden J, Persson M. A gauze sponge cannot act as a gas diffuser in cardiac surgery when it gets wet. *Journal of Thoracic & Cardiovascular Surgery*. 2003 May;125(5):1178-9.
13. Svenarud P, Persson M, van der Linden J. Efficiency of a gas diffuser and influence of suction in carbon dioxide deairing of a cardiothoracic wound cavity model. *Journal of Thoracic & Cardiovascular Surgery*. 2003 May;125(5):1043-9.
14. Svenarud P, Persson M, van der Linden J. Intermittent or continuous carbon dioxide insufflation for de-airing of the cardiothoracic wound cavity? *An experimental study with a new gas-diffuser*. *Anesthesia & Analgesia*. 2003 Feb;96(2):321-7.

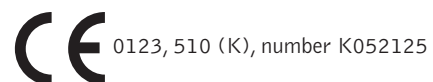


CarbonAid™ CO₂ diffuser

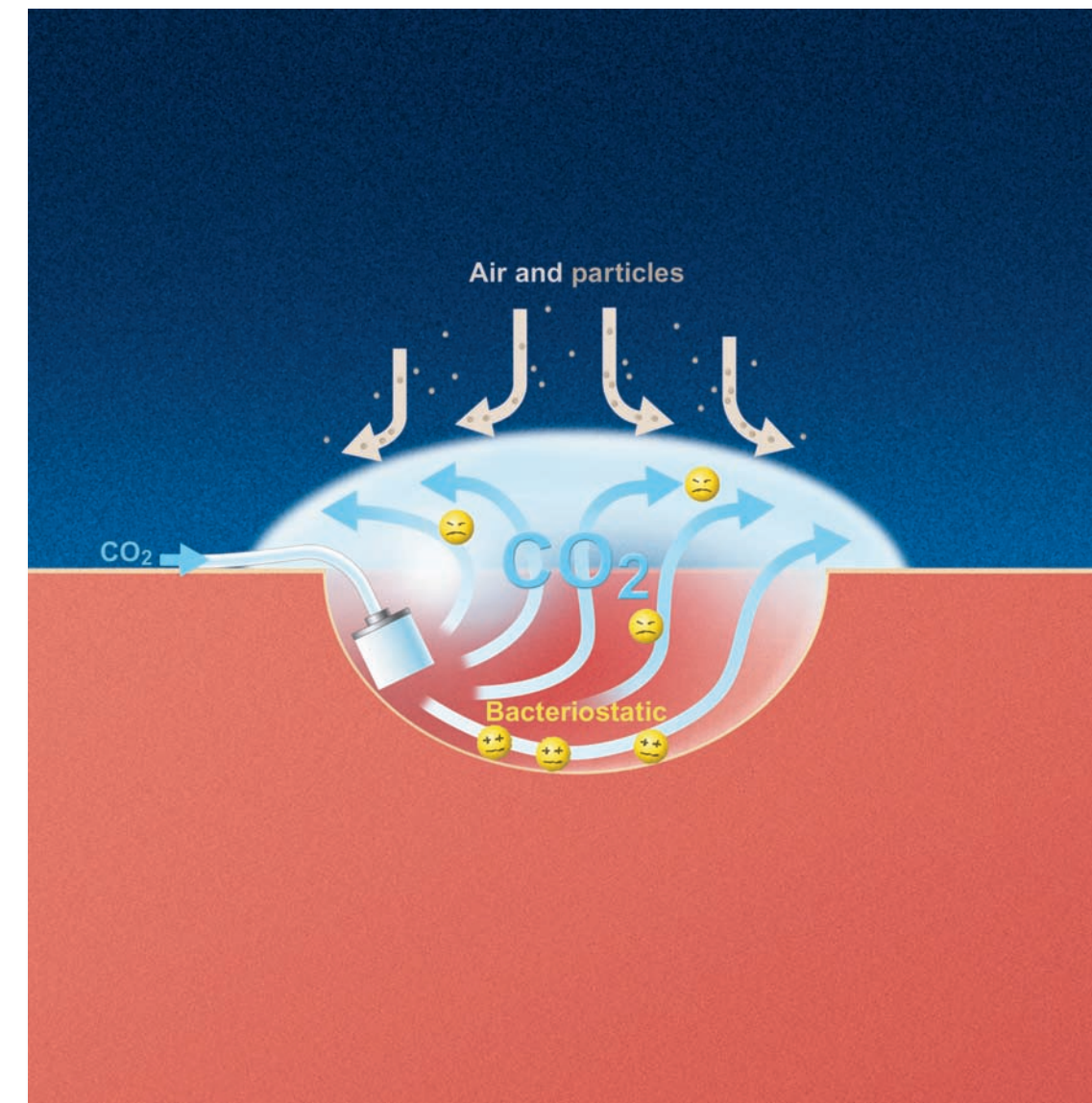
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Patents: US6494858, US6994685, EP1032322, EP1239915(DE,FR,GB), EP1494606(DE,FR,GB), EP1032322(DE,FR,GB), SE515473, JP4094810; further patents are pending.

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Be serious about de-airing!



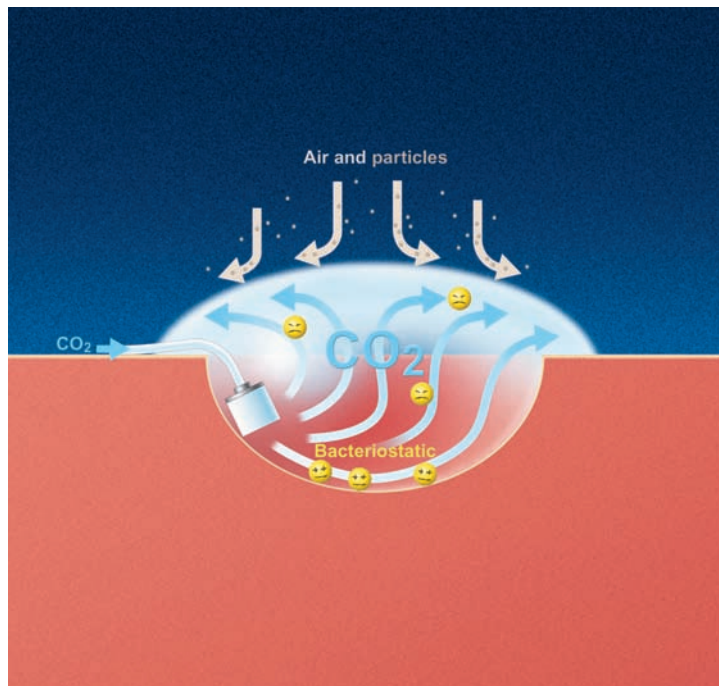
Replace *all* air with CO₂ during cardiothoracic surgery!

CarbonAid™ CO₂ diffuser

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CarbonAid™ CO₂ diffuser

– for effective de-airing with CO₂ during cardiothoracic surgery



– **No air in the wound, no risk for air embolism!**

To reduce the incidence of postoperative neurological complications^{3,6}.

– **Repel bacteria-carrying particles from the wound cavity!**

Less contamination, less risk for post-operative wound infection^{1,7}.

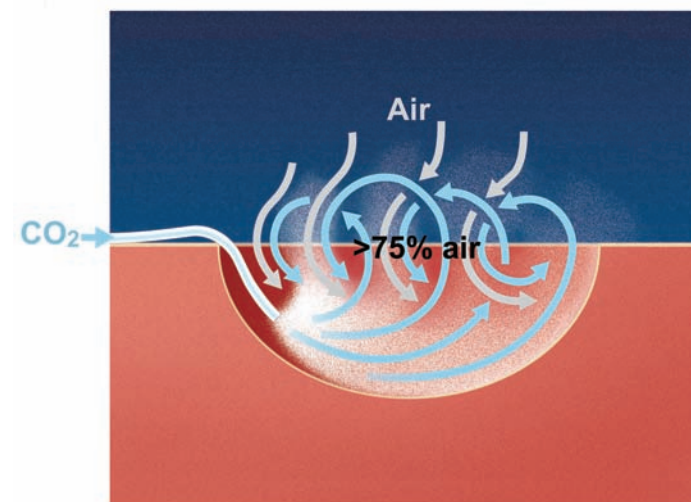
– **Bacteriostatic effect of CO₂!**

Reduced bacterial growth means fewer infections^{1,2}.

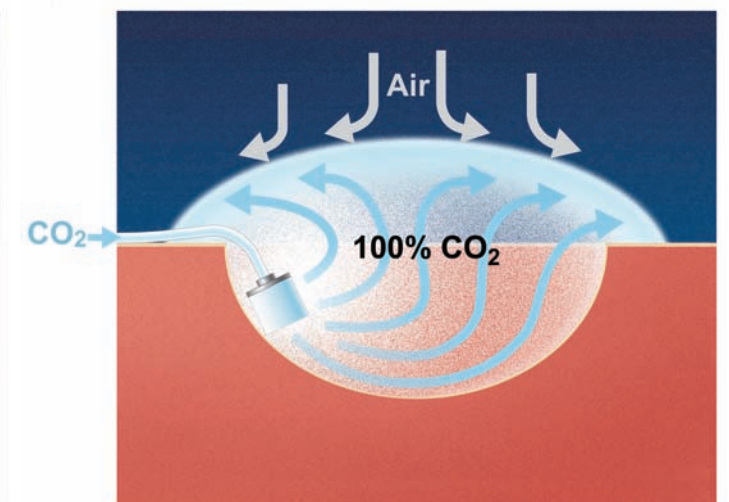


CarbonAid™ the only way to create a pure CO₂ atmosphere in the wound

By avoiding turbulence the CarbonAid™ CO₂ diffuser creates a totally saturated CO₂ atmosphere within the wound cavity (>99%)^{3,8,5,11}. It is the only device of its sort that stays effective when wet^{5,12}. Thus, it eliminates the risk of air embolism during open-heart surgery.



open ended tube



CarbonAid™ CO₂ diffuser

When CO₂ is insufflated via CarbonAid™ a protective cushion is built up and the continuous overflow from within the cavity prevents microscopic particles from descending into the wound. This overflow will even transport away such particles. The risk of airborne contamination is thus reduced by 80%^{1,7}.

The well known bacteriostatic effect of CO₂ further contributes to the prevention of postoperative infections, e.g. those caused by staphylococcus aureus^{1,2}.