

- V případě, kdy dojde ke změně stavu sliznic nebo jazyka, jejich otoku, či krvácení z nich, zbarvení zubů, bolestivé reakci pacienta, je vždy informován lékař.
- Před hygienou kontrolujeme tlak v obturační manžetě a bezprostředně po hygieně dutiny ústní odsajeme přebytky roztoku a ústních sekretů z úst a hypofaryngu.
- Hygienu dutiny ústní provádíme vždy v polosedě, se zvednutou horní polovinou těla minimálně do 30°.

LITERATURA

1. Magill SS, O'Leary E, Janelle SJ, Thompson DL, Dumyati G, Nadle J, et al. Emerging Infections Program Hospital Prevalence Survey Team. Changes in Prevalence of Health Care-Associated Infections in U.S. Hospitals. *N Engl J Med*. 2018 Nov 1;379(18):1732-1744. doi: 10.1056/NEJMoa1801550. PMID: 30380384; PMCID: PMC7978499.
2. Pileggi C, Mascaro V, Bianco A, Nobile CGA, Pavia M. Ventilator Bundle and Its Effects on Mortality Among ICU Patients: A Meta-Analysis. *Crit Care Med*. 2018 Jul;46(7):1167-1174. doi: 10.1097/CCM.0000000000003136. PMID: 29629985.
3. Nguile-Makao M, Zahar JR, François A, Tabah A, Garrouste-Orgeas M, Allaouchiche B, et al. Attributable mortality of ventilator-associated pneumonia: respective impact of main characteristics at ICU admission and VAP onset using conditional logistic regression and multi-state models. *Intensive Care Med*. 2010 May;36(5):781-9. doi: 10.1007/s00134-010-1824-6. Epub 2010 Mar 16. PMID: 20232046.
4. Jaillette E, Girault C, Brunin G, Zerimech F, Behal H, Chiche A, et al; BestCuff Study Group and the BoRéal Network. Impact of tapered-cuff tracheal tube on microaspiration of gastric contents in intubated critically ill patients: a multicenter cluster-randomized cross-over controlled trial. *Intensive Care Med*. 2017 Nov;43(11):1562-1571. doi: 10.1007/s00134-017-4736-x. Epub 2017 Mar 16. PMID: 28303301.
5. Garrouste-Orgeas M, Chevret S, Arlet G, Marie O, Rouveau M, Popoff N, et al. Oropharyngeal or gastric colonization and nosocomial pneumonia in adult intensive care unit patients. A prospective study based on genomic DNA analysis. *Am J Respir Crit Care Med*. 1997 Nov;156(5):1647-55. doi: 10.1164/ajrccm.156. 5. 96-04076. PMID: 9372689.
6. Bouadma L, Deslandes E, Lolom I, Le Corre B, Mourvillier B, Regnier B, et al. Long-term impact of a multifaceted prevention program on ventilator-associated pneumonia in a medical intensive care unit. *Clin Infect Dis*. 2010 Nov 15;51(10):1115-22. doi: 10.1086/656737. Epub 2010 Oct 11. PMID: 20936973.
7. Resar P, Pronovost P, Haraden C, Simmonds T, Rainey T, Nolan T. Using a bundle approach to improve ventilator care processes and reduce ventilator-associated pneumonia. *Jt Comm J Qual Patient Saf*. 2005 May;31(5):243-8. doi: 10.1016/s1553-7250(05)31031-2. PMID: 15960014.
8. Resar R, Griffin FA, Haraden C, Roger R, Griffin FA, Haraden H, et al. Using Care Bundles to Improve Health Care Quality. IHI Innovation Series White Paper. Cambridge, MA, Institute for Healthcare Improvement [Internet]. 2012 Jun 1 [cited 2012 Jun 1] Available from: <http://www.IHI.org>. Accessed June 1, 2017.
9. Kallet RH. Ventilator Bundles in Transition: From Prevention of Ventilator-Associated Pneumonia to Prevention of Ventilator-Associated Events. *Respir Care*. 2019 Aug;64(8):994-1006. doi: 10.4187/respcare.06966. PMID: 31346074.
10. Thapa D, Liu T, Chair SY. Multifaceted interventions are likely to be more effective to increase adherence to the ventilator care bundle: A systematic review of strategies to improve care bundle compliance. *Intensive Crit Care Nurs*. 2023 Feb;74:103310. doi: 10.1016/j.iccn.2022.103310. Epub 2022 Sep 23. PMID: 36154789.
11. Klompas M. Eight initiatives that misleadingly lower ventilator-associated pneumonia rates. *Am J Infect Control*. 2012 Jun;40(5):408-10. doi: 10.1016/j.ajic.2011. 07. 012. Epub 2011 Sep 23. PMID: 21943868.
12. Ouellette DR, Patel S, Girard TD, Morris PE, Schmidt GA, Truitt JD, et al. Liberation From Mechanical Ventilation in Critically Ill Adults: An Official American College of Chest Physicians/American Thoracic Society Clinical Practice Guideline: Inspiratory Pressure Augmentation During Spontaneous Breathing Trials, Protocols Minimizing Sedation, and Noninvasive Ventilation Immediately After Extubation. *Chest*. 2017 Jan;151(1):166-180. doi: 10.1016/j.chest.2016. 10. 036. Epub 2016 Nov 3. PMID: 27818331.
13. Waldauf P, Jiroutková K, Krajčová A, Puthucherry Z, Duška F. Effects of Rehabilitation Interventions on Clinical Outcomes in Critically Ill Patients: Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Crit Care Med*. 2020 Jul;48(7):1055-1065. doi: 10.1097/CCM.0000000000004382. PMID: 32345834.
14. Bodžašová M. Prevence ventilátorové pneumonie – role sestry. *akutně.cz*. [Internet] 2022. Available from: PowerPoint Presentation (akutne.cz).
15. Hua F, Xie H, Worthington HV, Furness S, Zhang Q, Li C. Oral hygiene care for critically ill patients to prevent ventilator-associated pneumonia. *Cochrane Database Syst Rev*. 2016 Oct 25;10(10):CD008367. doi: 10.1002/14651858.CD008367.pub3. Update in: *Cochrane Database Syst Rev*. 2020 Dec 24;12:CD008367. PMID: 27778318; PMCID: PMC6460950.

Závěr

Péče o dutinu ústní je u ventilovaných kriticky nemocných pacientů v intenzivní péči důležitá – její poctivé rutinní provádění patří mezi základní pilíře balíčku opatření k prevenci VAP. Otázka, jaký roztok je vhodný k orální dekontaminaci, však zůstává otevřená a vzhledem k tomu, že chlorhexidin má při aplikaci do dutiny ústní známé nežádoucí účinky a může představovat riziko, musíme v zájmu našich pacientů dále hledat bezpečné alternativy.

16. Gilbert JA, Blaser MJ, Caporaso JG, Jansson JK, Lynch SV, Knight R. Current understanding of the human microbiome. *Nat Med*. 2018 Apr 10;24(4):392-400. doi: 10.1038/nm.4517. PMID: 29634682; PMCID: PMC7043356.
17. Tuganbaev T, Yoshida K, Honda K. The effects of oral microbiota on health. *Science*. 2022 May 27;376(6596):934-936. doi: 10.1126/science.abn1890. Epub 2022 May 26. PMID: 35617380.
18. Wolff NS, Hugenholtz F, Wiersinga WJ. The emerging role of the microbiota in the ICU. *Crit Care*. 2018 Mar 20;22(1):78. doi: 10.1186/s13054-018-1999-8. PMID: 29559006; PMCID: PMC5861706.
19. Limeback H. Preventivní stomatologie. Praha: Grada; 2017. ISBN [19] 978-80-271-0094-1.
20. Marino PJ, Hannigan A, Haywood S, Cole JM, Palmer N, Emanuel C, et al. Comparison of foam swabs and toothbrushes as oral hygiene interventions in mechanically ventilated patients: a randomised split mouth study. *BMJ Open Respir Res*. 2016 Oct 14;3(1):e000150. doi: 10.1136/bmjresp-2016-000150. PMID: 27843549; PMCID: PMC5073587.
21. Jakubec P, Křenková A, Kolek V. Nozokomiální pneumonie [Hospital-acquired pneumonias]. *Vnitřní Lékař*. 2018 Winter;63(11):776-785. Czech. PMID: 29303279.
22. Zhao T, Wu X, Zhang Q, Li C, Worthington HV, Hua F. Oral hygiene care for critically ill patients to prevent ventilator-associated pneumonia. *Cochrane Database Syst Rev*. 2020 Dec 24;12(12):CD008367. doi: 10.1002/14651858.CD008367.pub4. PMID: 33368159; PMCID: PMC8114488.
23. Scannapieco FA, Bush RB, Paju S. Associations between periodontal disease and risk for nosocomial bacterial pneumonia and chronic obstructive pulmonary disease. A systematic review. *Ann Periodontol*. 2003 Dec;8(1):54-69. doi: 10.1902/annals.2003. 8. 1. 54. PMID: 14971248.
24. Feider LL, Mitchell P, Bridges E. Oral care practices for orally intubated critically ill adults. *Am J Crit Care*. 2010 Mar;19(2):175-83. doi: 10.4037/ajcc2010816. PMID: 20194614.
25. Kearns R, Booth M. Oral Hygiene Practices in Scottish Intensive Care Units – a National Survey. *Journal of the Intensive Care Society*. 2009;10(2):155-157. doi:10.1177/175114370901000224
26. Meidani M, Khorvash F, Abbasi S, Cheshmavar M, Tavakoli H. Oropharyngeal Irrigation to Prevent Ventilator-Associated-Pneumonia: Comparing Potassium Permanganate with Chlorhexidine. *Int J Prev Med*. 2018 Oct 12;9:93. doi: 10.4103/ijpvm.IJPVM_370_17. PMID: 30450176; PMCID: PMC6202778.
27. Hanifi N, Masoumi M, Jamshidi MR, Faghihzadeh S. The Effect of Ozonated Water and Chlorhexidine Gluconate on Prevention of Ventilator-Associated Pneumonia: A Double-Blind, Randomized, Clinical Trial. *Iranian Red Crescent Medical Journal*. In Press. 60576. 10.5812/ircmj.60576.
28. Nobahar M, Razavi MR, Malek F, Ghorbani R. Effects of hydrogen peroxide mouthwash on preventing ventilator-associated pneumonia in patients admitted to the intensive care unit. *Braz J Infect Dis*. 2016 Sep-Oct;20(5):444-50. doi: 10.1016/j.bjid.2016. 06. 005. Epub 2016 Jul 26. PMID: 27471125; PMCID: PMC9425535.
29. Sozkes S, Sozkes S. Use of toothbrushing in conjunction with chlorhexidine for preventing ventilator-associated pneumonia: A random-effect meta-analysis of randomized controlled trials. *Int J Dent Hyg*. 2023 May;21(2):389-397. doi: 10.1111/idh.12560. Epub 2021 Oct 31. PMID: 34687588.
30. Collins T, Plowright C, Gibson V, Stayt L, Clarke S, Caisley J, et al. British Association of Critical Care Nurses: Evidence-based consensus paper for oral care within adult critical care units. *Nurs Crit Care*. 2021 Jul;26(4):224-233. doi: 10.1111/nicc.12570. Epub 2020 Oct 29. PMID: 33124119.
31. Chan EY, Ruest A, Meade MO, Cook DJ. Oral decontamination for prevention of pneumonia in mechanically ventilated adults: systematic review and meta-analysis. *BMJ*. 2007 Apr 28;334(7599):889. doi: 10.1136/bmj.39136.528160.BE. Epub 2007 Mar 26. PMID: 17387118; PMCID: PMC1857782.
32. Labeau SO, Van de Vyver K, Brusselsaers N, Vogelaers D, Blot SI. Prevention of ventilator-associated pneumonia with oral antiseptics: a systematic review and meta-analysis. *Lancet Infect Dis*. 2011 Nov;11(11):845-54. doi: 10.1016/S1473-3099(11)70127-X. Epub 2011 Jul 26. PMID: 21798809.
33. DeRiso AJ 2nd, Ladowski JS, Dillon TA, Justice JW, Peterson AC. Chlorhexidine gluconate 0.12% oral rinse reduces the incidence of total nosocomial respiratory infection and