Document details

‹ Back to results | 1 of 1

Export Download Print E-mail Save to PDF Add to List More... ›

View at Publisher

Australian Critical Care
Volume 32, Issue 1, January 2019, Pages 55-62

Ventilator-associated events in children : A review of literature (Review)

Mohd Ali, N.A.[a,b], Jauncey-Cooke, J.[a,c], Bogossian, F.[a,d]

[a]School of Nursing, Midwifery and Social Work, The University of Queensland, Australia
[b]Department of Critical Care Nursing, Faculty of Nursing, International Islamic University Malaysia (IIUM), Malaysia
[c]Queensland Children's Hospital, Children's Health Queensland Hospital & Health Service, Brisbane, Australia

View additional affiliations

Abstract

View references (39)

Background: The complexity and variation in ventilator associated pneumonia (VAP) definitions in paediatrics may pose threats to the reliable identification of VAP. The revision of the surveillance definition to ventilator-associated event (VAE) has been mandated in adult populations, to overcome these issues. However, the evidence for application of the definition is unknown in children. Objectives: To review the evidence on the application of the new VAE surveillance definition in paediatric population and examine the potential challenges in clinical practice. Review methods: A systematic approach was used to locate and synthesise the relevant paediatric literature. Studies were appraised according to epidemiological appraisal instrument (EAI) and the grades of evidence in the National Health Medical Research Council (NHMRC) guidelines. Results: Seven studies met the inclusion criteria. Quality of study methods was above 50% on the EAI. The overall grade of evidence was assessed as C (satisfactory). The incidence of VAE in children ranged from 1.1 to 20.9 per 1000 ventilator days as a result of variations in surveillance criteria across included studies. There is little agreement between the new VAE and PNU/VAP surveillance definition in the identification of VAP. Challenges in the application of VAE surveillance were related to; the difference in modes of ventilation used in children versus adults, inconclusive criteria tailored to paediatric samples and a lack of data that support for automatic data extraction applied in paediatric studies. Conclusion: This review demonstrated promising evidence using the new VAE surveillance definition to define the VAE in children, but the level of the evidence is low. Before the possibility of real implementation in clinical settings, challenges related to VAE paediatric specific criteria' and the value of automated data collection need to be considered. © 2018 Australian College of Critical Care Nurses Ltd

SciVal Topic Prominence

Topic: Pneumonia, Ventilator-Associated | Ventilators, Mechanical | ventilator-associated events

Prominence percentile: 94.722

Author keywords

Children | Criteria | Intensive care unit | Paediatric | Surveillance | Ventilator associated event (VAE) | Ventilator associated pneumonia (VAP)

ISSN: 10367314
Source Type: Journal
Original language: English

DOI: 10.1016/j.aucc.2018.11.063
PubMed ID: 30554940
Document Type: Review
Publisher: Elsevier Ireland Ltd

References (39)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Gupta, S., Boville, B.M., Blanton, R., Lukasiewicz, G., Wincek, J., Bai, C., Forbes, M.L.

A Multicentered Prospective Analysis of Diagnosis, Risk Factors, and Outcomes Associated With Pediatric Ventilator-Associated Pneumonia

(2015) *Pediatric Critical Care Medicine*, 16 (3), pp. e65-e73. Cited 27 times.
http://journals.lww.com/pccmjournal
doi: 10.1097/PCC.0000000000000338

View at Publisher

2 Edward, I.B., Sergio, R.L., María Nela, A., María Mercedes, S., Magaly, P., Nieves, S.
Economic analysis of a pediatric ventilator-associated pneumonia prevention initiative in Nicaragua
(2012) *Int J Pediatr*, 2012.

3 Garner, J.S., Jarvis, W.R., Emori, T.G., Horan, T.C., Hughes, J.M.

CDC definitions for nosocomial infections, 1988

(1988) *AJIC: American Journal of Infection Control*, 16 (3), pp. 128-140. Cited 4662 times.
doi: 10.1016/0196-6553(88)90053-3

View at Publisher

4 Tablan, O.C., Anderson, L.J., Besser, R., Bridges, C., Hajjeh, R.

Guidelines for preventing health-care--associated pneumonia, 2003: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee.

(2004) *MMWR. Recommendations and reports : Morbidity and mortality weekly report. Recommendations and reports / Centers for Disease Control*, 53 (RR-3), pp. 1-36. Cited 942 times.

5 Guidelines for the management of adults with hospital-acquired, ventilator-associated, and healthcare-associated pneumonia

(2005) *American Journal of Respiratory and Critical Care Medicine*, 171 (4), pp. 388-416. Cited 4294 times.
doi: 10.1164/rccm.200405-644ST

View at Publisher

6 Horan, T.C., Andrus, M., Dudeck, M.A.

CDC/NHSN surveillance definition of health care-associated infection and criteria for specific types of infections in the acute care setting

(2008) *American Journal of Infection Control*, 36 (5), pp. 309-332. Cited 3014 times.
doi: 10.1016/j.ajic.2008.03.002

View at Publisher

7 Pneumonia (Ventilator –associated [VAP] and non- ventilator associated pneumonia [PNEU] event Protocol (2015)
(Accessed 2 October 2015)
https://www.cdc.gov/nhsn/pdfs/pscmanual/6pscvapcurrent.pdf

Incidence and Characteristics of Ventilator-Associated Events Reported to the National Healthcare Safety Network in 2014*

Magill, S.S. , Li, Q. , Gross, C.
(2016) Critical Care Medicine

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

8 Surveillance for ventilator-associated event (VAE) protocol
(2015)
(Accessed 2 October 2015)
https://www.cdc.gov/nhsn/pdfs/pscmanual/10-vae_final.pdf

9 Association for Professionals in Infection Control and Epidemiology/CDC
Neonatal and pediatric ventilator-associated event (VAE) working Group summary of activities
(2013)
(Accessed 2 October 2015)
http://www.apic.org/cdc

10 Hayashi, Y., Morisawa, K., Klompas, M., Jones, M., Bandeshe, H., Boots, R., Lipman, J., (...), Paterson, D.L.
Toward improved surveillance: The impact of ventilator-associated complications on length of stay and antibiotic use in patients in intensive care units (Open Access)

(2013) *Clinical Infectious Diseases*, 56 (4), pp. 471-477. Cited 87 times.
doi: 10.1093/cid/cis926

View at Publisher

11 Klompas, M.
Complications of mechanical ventilation - The CDC's new surveillance paradigm

(2013) *New England Journal of Medicine*, 368 (16), pp. 1472-1475. Cited 80 times.
http://www.nejm.org/doi/pdf/10.1056/NEJMp1300633
doi: 10.1056/NEJMp1300633

View at Publisher

12 Genaidy, A.M., LeMasters, G.K., Lockey, J., Succop, P., Deddens, J., Sobeih, T., Dunning, K.
An epidemiological appraisal instrument - A tool for evaluation of epidemiological studies

(2007) *Ergonomics*, 50 (6), pp. 920-960. Cited 64 times.
doi: 10.1080/00140130701237667

View at Publisher

13 Nix, S., Smith, M., Vicenzino, B.
Prevalence of hallux valgus in the general population: A systematic review and meta-analysis (Open Access)

(2010) *Journal of Foot and Ankle Research*, 3 (1), art. no. 21. Cited 187 times.
http://www.jfootankleres.com/content/3/1/21
doi: 10.1186/1757-1146-3-21

View at Publisher

14 NHMRC additional levels of evidence and grades for recommendations for developers of guidelines
(2000)

15 Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G.

Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement

(2009) *Journal of clinical epidemiology*, 62 (10), pp. 1006-1012. Cited 3759 times.
doi: 10.1016/j.jclinepi.2009.06.005

View at Publisher

16 Iosifidis, E., Chochliourou, E., Violaki, A., Chorafa, E., Psachna, S., Roumpou, A., Sdougka, M., (...), Roilides, E.

Evaluation of the new centers for disease control and prevention ventilator-associated event module and criteria in critically ill children in Greece

(2016) *Infection Control and Hospital Epidemiology*, 37 (10), pp. 1162-1166. Cited 7 times.
www.journals.uchicago.edu/ICHE/home.html
doi: 10.1017/ice.2016.135

View at Publisher

17 Narayanan, A., Dixon, G., Chalkley, S., Ray, S., Brierley, J.

Ventilator-associated pneumonia in children: comparing the plethora of surveillance definitions

(2016) *Journal of Hospital Infection*, 94 (2), pp. 163-164. Cited 2 times.
http://www.elsevier.com.ezproxy.um.edu.my/inca/publications/store/6/2/3/0/5/2/index.htt
doi: 10.1016/j.jhin.2016.05.006

View at Publisher

18 Beardsley, A.L., Nitu, M.E., Cox, E.G., Benneyworth, B.D.

An Evaluation of Various Ventilator-Associated Infection Criteria in a PICU

(2016) *Pediatric Critical Care Medicine*, 17 (1), pp. 73-80. Cited 15 times.
http://journals.lww.com/pccmjournal
doi: 10.1097/PCC.0000000000000569

View at Publisher

19 Cirulis, M.M., Hamele, M.T., Stockmann, C.R., Bennett, T.D., Bratton, S.L.

Comparison of the New Adult Ventilator-Associated Event Criteria to the Centers for Disease Control and Prevention Pediatric Ventilator-Associated Pneumonia Definition (PNU2) in a Population of Pediatric Traumatic Brain Injury Patients

(2016) *Pediatric Critical Care Medicine*, 17 (2), pp. 157-164. Cited 10 times.
http://journals.lww.com/pccmjournal
doi: 10.1097/PCC.0000000000000590

View at Publisher

20 Cocoros, N.M., Kleinman, K., Priebe, G.P., Gray, J.E., Logan, L.K., Larsen, G., Sammons, J., (...), Lee, G.M.

Ventilator-associated events in neonates and children - A new paradigm

(2016) *Critical Care Medicine*, 44 (1), pp. 14-22. Cited 16 times.
http://journals.lww.com/ccmjournal/pages/default.aspx
doi: 10.1097/CCM.0000000000001372

View at Publisher

21 Phongjitsiri, S., Coss-Bu, J., Kennedy, C., Silva, J., Starke, J., Graf, J., Thammasitboon, S.

The centers for disease control and prevention's new definitions for complications of mechanical ventilation shift the focus of quality surveillance and predict clinical outcomes in a PICU

(2015) *Critical Care Medicine*, 43 (11), pp. 2446-2451. Cited 14 times.
http://journals.lww.com/ccmjournal/pages/default.aspx
doi: 10.1097/CCM.0000000000001261

View at Publisher

22 Taylor, C.N., Noronha, L., Wichman, C.S., Varman, M.

Evaluation of 2 sets of screening criteria for ventilator-associated pneumonia in a children's hospital

(2014) *American Journal of Infection Control*, 42 (9), pp. 1011-1013. Cited 4 times.
http://www.elsevier.com.ezproxy.um.edu.my/inca/publications/store/6/2/3/0/8/3/index.htt
doi: 10.1016/j.ajic.2014.05.034

View at Publisher

23 Tamma, P.D., Turnbull, A.E., Milstone, A.M., Lehmann, C.U., Sydnor, E.R.M., Cosgrove, S.E.

Ventilator-associated tracheitis in children: Does antibiotic duration matter?
(Open Access)

(2011) *Clinical Infectious Diseases*, 52 (11), pp. 1324-1331. Cited 32 times.
doi: 10.1093/cid/cir203

View at Publisher

24 Craven, D.E., Chroneou, A., Zias, N., Hjalmarson, K.I.

Ventilator-associated tracheobronchitis; the impact of targeted antibiotic therapy on patient outcomes

(2009) *Chest*, 135 (2), pp. 521-528. Cited 103 times.
http://www.chestjournal.org/content/135/2/521.full.pdf+html
doi: 10.1378/chest.08-1617

View at Publisher

25 Klouwenberg, P.M.C.K., Van Mourik, M.S.M., Ong, D.S.Y., Horn, J., Schultz, M.J., Cremer, O.L., Bonten, M.J.M.

Electronic implementation of a novel surveillance paradigm for ventilator-associated events feasibility and validation

(2014) *American Journal of Respiratory and Critical Care Medicine*, 189 (8), pp. 947-955. Cited 94 times.
http://www.atsjournals.org/doi/pdf/10.1164/rccm.201307-1376OC
doi: 10.1164/rccm.201307-1376OC

View at Publisher

26 Magill, S.S., Rhodes, B., Klompas, M.

Improving ventilator-associated event surveillance in the national healthcare safety network and addressing knowledge gaps: Update and review

(2014) *Current Opinion in Infectious Diseases*, 27 (4), pp. 394-400. Cited 16 times.
http://journals.lww.com/co-infectiousdiseases/pages/default.aspx
doi: 10.1097/QCO.0000000000000083

View at Publisher

27 Boyer, A.F., Schoenberg, N., Babcock, H., McMullen, K.M., Micek, S.T., Kollef, M.H.

A prospective evaluation of ventilator-associated conditions and infection-related ventilator-associated conditions

(2015) *Chest*, 147 (1), pp. 68-81. Cited 58 times.
http://journal.publications.chestnet.org/data/Journals/CHEST/931880/chest_147_1_68.pdf
doi: 10.1378/chest.14-0544

View at Publisher

28 Haustein, T., Gastmeier, P., Holmes, A., Lucet, J.-C., Shannon, R.P., Pittet, D., Harbarth, S.

Use of benchmarking and public reporting for infection control in four high-income countries

(2011) *The Lancet Infectious Diseases*, 11 (6), pp. 471-481. Cited 86 times.
doi: 10.1016/S1473-3099(10)70315-7

View at Publisher

29 Bouadma, L., Sonneville, R., Garrouste-Orgeas, M., Darmon, M., Souweine, B., Voiriot, G., Kallel, H., (...), Timsit, J.-F.

Ventilator-Associated Events: Prevalence, Outcome, and Relationship with Ventilator-Associated Pneumonia

(2015) *Critical Care Medicine*, 43 (9), pp. 1798-1806. Cited 55 times.
http://journals.lww.com/ccmjournal/pages/default.aspx
doi: 10.1097/CCM.0000000000001091

View at Publisher

30 Stevens, J.P., Silva, G., Gillis, J., Novack, V., Talmor, D., Klompas, M., Howell, M.D.

Automated Surveillance for Ventilator-Associated Events

(2014) *Chest*, 146 (6), pp. 1612-1618. Cited 29 times.
http://www.chestjournal.org/
doi: 10.1378/chest.13-2255

View at Publisher

31 Chang, I., Schibler, A.

Ventilator Associated Pneumonia in Children

(2016) *Paediatric Respiratory Reviews*, 20, pp. 10-16. Cited 11 times.
http://www.elsevier.com.ezproxy.um.edu.my/inca/publications/store/6/2/3/0/6/6/index.htt
doi: 10.1016/j.prrv.2015.09.005

View at Publisher

32 Klompas, M.

Interobserver variability in ventilator-associated pneumonia surveillance

(2010) *American Journal of Infection Control*, 38 (3), pp. 237-239. Cited 125 times.
doi: 10.1016/j.ajic.2009.10.003

View at Publisher

33 Klompas, M.
Advancing the science of ventilator-associated pneumonia surveillance (Open Access)

(2012) *Critical Care*, 16 (5), art. no. 165. Cited 8 times.
http://ccforum.com/content/16/5/165
doi: 10.1186/cc11656

View at Publisher

34 Septimus, E., Green, L., Klompas, M.
Ventilator-associated events: A broader perspective

(2015) *Critical Care Medicine*, 43 (2), pp. e59-e61. Cited 4 times.
http://journals.lww.com/ccmjournal/pages/default.aspx
doi: 10.1097/CCM.0000000000000638

View at Publisher

35 Muscedere, J., Sinuff, T., Heyland, D.K., Dodek, P.M., Keenan, S.P., Wood, G., Jiang, X., (...), Klompas, M.
The clinical impact and preventability of ventilator-associated conditions in critically ill patients who are mechanically ventilated

(2013) *Chest*, 144 (5), pp. 1453-1460. Cited 89 times.
http://journal.publications.chestnet.org/data/Journals/CHEST/928254/chest_144_5_1448.pdf
doi: 10.1378/chest.13-0853

View at Publisher

36 Klein Klouwenberg, P., van Mourik, M., Ong, D., Horn, J., Schultz, M., Cremer, O.
Validation of a novel surveillance paradigm for ventilator-associated events
(2013) *Crit Care*, 17.
P1-P

37 Santschi, M., Randolph, A.G., Rimensberger, P.C., Jouvet, P.
Mechanical ventilation strategies in children with acute lung injury: A survey on stated practice pattern

(2013) *Pediatric Critical Care Medicine*, 14 (7), pp. e332-e337. Cited 39 times.
http://journals.lww.com/pccmjournal
doi: 10.1097/PCC.0b013e31828a89a2

View at Publisher

38 Hebert, C., Flaherty, J., Smyer, J., Ding, J., Mangino, J.E.
Development and validation of an automated ventilator-associated event electronic surveillance system: A report of a successful implementation

(2018) *American Journal of Infection Control*, 46 (3), pp. 316-321.
http://www.journals.elsevier.com/ajic-american-journal-of-infection-control/
doi: 10.1016/j.ajic.2017.09.006

View at Publisher

39 Magill, S.S., Klompas, M., Balk, R., Burns, S.M., Deutschman, C.S., Diekema, D., Fridkin, S., (...), Lipsett, P.
Developing a new, national approach to surveillance for ventilator-associated events

(2013) *Critical Care Medicine*, 41 (11), pp. 2467-2475. Cited 102 times.
doi: 10.1097/CCM.0b013e3182a262db

View at Publisher

Mohd Ali, N.A.; School of Nursing, Midwifery and Social Work, The University of Queensland, Level 3, Chamberlain Building, Australia; email:noor.mohdali@uqconnect.edu.au