

[< Back to results](#) | 1 of 1[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)[View at Publisher|](#)**Document type**

Article

Source type

Journal

ISSN

22279032

DOI

10.3390/healthcare9060701

Publisher

MDPI AG

Original language

English

[View less](#) ^

Healthcare (Switzerland) • Open Access • Volume 9, Issue 6 • June 2021 • Article number 701

Pediatricians' compliance to the clinical management guidelines for community-acquired pneumonia in infants and young children in Pakistan

Shakeel S.^a, Iffat W.^a, Qamar A.^b, Ghuman F.^c, Yamin R.^d, Ahmad N.^e, Ishaq S.M.^f, Gajdacs M.^g, Patel I.ⁱ, Jamshed S.^j,^k[Save all to author list](#)^a Faculty of Pharmaceutical Sciences, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, 74200, Pakistan^b Department of Physiology, Dr. Ishrat Ul Ebad Khan Institute of Oral Health Sciences (DIKIOHS), Dow University of Health Sciences, Karachi, 74200, Pakistan^c Dow University Hospital, Dow University of Health Sciences, Karachi, 74200, Pakistan^d Department of Pediatrics, National Institute of Child Health, Karachi, 74200, Pakistan^e Jinnah Postgraduate Medical Centre, Department of Chest Medicine, Karachi, 74200, Pakistan^f Scientific Assistant, Karachi Institute of Radiotherapy and Nuclear Medicine (KIRAN), Karachi, 74200, Pakistan^g Faculty of Medicine, Institute of Medical Microbiology, Semmelweis University, Budapest, 1089, Hungary^h Department of Pharmacodynamics and Biopharmacy, Faculty of Pharmacy, University of Szeged, Szeged, 6720, Hungaryⁱ School of Pharmacy, Marshall University, Huntington, 25755, WV, United States^j Department of Clinical Pharmacy and Practice, Faculty of Pharmacy, Universiti Sultan Zainal Abidin, (UniSZA), Kuala Terengganu, 21300, Malaysia^k Qualitative Research-Methodological Application in Health Sciences Research Group, Kulliyyah of Pharmacy, International Islamic University Malaysia, Kuantan, 25200, Malaysia[Hide additional affiliations](#) ^[Abstract](#)[Author keywords](#)[SciVal Topics](#)[Funding details](#)**Abstract**

Community-acquired pneumonia (CAP) is among the most commonly prevailing acute infections in children that may require hospitalization. Inconsistencies among suggested care and actual management practices are usually observed, which raises the need to assess local clinical practices. The current study was conducted to evaluate pediatricians' compliance with the standard clinical practice guidelines and their antibiotic-prescribing behavior for the management of CAP in children. Methods: A descriptive cross-sectional study was conducted using a self-administered questionnaire; which was provided to pediatricians by the researchers. Statistical analysis was

[Metrics](#) [View all metrics >](#)

PlumX Metrics

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)**Related documents**

Paediatric use of antibiotics in children with community acquired pneumonia: A survey from Da Nang, Vietnam

Nguyen, P.T.K. , Tran, H.T. , Truong, H.T.T. (2019) *Journal of Paediatrics and Child Health*

Applying lessons learnt from research of child pneumonia management in Vietnam

Nguyen, T.K.P. , Bui, B.B.S. , Ngo, Q.C. (2020) *Paediatric Respiratory Reviews*

[View PDF](#)

Antibiotic use in children hospitalised with pneumonia in Central Vietnam

Nguyen, P.T.K. , Tran, H.T. , Fitzgerald, D.A. (2020) *Archives of Disease in Childhood*

[View all related documents based on references](#)

[Find more related documents in Scopus based on:](#)

[Authors >](#) [Keywords >](#)

performed with SPSS 25 Statistics; χ^2 tests (or Fisher-exact tests) with the p-value set at < 0.05 as the threshold for statistical significance. Results: The overall response rate was 59.2%. Male respondents were (n = 101; 42.6%), and the respondents (n = 163; 68.7%) were under 30 years of age. Amoxicillin (n = 122; 51.5%) was considered as the most commonly used first-line treatment for non-severe pneumonia, whereas a smaller proportion (n = 81; 34.2%) of respondents selected amoxicillin–clavulanate. Likewise, amoxicillin (n = 100; 42.2%) was the most popular choice for non-severe pneumonia in hospitalized children; however, if children had used antibiotics earlier to admission, respondents showed an inclination to prescribe a macrolide (n = 95; 40.0%) or second-generation cephalosporin (n = 90; 37.9%). More than 90% responded that children <6 months old with suspected bacterial CAP will probably receive better therapeutic care by hospitalization. Restricting exposure to the antibiotic as much as possible (n = 71; 29.9%), improving antibiotic prescribing (n = 59; 24.8%), and using the appropriate dose of antimicrobials (n = 29; 12.2%) were considered the major factors by the respondents to reduce antimicrobials resistance. Conclusions: The selection of antibiotics and diagnostic approach was as per the recommendations, but indication, duration of treatment, and hospitalization still can be further improved. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Clinical management guidelines; Community-acquired pneumonia; Lower respiratory tract infections; Pakistan; Pediatricians



Topic name

Antimicrobial Stewardship; Prescribing; Respiratory Tract Infections

Prominence percentile

98.433

Funding sponsor	Funding number	Acronym
Hungarian Ministry for Innovation and Technology	NKP-20-5-SZTE-330	
Magyar Tudományos Akadémia	BO/00144/20/5	MTA

See opportunities by MTA [↗](#)

Funding text

(M.G. was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences (BO/00144/20/5), the New National Excellence Programme (NKP) of the Hungarian Ministry for Innovation and Technology (NKP-20-5-SZTE-330), and ESCMID's 30 under 30 Award).

References (33)

[View in search results format >](#)

All

[Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)

- 1 Ngocho, J.S., de Jonge, M.I., Minja, L., Olomi, G.A., Mahande, M.J., Msuya, S.E., Mmbaga, B.T.
Modifiable risk factors for community-acquired pneumonia in children under 5 years of age in resource-poor settings: a case–control study ([Open Access](#))

[View PDF](#)

(2019) *Tropical Medicine and International Health*, 24 (4), pp. 484–492. Cited 6 times.
[http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.1111/\(ISSN\)1365-3156](http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.1111/(ISSN)1365-3156)
doi: 10.1111/tmi.13211

[View at Publisher](#)

- 2 Esposito, S., Principi, N.
Defining the aetiology of paediatric community-acquired pneumonia: an unsolved problem ([Open Access](#))

(2019) *Expert Review of Respiratory Medicine*, 13 (2), pp. 153–161. Cited 7 times.
<http://www.tandfonline-com.ezproxy.um.edu.my/loi/ierx20>
doi: 10.1080/17476348.2019.1562341

[View at Publisher](#)

- 3 Khan, M.A.U., Akhtar, R.J.
Community Acquired Pneumonia (CAP) in Children in Developing countries
—A Review
(2019) *North. Int. Med. Coll. J*, 11, pp. 406-410.

- 4 Ramirez, J.A., Wiemken, T.L., Peyrani, P., Arnold, F.W., Kelley, R., Mattingly, W.A., Nakamatsu, R., (...), Carrico, R.M.
Adults Hospitalized with Pneumonia in the United States: Incidence, Epidemiology, and Mortality ([Open Access](#))

(2017) *Clinical Infectious Diseases*, 65 (11), pp. 1806-1812. Cited 144 times.
<http://cid.oxfordjournals.org/content/by/year>
doi: 10.1093/cid/cix647

[View at Publisher](#)

- 5 Akhter, S., Rizvi, N., Bhura, S., Warraich, U.A.
Management of community acquired pneumonia by family physicians ([Open Access](#))

(2017) *Pakistan Journal of Medical Sciences*, 33 (4), pp. 783-787. Cited 2 times.
<http://www.pjms.com.pk/index.php/pjms/article/download/12577/5412>
doi: 10.12669/pjms.334.12577

[View at Publisher](#)

- 6 Bradley, J.S., Byington, C.L., Shah, S.S., Alverson, B., Carter, E.R., Harrison, C., Kaplan, S.L., (...), Swanson, J.T.
The management of community-acquired pneumonia in infants and children older than 3 months of age: Clinical practice guidelines by the pediatric infectious diseases society and the infectious diseases society of America ([Open Access](#))

(2011) *Clinical Infectious Diseases*, 53 (7), pp. e25-e76. Cited 726 times.
doi: 10.1093/cid/cir531

[View at Publisher](#)

- 7 Cillóniz, C., Dominedò, C., Torres, A.
Multidrug Resistant Gram-Negative Bacteria in Community-Acquired Pneumonia ([Open Access](#)) [View PDF](#)

(2019) *Critical Care*, 23 (1), art. no. 79. Cited 30 times.
<http://ccforum.com/content/17>
doi: 10.1186/s13054-019-2371-3

[View at Publisher](#)

- 8 Omair, A.
Sample size estimation and sampling techniques for selecting a representative sample
(2014) *J. Health Special*, 2, p. 142. Cited 21 times.
[CrossRef]

- 9 Nguyen, P.T.K., Tran, H.T., Truong, H.T.T., Nguyen, V.T., Graham, S.M., Marais, B.J.
Paediatric use of antibiotics in children with community acquired pneumonia: A survey from Da Nang, Vietnam

(2019) *Journal of Paediatrics and Child Health*, 55 (11), pp. 1329-1334. Cited 6 times.
[http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.1111/\(ISSN\)1440-1754](http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.1111/(ISSN)1440-1754)
doi: 10.1111/jpc.14413

[View at Publisher](#)

- 10 Fishman, N.
Policy statement on antimicrobial stewardship by the society for healthcare epidemiology of america (SHEA), the infectious diseases society of america (IDSA), and the pediatric infectious diseases society (PIDS) ([Open Access](#))

(2012) *Infection Control and Hospital Epidemiology*, 33 (4), pp. 322-327. Cited 394 times.
<http://www.jstor.org.ezproxy.um.edu.my/stable/pdfplus/10.1086/665010.pdf>
doi: 10.1086/665010

View at Publisher
-
- 11 Shakeel, S., Nesar, S., Rahim, N., Iffat, W., Ahmed, H.F., Rizvi, M., Jamshed, S.
Utilization and impact of electronic and print media on the patients' health status: Physicians' perspectives

(2017) *Journal of Pharmacy and Bioallied Sciences*, 9 (4), pp. 266-271. Cited 2 times.
<http://www.jpbonline.org>
doi: 10.4103/JPBS.JPBS_327_16

View at Publisher
-
- 12 Cho, Y.I., Johnson, T.P., VanGeest, J.B.
Enhancing Surveys of Health Care Professionals: A Meta-Analysis of Techniques to Improve Response

(2013) *Evaluation and the Health Professions*, 36 (3), pp. 382-407. Cited 216 times.
doi: 10.1177/0163278713496425

View at Publisher
-
- 13 Brtnikova, M., Crane, L.A., Allison, M.A., Hurley, L.P., Beaty, B.L., Kempe, A.
A method for achieving high response rates in national surveys of U.S. primary care physicians ([Open Access](#))

(2018) *PLoS ONE*, 13 (8), art. no. e0202755. Cited 42 times.
<http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0202755&type=printable>
doi: 10.1371/journal.pone.0202755

View at Publisher
-
- 14 Gajdács, M., Albericio, F.
Antibiotic resistance: from the bench to patients ([Open Access](#))

(2019) *Antibiotics*, 8 (3), art. no. 129. Cited 42 times.
<https://www.mdpi.com/2079-6382/8/3/129/pdf>
doi: 10.3390/antibiotics8030129

View at Publisher
-
- 15 Gerber, J.S., Ross, R.K., Bryan, M., Localio, A.R., Szymczak, J.E., Wasserman, R., Barkman, D., (...), Fiks, A.G.
Association of broad- vs narrow-spectrum antibiotics with treatment failure, adverse events, and quality of life in children with acute respiratory tract infections ([Open Access](#))

(2017) *JAMA - Journal of the American Medical Association*, 318 (23), pp. 2325-2336. Cited 68 times.
https://jamanetwork.com.ezproxy.um.edu.my/journals/jama/articlepdf/2666503/jama_gerber_2017_oi_170142.pdf
doi: 10.1001/jama.2017.18715

View at Publisher

View PDF

- 16 Queen, M.A., Myers, A.L., Hall, M., Shah, S.S., Williams, D.J., Auger, K.A., Jerardi, K.E., (...), Tieder, J.S.
Comparative effectiveness of empiric antibiotics for community-acquired pneumonia ([Open Access](#))

(2014) *Pediatrics*, 133 (1), pp. e23-e29. Cited 37 times.
<http://pediatrics.aappublications.org/content/133/1/e23.full.pdf+html>
doi: 10.1542/peds.2013-1773

View at Publisher
-
- 17 Nguyen, P.T.K., Tran, H.T., Tran, T.S., Fitzgerald, D.A., Graham, S.M., Marais, B.J.
Predictors of unlikely bacterial pneumonia and adverse pneumonia outcome in children admitted to a hospital in central Vietnam ([Open Access](#))

(2020) *Clinical Infectious Diseases*, 70 (8), pp. 1733-1741. Cited 2 times.
<http://cid.oxfordjournals.org/content/by/year>
doi: 10.1093/cid/ciz445

View at Publisher
-
- 18 Yogo, N., Shihadeh, K., Young, H., Calcaterra, S.L., Knepper, B.C., Burman, W.J., Mehler, P.S., (...), Jenkins, T.C.
Intervention to reduce broad-spectrum antibiotics and treatment durations prescribed at the time of hospital discharge: A novel stewardship approach ([Open Access](#))

(2017) *Infection Control and Hospital Epidemiology*, 38 (5), pp. 534-541. Cited 19 times.
www.journals.uchicago.edu/ICHE/home.html
doi: 10.1017/ice.2017.10

View at Publisher
-
- 19 Márió, G., Andrea, S.
Physicians' opinions towards antibiotic use and resistance in the southeastern region of Hungary ([Open Access](#))

(2020) *Orvosi Hetilap*, 161 (9), pp. 330-339. Cited 2 times.
<https://akademiai.com/doi/pdf/10.1556/650.2019.31598>
doi: 10.1556/650.2019.31598

View at Publisher
-
- 20 Chou, C.-C., Shen, C.-F., Chen, S.-J., Chen, H.-M., Wang, Y.-C., Chang, W.-S., Chang, Y.-T., (...), Lin, M.-C.
Recommendations and guidelines for the treatment of pneumonia in Taiwan ([Open Access](#))

(2019) *Journal of Microbiology, Immunology and Infection*, 52 (1), pp. 172-199. Cited 36 times.
http://www.elsevier.com.ezproxy.um.edu.my/wps/find/journaldescription.cws_home/722895/description#description
doi: 10.1016/j.jmii.2018.11.004

View at Publisher
-
- 21 Mathur, S., Fuchs, A., Bielicki, J., Van Den Anker, J., Sharland, M.
Antibiotic use for community-acquired pneumonia in neonates and children: WHO evidence review ([Open Access](#))

(2018) *Paediatrics and International Child Health*, 38, pp. S66-S75. Cited 30 times.
<http://www.tandfonline-com.ezproxy.um.edu.my/loi/ypch20#.VvoBXrdf1Hg>
doi: 10.1080/20469047.2017.1409455

View at Publisher

[View PDF](#)

- 22 Dawson-Hahn, E.E., Mickan, S., Onakpoya, I., Roberts, N., Kronman, M., Butler, C.C., Thompson, M.J.
Short-course versus long-course oral antibiotic treatment for infections treated in outpatient settings: A review of systematic reviews ([Open Access](#))

(2017) *Family Practice*, 34 (5), pp. 511-519. Cited 33 times.
<http://fampra.oxfordjournals.org/>
doi: 10.1093/fampra/cmz037

View at Publisher
-
- 23 Ginsburg, A.-S., Mvalo, T., Nkwopara, E., McCollum, E.D., Phiri, M., Schmicker, R., Hwang, J., (...), May, S.
Amoxicillin for 3 or 5 days for chest-indrawing pneumonia in Malawian children ([Open Access](#))

(2020) *New England Journal of Medicine*, 383 (1), pp. 13-23. Cited 11 times.
<http://www.nejm.org.ezproxy.um.edu.my/medical-index>
doi: 10.1056/NEJMoa1912400

View at Publisher
-
- 24 Russell, F.M., Reyburn, R., Chan, J., Tuivaga, E., Lim, R., Lai, J., Van, H.M.T., (...), Mulholland, K.
Impact of the change in who's severe pneumonia case definition on hospitalized pneumonia epidemiology: Case studies from six countries ([Open Access](#))

(2019) *Bulletin of the World Health Organization*, 97 (6), pp. 386-393. Cited 7 times.
<https://www.who.int/bulletin/volumes/97/6/18-223271.pdf>
doi: 10.2471/BLT.18.223271

View at Publisher
-
- 25 Addo-Yobo, E., Anh, D.D., El-Sayed, H.F., Fox, L.M., Fox, M.P., Macleod, W., Saha, S., (...), Qazi, S.
Outpatient treatment of children with severe pneumonia with oral amoxicillin in four countries: The MASS study ([Open Access](#))

(2011) *Tropical Medicine and International Health*, 16 (8), pp. 995-1006. Cited 47 times.
doi: 10.1111/j.1365-3156.2011.02787.x

View at Publisher
-
- 26 Pernica, J.M., Harman, S., Kam, A.J., Carciumaru, R., Vanniyasingam, T., Crawford, T., Dagleish, D., (...), Loeb, M.
Short-Course Antimicrobial Therapy for Pediatric Community-Acquired Pneumonia: The SAFER Randomized Clinical Trial

(2021) *JAMA Pediatrics*, 175 (5), pp. 475-482. Cited 3 times.
<http://archpedi.jamanetwork.com.ezproxy.um.edu.my/issues.aspx>
doi: 10.1001/jamapediatrics.2020.6735

View at Publisher
-
- 27 Li, Y., Xu, J., Wang, F., Wang, B., Liu, L., Hou, W., Fan, H., (...), Lu, Z.
Overprescribing in China, driven by financial incentives, results in very high use of antibiotics, injections, and corticosteroids

(2012) *Health Affairs*, 31 (5), pp. 1075-1082. Cited 137 times.
<http://content.healthaffairs.org/content/31/5/1075.full.pdf>
doi: 10.1377/hlthaff.2010.0965

View at Publisher

View PDF

- 28 Ho, C.W., Lee, T.-L.
Global Governance of Anti-Microbial Resistance: A legal and Regulatory Toolkit
(2020) *Ethics and Drug Resistance: Collective Responsibility for Global Public Health*, pp. 401-420.
Springer: Cham, Germany
-

- 29 Om, C., Vlieghe, E., McLaughlin, J.C., Daily, F., McLaws, M.-L.
Antibiotic prescribing practices: A national survey of Cambodian physicians

(2016) *American Journal of Infection Control*, 44 (10), pp. 1144-1148. Cited 11 times.
<http://www.journals.elsevier.com.ezproxy.um.edu.my/ajic-american-journal-of-infection-control/>
doi: 10.1016/j.ajic.2016.03.062

View at Publisher
-

- 30 Fox-Lewis, S., Pol, S., Miliya, T., Day, N.P.J., Turner, P., Turner, C.
Utilization of a clinical microbiology service at a Cambodian paediatric hospital and its impact on appropriate antimicrobial prescribing (Open Access)

(2018) *Journal of Antimicrobial Chemotherapy*, 73 (2), pp. 509-516. Cited 9 times.
<http://jac.oxfordjournals.org/>
doi: 10.1093/jac/dkx414

View at Publisher
-

- 31 Tillekeratne, L.G., Bodinayake, C.K., Nagahawatte, A., Vidanagama, D., Devasiri, V., Arachchi, W.K., Kurukulasooriya, R., (...), Woods, C.W.
Use of rapid influenza testing to reduce antibiotic prescriptions among outpatients with influenza-like illness in southern Sri Lanka (Open Access)

(2015) *American Journal of Tropical Medicine and Hygiene*, 93 (5), pp. 1031-1037. Cited 24 times.
<http://www.ajtmh.org/content/93/5/1031.full.pdf+html>
doi: 10.4269/ajtmh.15-0269

View at Publisher
-

View PDF

- 32 Do, N.T.T., Ta, N.T.D., Tran, N.T.H., Than, H.M., Vu, B.T.N., Hoang, L.B., van Doorn, H.R., (...), Wertheim, H.F.L.
Point-of-care C-reactive protein testing to reduce inappropriate use of antibiotics for non-severe acute respiratory infections in Vietnamese primary health care: a randomised controlled trial (Open Access)

(2016) *The Lancet Global Health*, 4 (9), pp. e633-e641. Cited 70 times.
<http://www.elsevier.com.ezproxy.um.edu.my/journals/the-lancet-global-health/2214-109x>
doi: 10.1016/S2214-109X(16)30142-5

View at Publisher
-

- 33 Vernet, G., Mary, C., Altmann, D.M., Doumbo, O., Morpeth, S., Bhutta, Z.A., Klugman, K.P.
Surveillance for antimicrobial drug resistance in under-resourced countries (Open Access)

(2014) *Emerging Infectious Diseases*, 20 (3), pp. 434-441. Cited 46 times.
<http://wwwnc.cdc.gov/eid/article/20/3/pdfs/12-1157.pdf>
doi: 10.3201/eid2003.121157

View at Publisher
-

About Scopus

[What is Scopus](#)
[Content coverage](#)
[Scopus blog](#)
[Scopus API](#)
[Privacy matters](#)

Language

[日本語に切り替える](#)
[切换到简体中文](#)
[切换到繁體中文](#)
[Русский язык](#)

Customer Service

[Help](#)
[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

 RELX

[View PDF](#)