

50. Mellerson JL, Maxwell CB, Knighton CL, Kriss JL, Seither R, Black CL. Vaccination coverage for selected vaccines and exemption rates among children in kindergarten - United States, 2017-18 School Year. *MMWR Morb Mortal Wkly Rep* 2018;67:1115-22.
51. Olive JK, Hotez PJ, Damania A, Nolan MS. The state of the antivaccine movement in the United States: a focused examination of nonmedical exemptions in states and counties. *PLoS Med* 2018;15:e1002578.
52. Ladd JM, Karkazis K, Magnus D. Parental refusal of vaccination and transplantation listing decisions: a nationwide survey. *Pediatr Transplant* 2013;17:244-50.
53. Nabet B, Gable J, Eder J, Feemster K. Addressing vaccine hesitancy to protect children and communities against preventable diseases. 2017. PolicyLab at Children's Hospital of Philadelphia; 2017. [https://policylab.chop.edu/sites/default/files/pdf/publications/Addressing\\_Vaccine\\_Hesitancy.pdf](https://policylab.chop.edu/sites/default/files/pdf/publications/Addressing_Vaccine_Hesitancy.pdf). Accessed June 10, 2020.
54. Williams ER, Meza YE, Salazar S, Dominici P, Fasano CJ. Immunization histories given by adult caregivers accompanying children 3-36 months to the emergency department: are their histories valid for the Haemophilus influenzae B and pneumococcal vaccines? *Pediatr Emerg Care* 2007;23:285-8.
55. Czaja C, Crossette L, Metlay JP. Accuracy of adult reported pneumococcal vaccination status of children. *Ann Epidemiol* 2005;15:253-6.
56. Miles M, Ryman TK, Dietz V, Zell E, Luman ET. Validity of vaccination cards and parental recall to estimate vaccination coverage: a systematic review of the literature. *Vaccine* 2013;31:1560-8.
57. Lu PJ, Dorell C, Yankey D, Santibanez TA, Singleton JA. A comparison of parent and provider reported influenza vaccination status of adolescents. *Vaccine* 2012;30:3278-85.

## 50 Years Ago in *THE JOURNAL OF PEDIATRICS*

### Management of Listeriosis

Gordon RC, Barrett FF, Yow MD. Ampicillin treatment of listeriosis. *J Pediatr* 1970;77:1067-70.

*Listeria monocytogenes*, an important facultative human pathogen, is the third-leading cause of death from food-borne bacteria in the US.<sup>1</sup> The infection is most likely to affect pregnant women and their newborns, adults aged  $\geq 65$  years, and people with immunodeficiency. Listeriosis outbreaks impose significant economic impact on the food industry and public health.

The primary reason for the difficulty in treating listeriosis is that only a few antibiotics exert bactericidal activity. Thus, 50 years ago, Gordon et al successfully treated 3 cases of listeriosis with ampicillin. The antibiotics for treating listeriosis available at that time had poor safety profiles in newborns. Ampicillin had emerged as a new, safer alternative with good clinical response. The authors successfully treated 2 newborns with *Listeria meningitis* and an 86-year-old woman with septicemia secondary to infection with *L monocytogenes*. Antibiotic susceptibility testing suggested that penicillin, ampicillin, cephalothin, and kanamycin were bactericidal for *Listeria*, and that tetracycline and chloramphenicol were bacteriostatic.

*L monocytogenes* is intracellular, and thus antibiotics need to penetrate the host cells by crossing the lipid bilayer of the cell membrane. The first multidrug-resistant *Listeria* isolate was identified in France in 1988. Since then, only occasional cases of antibiotic resistance in listeriosis have been reported. Except for natural in vitro resistance to older quinolones, fosfomycin, and expanded-spectrum cephalosporins, *L monocytogenes* remains widely susceptible to clinically relevant antibiotics. However, there has been an increase in the minimum inhibitory concentration (MIC) of penicillin, indicating the need to modify the drug dosage.<sup>2</sup>

Today, the primary therapy for listeriosis still consists of a combination of ampicillin or amoxicillin plus gentamicin. The aminopenicillin should be given at high doses 4-6 times daily for a prolonged period. Cotrimoxazole is the drug of second choice. Acquired resistance in *L monocytogenes* from humans has had no clinical consequences so far, and it does not affect the first-line treatment. However, transfer of resistance genes from other bacteria and the recently increasing MICs of aminopenicillins underscore the need for active and continuous surveillance of the susceptibility of *Listeria* to antibiotics.

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### References

1. Scallan E, Hoekstra RM, Angulo FJ, Tauxe RV, Widdowson MA, Roy SL, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7.
2. Morvan A, Moubareck C, Leclercq A, Hervé-Bazin M, Bremont S, Lecuit M, et al. Antimicrobial resistance of *Listeria monocytogenes* strains isolated from humans in France. *Antimicrob Agents Chemother* 2010;54:2728-31.