

INJECTION PRACTICE

Current and Historical Journal References

Altemeier WA III. (1997). A Pediatrician's View: Take your tricks where you see them. *Pediatric Annals*, 26(6):345-351.

Beecroft PC, & Redick S. (1989). Possible complications of intramuscular injections on the pediatric unit. *Pediatric Nursing*, 17(4):333-376.

Bergeson PS, Singer SA, & Kaplan AM. (1982). Intramuscular injections in children. *Pediatrics*, 70(6):944-948.

Bergeson PS. (1990). Letters to the Editor: Immunizations to the deltoid region. *Pediatrics*, 85(1): 134.

Beyea SC, & Nicoll LH. (1996). Back to basics: administering IM injections the right way. *American Journal of Nursing*, 96(1): 34-35.

Beyea SC, & Nicoll LH. (1995). Administration of medications via the intramuscular route: an integrative review of the literature and research-based protocol for the procedure. *Applied Nursing Research*, 8(1):23-33.

Brandt PA, Smith ME, Ashburn SS, & Graves J. (1972). IM injections in children. *American Journal of Nursing*, 72(8):1402-1406.

Braun MM, Patriarca PA, & Ellenberg SS. (1997). Syncope after immunization. *Archives Pediatric Adolescent Medicine*, 151:255-259.

Centers for Disease Control and Prevention. (1999). Frequency of vaccine-related and therapeutic injections – Romania, 1998. *MMWR Morb Mortal Wkly Rep*, 48(13):271-274.

Centers for Disease Control and Prevention. (2001). Injection practices among nurses -- Valcea, Romania, 1998. *MMWR Morb Mortal Wkly Rep*, 50(04):59-61.

Chaplin G, Shull H, & Welk III, P (1985). How safe is the air-bubble technique for I.M. injections? *Nursing85*, 15(9):59.

Chugh K, Chawla D, & Aggarwal BB. (1993). Optimum needle length for DPT inoculation of Indian infants. *Journal of Indian Pediatrics*, 60(3):435-440.

Covington BP, & Trattler MR. (1997). BULL'S-EYE! Finding the right target for I.M. injections. *Nursing97*, 27(1):62-63.

Diggle L, Deeks J. (2000). Effect of needle length on incidence of local reactions to routine immunisation in infants aged 4 months: randomised controlled trial. *British Medical Journal*, 321:931-933.

Dutton WF & Cake GB. (1936). *Parenteral Therapy*: 10-19; 25-31. Springfield, IL: Charles C. Thomas.

Engstrom JL, Giglio NN, Takacs SM, Ellis MC, & Cherwenka DI. (2000). Procedures used to prepare and administer intramuscular injections: a study of infertility nurses. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 29(2):159-168.

Farley HF, Joyce N, Long B, & Roberts R. (1986). Will the IM needle reach the muscle? *American Journal of Nursing*, 86(12):1327-1328.

Feldman HR. (1987). Practice may make perfect but research makes the difference. *Nursing87*, 17(3):46-47.

Friedrich H. (1966). Common sense in intramuscular injections. *Nursing Clinics of North America*, 1(2):333-335.

Grohar ME. (1983). How to give an intramuscular injection. *Pfipharmecs Division*, Pfizer Inc.

Groswasser J, Kahn A, Bouche B, Hanquinet S, Perlmuter N, & Hessel L. (1997). Needle length and injection technique for efficient intramuscular vaccine delivery in infants and children evaluated through an ultrasonographic determination of subcutaneous and muscle layer thickness. *Pediatrics*, 85(9):400-403.

Hahn K. (1991). Letters to the Editor: Author's response. *Nursing91*, 20:6.

Hahn K. (1990). Brush up on your injection technique. *Nursing90*, 20(9): 54-58.

Hayes C. (1998). Injection technique intramuscular –1. *Nursing Times*, Oct 28-Nov 3; 94(43):suppl 1-2.

Hayes C. (1998). Injection technique intramuscular –2. *Nursing Times*, Nov 4-10; 94(44):suppl 1-2.

Howard-Jones N. (1971). The origins of hypodermic medication. *Scientific American*, 224: 96-102.

Ipp MM, Gold R, Goldbach M, Maresky DC, Saunders N, Greenberg S, & Davy T. (1989). Adverse reactions to Diphtheria, Tetanus, Pertussis-Polio vaccination at 18 months of age: effect of injection site and needle length. *Pediatrics*, 83(5): 679-682.

Jacobson RM, Swan A, Adegbenro A, Ludington SL, Wollan PC, Poland GA, & Vaccine Research Group. (2001). Making vaccines more acceptable – methods to prevent and minimize pain and other common adverse events associated with vaccines. *Vaccine*, 19:2418-2427.

Katsma D & Katsma R. (2000). The myth of the 90°-angle intramuscular injection. *Nurse Educator*, 25(1):34-37.

Katsma D & Smith G. (1997). Analysis of needle path during intramuscular injection. *Nursing Research*, 46(5):288-292.

Knol K. (1997). How meaningful is the aspiration of injection solution after inserting the injection needle for the intramuscular administration of vaccines? *Nederlands tijdschrift voor geneeskunde*, 141(11):547.

Lenz CL. (1983). Make your needle selection right to the point. *Nursing83*, 13(2): 50-51.

Lilley LL & Guanci R. (1998). Beware of routine procedures. *American Journal of Nursing*, 98(10):18.

Losek JD & Gyuro J. (1992). Pediatric intramuscular injections on the pediatric unit. *Pediatric Emergency Care*, 8(2):79-81.

Marcuse EK & MacDonald NE. (1996). Neurologic injury after vaccination in buttocks. *Canadian Medical Association Journal*, 155(4):374.

McConnell EA. (1999). Administering a Z-track I.M. injection. *Nursing99*, 29(1):26.

McConnell EA. (1982). The subtle art of really good injections. *RN*, 45(2):25-35.

McIvor A, Paluzzi M, & Meguid MM. (1991). Intramuscular injections abscess – past lessons relearned. *New England Journal of Medicine*, 324(26):1897-1898.

Noyes, J. (1995). An explanation of the difference between expert and novice performance in the administration of an intramuscular injection of an analgesic agent to a patient in pain. *Journal of Advanced Nursing*, 22:800-807.

Pfaundler WS & Schlossmann. (1935). *The Diseases of Children*: 405. Philadelphia: Lippincott.

Poland GA, Borrud A, Jacobson RM, McDermott K, Wollan PC, Brakke D, & Charboneau JW. (1997). Determination of deltoid fat pad thickness: implications for needle length in adult immunization. *Journal of the American Medical Association*, 277(21):1709-1711.

Program for Appropriate Technology in Health. Giving safe injections: introducing auto-disable syringes. Available at: <http://www.path.org/resources/safe-inj-pdf.htm>. Accessed August 13, 2001.

Reeler AV, Simonsen L, & Health Access International. (2000). Unsafe injections, fatal infections. *Bill and Melinda Gates Children's Vaccine Program: Occasional Paper #2*.

Reis EC, Jacobson RM, Tarbell S, & Weiniger BG. (1998). Taking the sting out of shots: control of vaccination-associated pain and adverse reactions. *Pediatric Annals*, 27(6): 375-386.

Rodger M & King L. (2000). Drawing up and administering intramuscular injections: a review of literature. *Journal of Advanced Nursing*, 31(3):574-582.

Ruben FL, Froeschle JE, Meschievitz C, Chen K, George J, Reeves-Hoché MK, Pietrobon P, Bybel M, Livingood WC, & Woodhouse L. (2001). Choosing a route of administration for quadrivalent meningococcal polysaccharide vaccine: intramuscular versus subcutaneous. *Clinical Infectious Diseases*, 32:170-172.

Shaffer LW. (1929). The fate of intragluteal injections. *Archives of Dermatology and Syphilology*, 19(3):347-364.

Stokes JH. (1921). A technic of intramuscular (epi-fascial) injection. *Medical Record*, 99:730-734.

Talber JL, Haslam RHA, & Haller JA Jr. (1967). Gangrene of the foot following intramuscular injection in the lateral thigh: a case report with recommendations for prevention. *Journal of Pediatrics*, 70:110-117.

Tubiana-Rufi N, Belarbi N, Du Pasquier-Fediaevsky L, Polak M, Kakou B, Leridon L, Hassan M, & Czernichow P. (1999). Short needles (8mm) reduce the risk of intramuscular injection in children with Type 1 diabetes. *Diabetes Care*, 22(10):1621-1625.

WHO Expanded Programme on Immunization. (1984). *Immunization in practice: a guide for health workers who give vaccines*. Geneva: World Health Organization.

Wyeth Laboratories. (1968). *Intramuscular Injections*. New York: Wyeth Laboratories.

Zbrozek AS, Agbara E, & Head M. (1994). Mannitol injections: with or without filter needles?: A cost-effectiveness analysis. *Nursing Economics*, 12(4):196-200.

Zelman S. (1961). Notes on techniques of intramuscular injection. *The American Journal of the Medical Sciences*, 241(5):563-574.

Zuckerman JN. (2000). The importance of injecting vaccines into muscle. *British Medical Journal*, 321:1237-1238.

Above Articles by Year of Publication, in Chronological Order

- 1921 Stokes JH. A technic of intramuscular (epi-fascial) injection.
- 1929 Shaffer LW. The fate of intragluteal injections.
- 1935 Pfaundler WS. *The Diseases of Children*.
- 1936 Dutton WF. *Parenteral Therapy*.
- 1961 Zelman S. Notes on techniques of intramuscular injection.
- 1966 Friedrich H. Common sense in intramuscular injection.
- 1967 Talber JL. Gangrene of the foot following intramuscular injection in the lateral thigh: a case report with recommendations for prevention.
- 1968 Wyeth Laboratories. *Intramuscular Injections*.
- 1971 Howard-Jones N. The origins of hypodermic medication.
- 1972 Brandt PA. IM injections in children.
- 1982 Bergeson PS. Intramuscular injections in children.
- 1982 McConnell EA. The subtle art of really good injections.
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- 1983 Lenz CL. Make your needle selection right to the point.
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- 1997 Covington BP. BULL'S-EYE! Finding the right target for I.M. injections.
- 1997 Groswasser J. Needle length and injection technique for efficient intramuscular vaccine delivery in infants and children evaluated through an ultrasonographic determination of subcutaneous and muscle layer thickness.
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- 1997 Poland GA. Determination of deltoid fat pad thickness: implications for needle length in adult immunization.
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- 1998 Reis EC. Taking the sting out of shots: control of vaccination-associated pain and adverse reactions.
- 1999 Centers for Disease Control and Prevention. Frequency of vaccine-related and therapeutic injections – Romania, 1998.
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- 2000 Diggle L. Effect of needle length on incidence of local reactions to routine immunisation in infants aged 4 months: randomised controlled trial.
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- 2000 Zuckerman JN. The importance of injecting vaccines into muscle.
- 2001 Centers for Disease Control and Prevention. Injection practices among nurses --- Valcea, Romania, 1998.
- 2001 Jacobson RM. Making vaccines more acceptable – methods to prevent and minimize pain and other common adverse events associated with vaccines.
- 2001 Program for Appropriate Technology in Health. Giving safe injections: introducing auto-disable syringes.
- 2001 Ruben FL. Choosing a route of administration for quadrivalent meningococcal polysaccharide vaccine: intramuscular versus subcutaneous.

INJECTION PRACTICE: PAIN MANAGEMENT

Allen KD, White DD & Walburn JN. (1996). Sucrose as an analgesic agent for infants during immunization injections. *Arch Pediatr Adolesc Med*, 150(3):270-4.

Cohen LL, Blount RL & Panopoulos G. (1997). Nurse coaching and cartoon distraction: an effective and practical intervention to reduce child, parent, and nurse distress during immunizations. *Journal of Pediatric Psychology*, 22(3):355-70.

Cohen LL, Cohen RJ, Blount RL, Schaen ER & Zaff JF. (1999). Comparative study of distraction versus topical anesthesia for pediatric pain management during immunizations. *Health Psychology*, 18(6):591-8.

Goodenough B, Addicoat L, Champion GD, McInerney M, Young B, Juniper K & Ziegler JB. (1997). Pain in 4- to 6-year-old children receiving intramuscular injections: a comparison of the Faces Pain Scale with other self-report and behavioral measures. *Clinical Journal of Pain*, 13(1):60-73.

Jacobson RM, Swan A, Adegbenro A, Ludington SL, Wollan PC, Poland GA & Vaccine Research Group. (2001). Making vaccines more acceptable—methods to prevent and minimize pain and other common adverse events associated with vaccines. *Vaccine*, 19:2418-27.

Rosmus C, Johnston CC, Chan-Yip A & Yang F. (2000). Pain response in Chinese and non-Chinese Canadian infants: is there a difference? *Social Science & Medicine*, 51(2):175-84.

Schneider EM & LoBiondo-Wood G. (1992). Perceptions of procedural pain: parents, nurses, and children. *Child Health Care*, 21(3):157-62.

Taddio A, Nulman I, Goldbach M, Ipp M & Koren G. (1994). Use of lidocaine-prilocaine cream for vaccination pain in infants. *Journal of Pediatrics*, 124(4):643-8.