

Normal Serum Lactate Values in Various Pediatric Populations: A Literature Review

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Introduction: There are many causes for serum lactate to elevate, but literature and clinical practice predominantly focuses on elevated lactate signifying sepsis or septic shock. Elevated lactate levels indicate tissue hypoperfusion in sepsis; an early diagnostic marker that guides treatment. Currently, accepted normal serum lactate levels in children are ages 0-90 days: 1.1-3.5 mmol/L, ages 3-24 months: 1.0-3.3 mmol/L, and ages 2-18 years: 1.0-2.4 mmol/L.

Purpose: To investigate lactate values in various pediatric populations to determine if the accepted clinical lactate reference range accurately represents populations outside of the acutely ill child.

Methods: Utilization of Wichita State University SmartSearch tool that mines multiple databases including, but not limited to, Science Direct, CINAHL, MEDLINE, and Cochrane Library. Articles included between February 1, 1996 and November 1, 2017.

Results: Seventeen studies were identified and reviewed. Lactate values were elevated above normal in, exercising children, preterm infants, infants with low birth weight, and infants with trauma and hypoxia. Lactate levels in children with sepsis were not found to be globally elevated, but an elevated lactate in a child with a sepsis predicted a higher mortality.

Conclusion: One range of normal lactate does not accurately represent all populations that are non-acutely ill. Lactate in various pediatric populations compared to a normal population was found to be elevated. Causes for elevated serum lactate levels are not well studied or recognized outside of an acutely ill population. When evaluating serum lactate values, there should be consideration for variation in lactate level in the non-acutely ill population.