

Editorial

“The Rude Unhinging of the Machinery of Life”

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Shock is one of the most common reasons that children are admitted to the pediatric intensive care unit (PICU). Early recognition and reversal of the shock state are essential to improved outcomes. Unfortunately, shock as a distinct disease state is frequently misunderstood and under-recognized. For example, the clinical definition of shock remains controversial, in large part due to vast number of disorders that cause shock in critically ill and injured children. Shock frequently represents the final stage of clinical deterioration in a number of these disorders, so that the initial signs and symptoms of shock are frequently attributed to the underlying cause and not shock per se.

While the ancient Greek physician Hippocrates was perhaps the first to describe shock as a distinct disease state, the French surgeon Henri Francois Le Dran was the first person to use the medical term *shock* in 1737, which was literally translated from the French verb *choquer*, in his textbook, *A Treatise of Reflections Drawn from Experience with Gunshot Wounds* [1]. In a surprising turn of events, it was a mistranslation of Le Dran’s description by the English physician Clare in 1743 that introduced the term *shock* into the English language [2]. Since that time, shock has been called a number of things – the *rude unhinging of the machinery of life* (by Samuel Gross in 1872) [3] and *a momentary pause in the act of death* (by John Warren in 1895) [4]. While these colloquial definitions adequately

describe the underlying pathophysiology of shock (e.g., we now recognize Gross’ *machinery of life* as the mechanisms that maintain adequate oxygen delivery and utilization at the cellular level), a more clinically useful definition of shock is an imbalance between oxygen delivery and oxygen consumption. Literally, shock is a perfect example of economics at work, in that the state of shock is purely a mismatch between oxygen supply and oxygen demand.

The accompanying 6 articles in this supplement provide a concise review of shock in children. The first article provides an overview of the pathophysiology of shock in children, as well as highlighting some of the more important differences between pediatric shock and adult shock. The general approach to the recognition and management of pediatric shock is also discussed. The remaining articles describe in greater detail, the different types of pediatric shock, including hypovolemic shock, neurogenic shock, cardiogenic shock, septic shock, and obstructive shock. Each article discusses the nuances of the epidemiology, pathophysiology, and management of the different types of shock. We hope that these articles will provide the reader with a better understanding of the approach to shock in the pediatric age group.

REFERENCES

- [1] LeDran HF. *A treatise, or reflections drawn from practice on gunshot wounds*. London: J. Clarke & Co. 1737.
- [2] Mello PMVC, Sharma VK, Dellinger RP. Shock: an overview. *Semin Respir Crit Care Med* 2004; 25: 619-28.
- [3] Gross SG, Ed. *A system of surgery: pathological, diagnostic, therapeutic, and operative*. Philadelphia: Lea and Febiger 1872.
- [4] Warren JC. *Surgical pathology and therapeutics*. Philadelphia: W.B. Saunders 1895.

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§Guest Editor

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