

COMMENTARY

Caring for the Newborn - Musings of a Neonatologist

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The Newborn infant always requires support and nursing – A fact that nature shows all of us in the way a bird takes care of its nestlings, or cat takes care of her kittens or even as the formidable crocodile supports its hatchlings. Despite all the care given not many of these of the animal kingdom can assure the survival of their offspring beyond the early neonatal period. For long the human race too used to have the philosophical acceptance for neonatal death. The human intellect however seemed determined to ensure the survival of the weakest with its unending innovations and therapeutics.

A lot of things that we take for granted today while treating neonates were unavailable to us in India a few decades ago. Many a neonatologist of this author's generation would remember the butterfly needles or the so called scalp vein needles that were the mainstay for any intravenous therapy--the finesse of their strappings reflecting the creativity of the nurses. It could be confidently said that the last half a century, with its plethora of innovations has indeed improved the probability of survival of the extreme of preterm.

Man has for long recognized the vulnerability of the perinatal period. The published history of neonatal medicine¹ recognizes the writings of Seranus of Ephesus (98-AD – 138 AD), the Greek physician who practiced in Rome, for its details about gynecology and child health.¹ We as Indians should be proud to know that, Susrutasamhita (<300 BC – 200BC) provided specific guidelines for diet for the pregnant woman, conduct of labour and care of the umbilical cord.² It was interesting to note that Sushruta predicted the role of maternal behaviour and dietary intake during pregnancy on the personality and attitudes of the infant! Modern research highlights this in a language that the present day scientific community can understand.³ Susruta had recommended an 'eight finger' length for the cord that had to be tied and cut, ensuring that the thread anchored the cut cord in the direction of the infant's neck.² Perhaps to ensure that the cord doesn't get soiled with urine and stool! Text from an earlier period by Charaka gave guidelines on resuscitation "If he (newborn) fails to move he should be fanned till he recovers. cleaning of lips, mouth, tongue and throat"⁴ ---steps that are quite familiar even today. Perhaps it was to our academic loss that ensuring movement of air was literally translated as "fanned".



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The latter half of the 20th century saw an exponential development in the field of newborn care. The term “Neonatology” finally came into being in 1960, attributable Alexander Shaffer in his book *Diseases of the Newborn*.⁵ Needless to say that the tragic death of the newborn infant of President John Kennedy, being attributed to Hyaline Membrane Disease gave fillip to research in this aspect of neonatal care. Despite Mary Ellen Avery and Jere Mead showing in 1959 that this disorder was linked to a deficiency of surfactant, the only available treatment was ventilator and supportive care. Robert Usher, in Montreal, had shown in a randomized, controlled trial that RDS mortality could be reduced by using a constant infusion of intravenous glucose and bicarbonate to minimize hyperkalemia and acidosis. In the 1960s, this was known as “the Usher regime.”⁶ It was not until Fujiwara reported success with exogenous liquid surfactant extracted from minced calf lung that the currently all too familiar surfactant replacement therapy with all its variants and methodologies started evolving.

The Phase of Innovations

A visit to the pavilions of any neonatology convention is enough to show the progress made in the field of monitoring and respiratory support. The simultaneous advances in all other field of modern medicine had its positive impact in neonatal care. The structured neonatal intensive care has become a familiar component of the modern health care system. Dr. John Gluck is credited with designing the first American newborn intensive care unit (NICU) in 1965, at Yale Hospital in New Haven, Connecticut.⁶ This fledgling design has progressed to the state of the art NICUs of today. It was informative to realize that Charaka Samhitha (<300 BC – 100 BC) had elaborate descriptions for newborn nursery with details of space, ventilation, lighting, provision for water storage, method of fumigation etc.⁴

The transformation of the life in the early incubator of Chapple⁷ to the survival in the modern day state of the art baby care units could be metaphorically termed for the infant as a metamorphosis from an iron cage into golden one. The ‘Baby in the incubator and mother in vacuum’ concept had prevailed for a few decades. It was a welcome change to have the developmentally supportive care and NIDCAP becoming more prevalent and popular.⁸ This appreciation of the holistic development of the neonate was indeed an important step to finally integrate and accept the neonate as an individual and not merely as a “living product” oscillating between conceptus and childhood.^{9,10} Once again this author was fascinated to learn from the legacy of Caraka,⁴ that Charka Samhitha in its design of the nursery for the newborn, included “toys to stimulate the baby.. that were also impossible to put in the baby’s mouth and injure”, --- Implying the significance given to developmentally supportive care even around 300 BC!

Treating The Newborn

The narratives for treatment and commentaries of clinical practitioners gave way to structured reproducible research, that soon became the foundation for evidence based medicine. Advances in biostatistics provided all possible methods to overcome the bias of the researcher. All with the aim of providing and giving guidelines for the clinician to treat a disease. Often supported by guidelines were criteria to diagnose and categorize the disease. Evidence based treatment became the buzzword in neonatal care of the day,¹¹ albeit with its own limitation. The absence of evidence does not always substantiate that the evidence is absent.^{12,13} Many guidelines in neonatal care have had international acceptance, often with some superficial amount of region specific modifications. But are guidelines never to be questioned?¹⁴ Discarding Usher’s regimen for treating RDS⁶ is indeed a suitable example to highlight that guidelines are not always static and hence not sacrosanct and unquestionable. The reluctance to question guidelines, specially those that have their primary origins from the medical societies of the west is now a rule. Justifiably so, in the absence of structured research and data from our country. Optimizing care for our population should also look into the best practices that can be beneficial to its population in entirety across socioeconomic lines. The concept of cost of care is very important irrespective of it being borne by the tax payer or by the patients themselves. It would therefore be prudent to reiterate the statement “The nursery needs discoveries”,^{15,16} in right earnest in our country.

But questioning all guidelines would be like reinventing the wheel. At the same time the land of Charaka and Sushruta can definitely add or modify neonatal care to benefit its society. If one were to use the jargon of software development life cycle (SDLC)¹⁷ the clinical practice guidelines that currently tend towards a “Waterfall model” should change towards a combination of Spiral and Iterative & Incremental model for developing guidelines. --- the additional input coming from the informal experiences of the vast numbers of doctors caring for newborns who do not know the art of writing scientific papers, delving into un-interpreted medical literature available in India, relook at the historic writings like the “granthas” of Charaka and Sushrutha with correct medical translations etc. One should always recollect that the discovery of the much appreciated antimalarial Artemisinin that fetched professor You-you Tu of China the Nobel Prize (2015) had its origin in traditional Chinese medicine. It would be only fair to consider that those who could conceive the rhinoplasty, and give guidelines for developmentally supportive care could provide some pearls of information that the Indian researchers can seek to incorporate for universal benefit.

In these days of equipment facilitated and investigation driven times of neonatology, let us introspect into what we can contribute to the immense world of perinatal care. May it be from immense unpublished clinical experience of our clinicians and social workers, our centuries old literature that delve into the tender personalized care of the infant, very similar to the developmentally supportive care of today, or to nutritional guidelines that could be optimal for the Indian subcontinent.

It is high time that the country that leads the world in birth rate, also becoming a guiding source for the clinical care of the neonate.

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