

## EDITORIALS

# It is not enough to grieve; we must learn from Gorakhpur

**YOGESH JAIN, KESHAV DESIRAJU**

Gorakhpur has, yet again, sent out a warning. The death of a child anywhere, anytime, is a matter for grief and the news that an unusually large number of children, mainly newborns had died at the BRD Gorakhpur Medical College in eastern Uttar Pradesh has truly shocked the nation. All the reports, whether from the press or of at least five enquiries set up by various local, state and national authorities point only in one direction; poor people will get only poor public health systems. And for this reason we will see Gorakhpur happening again. Indeed, as this piece is being written, there are news reports of 52 babies having died over 30 days in a Jharkhand hospital due to malnutrition. And in the same public hospital in Gorakhpur, another 61 babies have died over 72 hours "due to various ailments, including encephalitis, health complexities in newborns, pneumonia, sepsis, etc." (1).

We are correct in mourning Gorakhpur; but it is not enough to be overwhelmed by guilt or by the size of the problem. What needs to change in India's public health systems so that poor people and their children do not die?

Firstly, the specifics. Why are the systems so weak? The supply of oxygen was allegedly broken due to non-payment to the private provider. This is relevant even if the lack of oxygen was not the proximate cause of death. Oxygen is arguably the most vital of all drugs, but the bulk of oxygen that is produced and supplied to all public and private hospitals in India is produced by a very few private manufacturers, of which the leader is INOX India (2), better known for its role in the celluloid industry than for making medical gases. Is it acceptable that perhaps the most life-saving of all drugs is not produced by the government, and that we as a country depend upon private companies completely? Should this not have been nationalised like banks, or jails or the courts? This situation is not unique. Despite a sale of two trillion rupees annually in pharmaceutical production, an overwhelming majority of drugs is produced by the private pharmaceutical companies and not by the state. This may be the time for the state to enter the production and supply of at least oxygen, if not other medical gases and drugs.

It is also relevant that arranging for the supply of essential medicines, disposables, oxygen, etc, and further arranging to pay for these is among the most elementary administrative tasks of a working health system. It is reported that funds were critically low. It is not just that health sector allocations were slashed; but allocations for acute encephalitis syndrome/Japanese encephalitis were particularly low. This is certainly one level of lapse, whether at the centre or at the state (3). The limited funds available do not also seem to have been released speedily. Those responsible, whether at the Secretariat, the Directorate of Health, the district or the hospital, were simply unable to put through a routine logistical task. And these are the persons who are shortly to be entrusted with sub-letting parts of district hospitals of tier 2 and 3 cities to run selected NCD care services (4), as has been recently proposed by the Niti Aayog. If this is the state of compliance in a government facility, how will quality of care provided by private players and their compliance with ground rules laid down by the state be ensured by the state regulatory bodies?

Secondly, we cannot get away from the dismal truth regarding the infrastructure situation in this large tertiary care hospital in a poor state. If we are really serious about wanting people to return to public health systems away from impoverishing private healthcare providers, we need to invest more in those public systems. A chronically overburdened tertiary care service in which there may be three critically sick children to a single bed in the intensive care unit should have long ago pushed government towards creating more such infrastructure in this populous region. And to staff these places, we have to have nursing schools and medical colleges that can train competent care providers. It is true we will need competent care providers with specialty skills, and cannot depend on commuting specialist and super-specialists of big towns. It is also true that putting in place the appropriate special certificate courses would require the consent of the Medical Council of India, of which the less said the better, but this is nothing a determined state government cannot do.

Authors: **Yogesh Jain** (yogeshjain.jssbilaspur@gmail.com), Paediatrician, Jana Swasthya Sahyog, Ganiyari village, Chhattisgarh, 495 112 INDIA; **Keshav Desiraju** (keshavdesiraju@gmail.com), Former Health Secretary, Union Department of Health and Family Welfare, New Delhi, INDIA

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State governments have to invest in setting up more nursing and medical colleges if the requirements of a growing health system have to be even reasonably met. Even if we are to depend more on private sector providers, and this is by no means a universally accepted prescription, the doctors still have to be trained. It cannot be anybody's argument that medical education is also to be privatised. Uttar Pradesh in particular, a state with a population of well over 200 million, has ten government medical colleges. Is it any wonder that systems have collapsed?

Of course, this requires that we invest more for public health systems. The 1.1% of GDP budget and the excuse of poor absorptive capacity of our public systems can both simply not be accepted any more. In the last twelve years, both the central and state governments have shown the capacity to provide increased budgetary support for the health sector, through the NRHM, now the NHM. But more is needed, and from the state governments.

Thirdly, responsibility. One haunting fact that has shamed us all is that when the oxygen supplies were failing on the night of August 10, the nurses and the doctors of the paediatric and neonatal intensive care units handed self-inflating bags called ambu bags to several parents of these very sick children and asked them to pump air into the lungs through their mouths and noses. Bagging air using an ambu bag is a skilled job, and can scarcely be handed over to a novice. It beggars belief that trained and trainee paediatricians and paediatric nurses should have given up hope and transferred responsibility to the parents of such sick children. Where are the ethical moorings of this public hospital? Not only do the clinical care providers and academics of paediatrics and nursing need to explain how this happened, but human resources managers need to plan our responses to such unusual situations, should they arise in future, as they will. Could they not have asked for more staff members from among the total clinical team to join them in an unusual situation?

Fourthly, good practice. An early theory propounded was that the spike in the number of deaths was due to Japanese encephalitis (JE), the periodic and seasonal illness caused by a viral infection of the brain. JE is known to be endemic in eastern UP and surrounding Bihar. This rumour was easily dismissed. A quick perusal of the clinical details of the dead showed the majority to be newborns in their first week of life when JE is impossible. A large study in 2017 (5) had established that only a tiny fraction of encephalitis illnesses could be attributed to JE and that a large proportion was due to scrub typhus. The ICMR has indeed issued an advisory that an antibiotic called doxycycline be used in those with short duration fevers so that their scrub typhus illness does not progress to a severe stage of encephalitis. This advice has not been heeded. We continue to hide behind the seemingly insoluble problem of JE and fend off questions about our collective incompetence to manage our health systems. Why can't we settle our epidemiological questions regarding common clinical syndromes that we see 39 years after JE was observed as a problem?

Crises are challenges and we must learn both from our mistakes as from our successes, since they could improve our responses to future crises. There have been enquiries into Gorakhpur. It is essential that we fix immediate responsibility but we need to go beyond fixing. We need clear headed analysis of where and why we have gone wrong. However, after public health crises, we need, both as individuals and as systems, to own up responsibility for mistakes made if we are to learn from them. Our usual response is denial at best, and obfuscation at worst. Or a general lament that "the system" is corrupt. This is perhaps the time to reflect that we *are* the system.

Have we learnt from the deaths of 13 women soon after tubal ligations performed in a laparoscopic surgical camp in 2014 in Bilaspur (6)? Not one person, nor any procedure was found out of order and a drug manufacturer who supplied drugs was somehow incriminated for making poisonous drugs. Did our city hospitals learn how to prevent deaths and destruction due to accidental fires inside hospitals after it happened in an uptown hospital in Kolkata (7)? Or when public health systems break down as has happened in multiple dengue outbreaks or in the Surat plague (8), did we learn how to repair broken systems? Or when contaminated drugs killed many in diethylene glycol poisoning in Mumbai (9) and Delhi (10), did we learn any lessons? There is always a first time. Surely, it is now?

There are, of course, larger issues of responsibility, accountability and ethical conduct. It is perhaps beyond the scope of this article to question why elected representatives function the way they do, but why do civil servants conduct themselves in ways which are less than exemplary? If financial corruption is the besetting evil of public systems in India, incompetence, laziness and bloody-mindedness are not far behind. Why are these acts of omission and commission never identified as such? And responsibility never fixed and punishments delivered, at responsible decision-making levels? It is not that such steps cannot be taken. All governments have shown the ability to take exemplary action in cases where they have a special interest in doing so. Should the deaths of babies in unconscionable numbers not be one such situation? Further, and this is an issue for ethicists to ponder over, and all those interested in the establishment of a code of medical ethics, can ethical conduct be taught? Is this something to be left to for individuals to figure out on their own? When we address the question of reform in public systems, can we not also address the question of reform in human nature? Is that too much to ask, or even hope for?

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## The science in the p-value: need for a rethinking

**MALA RAMANATHAN**

Teaching in a school of public health, I often listen to presentations from master's degree students who undertake analysis of primary data collected to answer a question of public health relevance. Inexorably, the presentation will lead to an analysis slide which depicts the results of a multivariate modeling exercise (where the associations between more than one identified factor and the outcome of interest are analysed). Strategic rows which indicate a significant p-value will be highlighted or marked with an asterisk (\*), and the student will conclude with a statement indicating which of the identified factors had "statistically significant p-values".

Use of the p-value as part of the tests of statistical significance is not an exception; it is the norm in most health research. When RA Fisher, who propounded this concept of the p-value, suggested, "It is usual and convenient for experimenters to take 5 percent as a standard level of significance, in the sense that they are prepared to ignore all results that fail to reach this standard, and, by this means, eliminate from further discussion the greater part of the fluctuations which chance causes have introduced into their experimental results," he also prefaced it with "It is open to the experimenter to be more or less exacting in respect of the smallness of the probability he would require before he would be willing to admit that his observations have demonstrated a positive result." (1). However, this allowance made by Fisher seems to have been lost in the effort to find an easy standard to apply.

Often, there is no discussion about the size of the effect (meaning how a unit change in the identified factor is expected to alter the outcome of interest, or the adequacy of the sample size to yield a valid estimate of this effect), or the efficiency of the model being specified (meaning how well the identified factors serve to explain the outcome). Most of us with better understanding are guilty of remaining silent through such presentations, or of asking one or two pointed questions without going through the whole gamut of explanations that are needed. This is possibly because of a collective angst regarding the outcome of the learning process for the master's degree. I suspect part of the silence is shaped by the difficulties involved in finding simple, lay language explanations for how this form of use and interpretation of the p-value is limited in its scientific merit. While student presentations do not result in public harm, public policy choices, informed by misinterpreted or limited reading of results, can be damaging.

The American Statistical Association (ASA), one of the oldest professional bodies of statisticians with a global membership, took the unusual step of speaking out on the reading of evidence using statistical analysis in 2016 (2). It followed this statement published in the *American Statistician* with an explicit list of do's and don'ts regarding p-values, confidence intervals and power of a test in the online supplement to the journal (3). This publication authored by the Who's Who of statisticians elucidates the

Author: **Mala Ramanathan** (malaramanathan@yahoo.co.uk), Professor, Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala 695 011 INDIA

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