

# CURRENT SCIENCE

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EDITORIAL

## Invisible Excellence: Scientists who Save Lives

At least as judged by the volume of letters received by *Current Science* for the 'Correspondence' section, the (generally worrisome) state of Indian science seems to be an all-time favourite topic. Nor is there any dearth of recipes suggested for improvement of the same. Clamour for more support from the Government (in terms of funds) – or bemoaning its lack – is one frequent theme; a serious concern about the dwindling numbers of students opting for Science (especially in recent years) and proposals for correcting the situation (e.g. by making science more attractive) is another. The competition of course is with the glittering IT industry, and attractiveness is quantified most often in financial terms. Another priority item is retaining the interest of the young and bright scientists in this noble profession, and encouraging them to do 'Excellent Science' – and what better incentive can there be other than the monetary one?

There is, as always, an impractical, and considerably less vocal group, quite out of touch with the modern reality and blissfully unaware of the changed value system, who continues to trust the old-fashioned idealism – believing that it is the heroes (and heroines, to be politically correct) of yesteryear who would best inspire the youngsters of today. How do we choose them from the scientists of yesterday and today? What yardsticks should we apply? Should we continue to weigh the contributions in terms of the number of publications, number of citations, the dreaded impact factors and such indices (as advocated for unbiased, objective, scientific selection for awards or admission to fellowships of prestigious scientific societies)? Surely we should, and surely the names like G. N. Ramachandran would automatically figure in such a list.

While such 'science performance indicators' undoubtedly have their merit, perhaps the best criterion to judge the 'inspiration value' of any scientific contribution would be the impact that the discovery has had on the society. And when it comes to matters of human interest, what can be more important than the saving of human lives? No wonder that Pasteur, Jenner and Alexander Fleming still continue to inspire idealistic young minds intent on the reduction of human suffering through saving of lives.

The potential for saving lives is much higher in the rural areas; an unfortunate consequence of the high proportion of avoidable deaths that take place there. The causes of death are very many and varied and the roots of most of them can be traced to poverty, to lack of resources, to corruption, to indifference – the list is nearly endless. It is also often claimed that the solutions to these problems already exist, and it is up to the society (or government, administration, politicians, bureaucrats, etc.) to implement them – and there is little or no role for science to play.

Such claims indeed sound very reasonable – but only superficially so. Those who have thought deeper and more carefully have time and again pointed out that tackling some of the problems faced by the rural poor demands as much scientific and technical creativity and know-how as needed by those working at the forefront of mainstream science. India, with its large rural and poor population has the dubious distinction of providing many such challenges. On the other hand, it is heartening also to know that there are scientists who have had the vision and commitment to take on these challenges and meet them very successfully. Not only have they been able to achieve the scientific breakthroughs, but they have also been able to operationalize their findings, resulting in the saving of a large number of lives. And just in case some of the residents of the ivory towers wish to dismiss these accomplishments merely as a managerial feat, the Gold Standard (publications in peer-reviewed, international, prestigious journals) has also been met by them.

One of the most important parameters indicative of the quality of life of any society is the infant and neonatal mortality rate. In India, the rate continues to be very high, especially in rural areas, and all the more so in remote ones. *Journal of Perinatology*, of the *Nature* group of journals, had devoted an entire supplement (vol 25, March 2005), containing a dozen articles authored by Dr Abhay T. Bang, Dr Rani A. Bang and their colleagues, to the Gadchiroli Field Trial. As the guest editorial of the supplement points out:

'It wasn't until after the year 2000 that the potential for significantly reducing neonatal mortality in resource-poor areas of the world through the use of simple approaches

for recognizing, preventing, and treating neonatal problems at the community level became increasingly apparent. This was due in large part to the publication of a study in 1999 by Dr Abhay Bang and colleagues in Gadchiroli, India at SEARCH (the Society for Education, Action, and Research in Community Health), which demonstrated a 62% decline in neonatal mortality rate in rural communities using a "home-based neonatal care" approach (*Lancet*, 1999, **354**, 1955–1961). ... Since the publication of the original study, SEARCH continues to implement and monitor neonatal interventions in the study site. The study team has worked in 39 intervention villages and 47 control villages for more than a decade ... The project also provides ... critical insights into why the interventions work. Finally, they provide useful guidance to investigators, program managers and policy makers in how to implement essential newborn care at the community level.' The article in *Lancet* mentioned above has received a hundred citations, and is just one amongst the several dozens authored by the team over the last two decades. Even a cursory glance at the contents would be adequate to indicate the unique combination of creativity, resourcefulness and extraordinary degree of meticulousness that is expected of world-class research.

The scale of the problem of neonatal mortality, and its relevance to the many developing countries, has at least made International Agencies like the World Health Organization to devote serious attention and resources to it. On the other hand, some of the other serious causes have not attracted as much attention as they should have. Deaths due to snakebite is one amongst them. A very large number of deaths (quoted figures vary from 15,000 to 50,000, and some have indicated that it accounts for one tenth as much mortality as malaria) take place in India due to snakebites. The many different species of venomous snakes found in India, and the great deal of variation seen in the physiological response of the victims makes treatment of snakebites a very complex task. It has been pointed out that one of the most effective (under some circumstances) treatments is the administration of the anticholinesterase Neostigmine, originally suggested in 1972 by Dr R. N. Banerjee, the author of the authoritative chapter on treatment of snakebites published in *Progress in Clinical Medicine* in India in 1978. Unfortunately (and much more so for victims of snakebite), his work is not as well known as it should be.

A less well known (and hence much less studied) cause of deaths is scorpion stings. While scorpion toxin has been a subject of considerable research interest, the social

and economic status of the victims of scorpion stings had ensured that investigations about treatment are almost non-existent. Fatality amongst the scorpion victims was about 25% to 30% before 1983 (*Indian Pediatrics*, 2000, **37**, 504–514). Dr H. S. Bawaskar, working in a Primary Health Center in a rural part of Western Maharashtra, conducted a very thorough and meticulous study of the effect of scorpion venom, and evolved techniques for management of scorpion stings employing the relatively inexpensive and widely available drug Prazosin. This has reduced the mortality rate to 1%–3%. More than two decades of extensive and detailed investigations carried out by the husband-and-wife team of Dr H. S. Bawaskar and Dr P. H. Bawaskar have resulted in more than three dozen publications in international medical journals. The wide scope of these studies, the depth of thinking seen therein and the ongoing, continuous effort towards extending these findings to other problems further highlights the quality of this research. It is while going through these published works that one comes across a very touching tribute from Dr H. S. Bawaskar to the late Dr Munro, the editor of *Lancet*, who passed away in 1997. In a letter published in *Lancet*, Dr Bawaskar writes how he remembers receiving a letter from Dr Munro 'dated 8 December 1981, in which he accepted my clinical paper on public health within 1 week of its arrival at *The Lancet's* London office. ... This alone boosted my morale and doubled my enthusiasm. After completion of my MD thesis, I decided to continue my work in a rural area. Since then, my wife and I have researched into the cardiovascular effects of scorpion venom, and our work on Prazosin was reported in *The Lancet* in 1986. We have since published many reports, and have trained more than five thousand doctors in Maharashtra on the management of scorpion victims in rural areas. I attribute our success to the initial stimulus by Ian Munro, to whom I dedicate this lifelong research'. Now this is something which editors of scientific journals would certainly find most inspiring!

So why is this Excellence in Research so invisible? Or is this invisibility merely an illusion, attributable to either myopic or blinkered vision prevalent in the rarefied atmosphere of the academia? If not, then are these merely isolated instances? Fortunately not! The remarkable book by Dr Anil Awachat, *Beyond Work – Visionaries from Another India* describes several more. Undoubtedly, the *Another India* harbours many more such visionaries – and one looks forward to ensuring better visibility to them – in the interest of all of us.

N. V. Joshi