



Opinion paper

The Lancet Commission on Global Surgery - Association of Rural Surgeons of India Karad Consensus Statement on Surgical System Strengthening in Rural India

On behalf of the Association of Rural Surgeons of India – Lancet Commission on Global Surgery Consensus Committee (ARSI-LCoGS Consensus Committee)*

ABSTRACT

In India, 90% of the rural population is estimated to lack access to safe, affordable, and timely surgical care. Surgical care in these settings is often characterized by limited resources. Provision of rural surgical care often requires novel approaches as compared to those in higher income urban sectors, specifically in areas of infrastructure, workforce, and blood. This consensus statement draws upon the wealth of experience held by India's rural surgeons to identify key problems and lay forth actionable solutions in the areas of surgical infrastructure, workforce, and blood supply.

1. Introduction

The Lancet Commission on Global Surgery is a global partnership consisting of over 500 clinicians, policymakers, economists and funders spanning over 110 countries. The Commission envisions universal access to safe, affordable surgical and anesthesia care when needed¹⁰. Yet in India, 90% of the rural population is estimated to lack safe, affordable, and timely access to surgical care.¹ Surgical care in rural settings and low-income urban settings is often characterized by limited resources. As such, provision of rural surgical care often requires different approaches than in the high-income urban sector, specifically in areas of infrastructure, workforce, and blood. A concerted national effort is necessary to analyze the challenges faced by rural surgeons and their patients, and to develop contextually appropriate policy for these settings. This consensus statement draws upon the wealth of experience held by India's rural surgeons to identify key problems and lay forth actionable solutions in the areas of surgical infrastructure, workforce, and blood supply.

2. Surgical needs and innovations for the rural setting

2.1. Problem statement

Surgical hospitals in rural areas face significant deficits in the

infrastructure, equipment, and supplies needed for care delivery. Unreliable supply chains and high equipment costs limit availability and affordability, accreditation requirements are based on higher income standards, and low-cost innovations are poorly understood.

2.2. Background

- High equipment costs limit availability and affordability of essential equipment, ranging from endoscopic to anesthesia machines, in both the rural public and private sector. Some medical equipment manufacturers¹ are willing to extend equipment discounts to bulk purchasers, but not to isolated rural surgeons. Even when equipment is available, maintenance is difficult to secure.
- The National Accreditation Board of Hospitals maintains infrastructure and workforce standards based on the high-income, urban environment. For example, a staff pathologist is required in order to operate a basic laboratory.^{12,2} Application of these standards would preclude the provision of any surgical care in most rural hospitals, further widening the access gap.
- Creative workarounds and novel innovations by rural practitioners have made surgical care possible despite deficits in equipment and affordability.^{7,8} These range from using common materials to replace expensive consumables during laparoscopic surgery³ to the

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¹ A German manufacturer of laparoscopic equipment had offered to discount a key component of laparoscopic surgery that regularly retailed at 2000 Euros to 650 Euros with a group purchase order of 30 items.

² Similarly, the NABH requires a radiologist in order to operate a radiology department and multiple air conditioners in order to manage a blood bank. These skilled workers are in short supply in rural settings.

³ An inexpensive sterile glove is attached onto the end of an insufflation device to replace the much more expensive inflatable balloon disposable developed for laparoscopic hernia repair. <http://mdcurrent.in/primary-care/small-incisional-hernia-repair-low-cost-minimally-invasive-technique-for-rural-areas/>

use of mosquito net as a replacement for hernia mesh.^{13,14,15} Unfortunately, uptake and dissemination is poor, given lack of formal assessment and minimal capacity for research and publication.

2.3. Action Items

- Government should subsidize the purchase of essential equipment for rural hospitals and partner with financial institutions to provide soft loans for the purchase of said equipment. Industry and civil society should leverage group purchasing to facilitate affordable procurement of equipment and maintenance contracts.
- The central government should create a separate accreditation and credentialing board to define minimum standards for rural surgical hospitals, based on consensus of rural practitioners in collaboration with international partners.⁴ This board should also sponsor research and the development of rural-specific practice guidelines and serve as the base for medico-legal standards in rural settings.
- Rural practitioners should actively document and collate surgical innovations in the rural settings. They should partner with academic institutions to formally study, publicize, and scale cost-saving and quality-improving innovations from the rural setting. Academic institutions should formally collaborate⁵ with rural surgeons, innovation labs, and industry to develop equipment specifically for the rural setting.

3. Workforce challenges in the rural setting

3.1. Problem statement

Rural India is facing a severe shortage of trained physician and non-physician surgical workforce.¹¹ Insufficient professional constructs for rural workforce, inadequate academic-rural partnerships, and sub-optimal stakeholder coordination contribute to fragmented surgical systems in rural India.

3.2. Background

- 68% of India's population lives in rural areas, but only 22.7% of total healthcare workforce in the country serve in the rural areas (Costa⁵). A 1-year rural service bond for M.B.B.S. graduates from Government medical colleges already exists to import healthcare providers. However, inadequate implementation and monitoring has made this intervention ineffective.
- Post-graduate surgical, obstetric, and anesthetic programs as well as medical colleges do not currently extend into rural hospitals. (¹¹, Sect 2.4) This limits (1) trainee exposure to rural settings, (2) development of broad-based surgical skillsets, and (3) professional connectivity between rural practitioners and urban counterparts.
- Rural hospitals currently rely upon informally trained ancillary staff and physicians to provide services where few alternatives exist (^{6,9}). Due to the overwhelming need these staff stretch the boundaries of their professional training to provide care to patients. However, these individuals take on considerable personal risk by serving without clear financial compensation and legal protections. Furthermore, their ability and clinical standing are not standardized, which prevents professional growth and consistency of skills.
- Optimized partnerships with visiting urban and international surgeons can yield mutual benefit to rural workforce and their patients, as well as visiting staff. Unfortunately, these partnerships too often

fail to yield maximal success due to mismatch in the surgical needs and skills that are offered.^{4 6}

- Lack of coordination between governing, professional, educational, and funding bodies has led to an inefficient health system. In this confusing landscape rural issues remain largely overlooked and unaddressed. This poor coordination makes accreditation criteria for standardized care unachievable in rural settings.

3.3. Action Items

Optimize Current Workforce:

- Government credentialing bodies should establish a standardized system of certification for informally trained surgical workforce in rural areas. These standards should be developed in concert with rural practitioners to ensure local rural needs are addressed. Scale-up of existing short-course programs can accelerate this effort especially if internet and telemedicine capabilities are leveraged. This will lead to the development of a mid-level skilled paramedic cadre of surgical, anesthetic, and obstetric providers.
- An online platform should be created to match local needs with visiting providers. Needs should be matched based upon the following: specialty, level of training, geographic location of need, time commitment, and past performance reviews. Subscription to this platform should be required of all parties who provide visiting care e.g. individual providers, group providers, professional colleges, NGOs, and faith-based organizations.

Expand workforce:

- Urban, academic institutions should partner with rural hospitals and practitioners for post-graduate training, bilateral learning, and professional connectivity through extension of training programs. This will provide surgical and anesthesia trainees with broad-based surgical skill-set and early exposure to rural settings. Initial efforts should begin with postgraduate training, and subsequently extend to medical colleges and supporting services as capacity increases. The DNB Rural Surgery course is an excellent post-graduate training that includes rural training components that the Medical Council of India and National Board of Examiners should endorse and include in Schedule 1 of the MCI Act. In the meantime, major academic institutions like AIIMS should initiate versions of such courses among their students.
- Temporary import of private practitioners to district hospitals and continuance of surgical camps to clear backlog of cases can compensate for workforce deficits until newly trained graduates fill current gaps. Similar short-term stopgap solutions have been implemented successfully for Emergency Obstetric Care Programs. (ref)

Optimize Professional Environment:

- Consistent standards between the governing, professional, and educational bodies for surgical care should be developed to improve efficiency of the surgical system. This will in turn facilitate appropriate funding and monitoring. Specific considerations that should be addressed include but are not limited to credentialing of rural hospitals, legal protection of rural providers, and mobility/development of the surgical workforce.

⁴ *Global Surgery 2030*, the report from The Lancet Commission on Global Surgery, outlines the “Ten needs for the provision of safe surgery and anesthesia care” in the report's Panel 2

⁵ Active, formal collaborations may include adjunct professorships and a specific rural development research focus

⁶ The Royal Australasian College of Surgeons has operated a workforce partnership for several years with rural practitioners in the Pacific Islands Project. The American College of Surgeons has operated Operation Giving Back, a program that has previously been used to coordinate surgical volunteerism.

4. Blood deficits in the rural setting

4.1. Problem statement

A significant shortage of blood in rural areas limits the ability of surgeons to care for their patients. Geographic, economic, and legal factors contribute to this shortage.

4.2. Background

- There is a severe shortage of blood infrastructure in rural settings. Approximately 70% of the Indian population lives in rural areas, but the current network of approved, functional blood banks does not ensure safe, adequate access at district and sub-district hospitals (¹¹, Sect 4.3.4.5).
- Improved transparency at blood banks would improve knowledge of where blood is available and promote responsible sourcing of blood.
- Variable and often exorbitant costs of banked blood serve as an additional barrier for rural patients to obtain blood.
- Due to the limited rural blood infrastructure, alternatives that do not rely on banked blood must be considered. Unbanked Directed Blood Transfusions (UDBT) is one such alternative³ in which donors undergo rapid testing for infection, followed by phlebotomy and immediate transfusion of the patient. This process can be designed with safety and accountability mechanisms and has been endorsed by the 2015 National Health Policy as the only feasible and safe option in some contexts (¹¹, Sect 4.3.4.5). Unfortunately, legal regulation against UDBT² has precluded use of this life-saving alternative.

4.3. Action Items

- Academic institutions, public health organizations, and clinicians should conduct rigorous research to quantify and build evidence documenting the rural need for blood. This research should include case studies and quantification of patient harm or death due to lack of blood.
- NACO, the National Blood Transfusion Council, and their state-level affiliates must enhance transparency through required online weekly reporting of source, amount, and type of blood donated to blood banks.
- The Ministry of Health and Family Welfare must add blood and blood products to the National List of Essential Medicines to guarantee affordability.
- ARSI, rural clinicians, and international bodies should continue to support the legal provision of regulated Unbanked Directed Blood Transfusion (UDBT) through research and advocacy.

Conflict of interest

The authors have no conflicts of interest to disclose.

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