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Review Articles

Becoming a First-Response Generalist Surgeon: A Narrative-Informed Pathway for Training Primary Surgical Responders in China

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Abstract

Background Strengthening the capacity of primary care is central to China's ongoing reform toward hierarchical service delivery and county medical alliances. Although community programs for chronic disease management have matured, significant gaps remain in acute, trauma, and surgical response at the grassroots level. This paper outlines a practical pathway for cultivating first-response generalist surgeons—physicians able to stabilize patients, perform essential procedures within a defined scope, and support safe referral in resource-limited contexts. **Methods** The paper draws on a narrative-informed and policy-grounded perspective, combining first-hand clinical experience, national health strategies, WHO guidance on surgical capacity, and the principles of competency-based medical education (CBME). International rural generalist programs in Australia, Canada, and the United States are reviewed to inform the proposed framework. **Results** A four-stage training model is proposed:(1) early exposure to emergency and procedural skills at the undergraduate level, (2) standardized residency focusing on stabilization and essential surgical competencies, (3) county-level rotations for trauma and emergency immersion, and (4) continued tele-supervision and quality assurance. The framework identifies three layers of core competence—rapid emergency recognition and stabilization, basic surgical and pre-transfer management, and long-term postoperative follow-up—supplemented by modules specific to China's system, such as county-level referral coordination and AI-assisted remote support. **Conclusion** Cultivating first-response generalist surgeons represents both a policy-aligned and ethically responsible approach to strengthening China's primary healthcare. The model underscores scope discipline, teamwork, and moral humility—emphasizing not only knowledge, but the readiness to act where life first calls for help.

Keywords: Primary Care; Generalist Surgeon; Rural Health; Competency-Based Medical Education; Emergency Response; China Health Reform

1 Introduction

It happened on a crowded high-speed train during a national holiday. Suddenly, the announcement system called out for medical assistance. I was a second-year medical student then. Almost before thinking, I stood up. With only limited training and a half-formed sense of clinical reasoning, I examined the passenger, offered what supportive measures I could, and called my mentor for guidance over the phone. The patient's discomfort eased but did not disappear. It wasn't exactly a failure—more like a quiet turning point. I realized that medical knowledge, however complete in textbooks, does not automatically translate into real-world rescue competence. That moment stayed with me. It showed that the strength of a healthcare system is measured not only by its tertiary hospitals, but also by the readiness of whoever happens to be first at the scene when help is needed.

In China today, the ongoing effort to strengthen primary care and implement hierarchical medical services has renewed attention to the front line. The question is not only how well physicians can refer patients, but how safely and effectively they can act before referral becomes possible. In rural or county-level settings, emergencies, trauma, and acute pain episodes are increasingly common, yet most training still takes place within specialized, well-equipped hospitals. As a result, many young doctors graduate fluent in theory but unprepared for the unpredictable, resource-limited moments that shape

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both survival and public trust.

This challenge is hardly unique to China. Canada's Enhanced Surgical Skills programs, Australia's Rural Generalist Pathway, and the U.S. rural surgery tracks all grew from the same realization: that communities far from tertiary centers need "generalist surgical responders"—clinicians able to recognize emergencies, perform essential procedures, and stabilize patients until definitive care is available. These international experiences show that system resilience depends not only on specialization, but also on distributed competence [1].

China's current reforms, especially the development of county medical alliances, create a timely opportunity to rethink early surgical preparedness. General practice education has expanded, yet the ability to act decisively in emergencies—what to do when someone collapses—is still not systematically cultivated. For students who feel called to frontline responsibility—sometimes from a classroom, sometimes from a sudden voice over a loudspeaker—the existing pathway offers ideals, but not enough structured preparation.

This paper therefore explores how a narrative-informed and competency-based model might help shape a new generation of "generalist surgical responders" in China. Drawing on personal experience, policy review, and international evidence, it proposes a progressive training pathway emphasizing early exposure, procedural fundamentals, supervised hands-on practice, and tele-guided support. The aim is not to expand a list of technical skills, but to cultivate readiness—the quiet confidence to step forward when a life depends on it.

2 The First-Response Imperative in China's Primary Health System

China's health reform has reached a stage where capacity—not merely coverage—defines the real strength of primary care. As hierarchical diagnosis and treatment and county medical alliances continue to expand, a quiet but urgent question has surfaced:Who stands beside the patient first, before the specialist arrives, before the system fully activates, when seconds truly matter?

2.1 Hierarchical Care and County Health Alliances: From Coverage to Capability

Over the past decade, reforms have pushed resources downward, building integrated networks across counties and townships. These efforts have clearly improved access to medicines, continuity of chronic care, and essential service coverage.

Yet in emergency and surgical response, the gap is still visible.Many grassroots facilities can manage hypertension or diabetes with confidence, but hesitate when faced with trauma or acute abdomen.For a patient collapsing after an accident, the reality is not about "levels of care," but about time and distance.

If China's primary care system is to become the true foundation of health equity, it must anchor not only referral mechanisms but also the ability to act—immediately, competently—at the first site of care.

2.2 The "Acute–Trauma–Surgical" Capability Gap

China's achievements in chronic disease control are undeniable, yet the chain of acute–trauma–surgical capability remains fragile in many communities.

First assessment and stabilization skills vary; Familiarity with emergency protocols can be inconsistent; Minor surgical procedures are seldom practiced in real settings; Referral often replaces immediate action rather than following it.

This is not a criticism, but a developmental truth. Historically, community physicians were never expected to perform first surgical responses. But as trauma incidence rises, populations age, and acute exacerbations of chronic diseases become more frequent, a new kind of frontline competence is needed.

2.3 A Shift in Medical Aspirations: From Specialist Glamour to Frontline Responsibility

Among China's younger medical students, a subtle transformation is underway. The aspiration to specialize remains strong, yet many are also drawn to a different kind of excellence—being the one who can act when help is most needed.

My own experience—facing an emergency on a train, armed with knowledge but unsure how to intervene—reflects this shift. Compassion alone cannot stabilize an airway; good intentions do not compress a chest.

The feeling was not shame, but awakening—a realization that being "present and capable" matters as much as being "brilliant and specialized."

In this sense, the ideal of medical excellence is quietly evolving: not the tallest spire in the system, but the brick that does not give way when weight arrives.

3 Conceptual and International Frameworks

Understanding how to cultivate first-response surgical competence requires drawing on established international models while allowing them to resonate with China's evolving healthcare realities.

3.1 WHO Basic Surgical Capability Framework

The World Health Organization (WHO) has long emphasized that basic surgical and trauma care constitute fundamental components of primary health systems. Its framework highlights the capacity for airway management, hemorrhage control, and other essential life-saving interventions, alongside the establishment of safe referral systems and stabilization procedures. Importantly, the WHO's notion of "basic" surgical capacity does not imply simplicity or limitation; rather, it signifies those indispensable skills and systems that directly determine survival and equity in medical access.

3.2 CBME: Competency-Based Medical Education

Competency-Based Medical Education (CBME) shifts the focus of medical training from time spent in rotations to what learners can reliably do in real situations [2].

For emergency and first-response contexts, this orientation is especially relevant: competence is proven not in written recall but in the calm application of skills under pressure, clear communication within a team, and sound judgment about when to intervene and when to transfer.In this sense, CBME turns "knowledge into hands"—a metaphor that captures the movement from comprehension to capability, from knowing to doing.

Taken together, the WHO framework defines what basic surgical capacity should entail, while CBME offers insight into how it might be formed. Their intersection provides a conceptual ground on which China can build.

3.3 Rural Generalist Models: Canada, Australia, and the United States

International experiences with rural medical training provide instructive examples for designing China's own pathway.

In Australia, the Rural Generalist Program combines emergency medicine with a defined scope of primary surgical practice, guided by national governance and structured progression. It treats rural practice not as compromise, but as a discipline requiring rigor and breadth.

In Canada, general practice–surgery programs train physicians to stabilize patients and perform selected operations, ensuring that remote areas can receive timely surgical care without immediate transfer [3]. Credentialing is managed at the provincial level, balancing local autonomy with oversight.

In the United States, rural family medicine tracks with surgical and emergency components prepare doctors for hands-on procedural work in small hospital systems. Here, credentialing is typically handled through hospital privileges rather than national certification, reflecting the diversity of U.S. healthcare settings.

Across these examples, a shared conviction emerges: the rural generalist is not a "mini-surgeon," but a stabilizing force within the system. Their value lies in the breadth of safe competence, the discipline of triage, and the trust that communities place in someone who can act first—and act well.

4 Analytical Approach and Framework Construction

This study adopts a narrative-informed and policy-grounded approach to explore how a pathway for cultivating primary-response generalist surgeons could be shaped within China's evolving health system. Rather than approaching this as a purely pedagogical reform, the inquiry begins with lived experience—moments of helplessness and resolve at the scene of illness that awaken a professional consciousness of being useful where one is most needed.

4.1 Narrative-Informed Viewpoint

The narrative foundation serves not as an anecdotal device but as an epistemological stance [4]. The "train encounter," when a young medical student faced a real emergency with limited capability, becomes a touchstone for reflecting on the gap between academic knowledge and situational readiness. Such moments embody the enduring tension at the heart of medical education—between knowing and acting, between aspiration and preparedness. Grounding the analysis within this narrative highlights how professional identity formation and curriculum design can converge on the same question: How do we train for response, not only for recognition?

4.2 Competency Mapping

To operationalize these insights, a competency-mapping framework is constructed to bridge theoretical formulation with local implementation. It integrates three domains of competence—emergency recognition and stabilization, basic surgical procedures and pre-transfer management, and long-term surgical follow-up—each linked to observable learning outcomes and staged training phases. The mapping process prioritizes translatability, ensuring that the competencies are neither abstract ideals nor over-specialized fragments, but contextually achievable standards within China's county-level and rural hospital systems.

Taken together, this methodological orientation—narrative-grounded, policy-informed, and competency-structured—aims to illuminate a coherent pathway toward shaping the "first-response generalist surgeon" as both a medical and social role: a practitioner whose strength lies in readiness, steadiness, and the capacity to sustain trust at the community frontline [5].

5 Designing a Chinese Pathway for Training First-Response Generalist Surgeons

The concept of a primary-response generalist surgeon in China does not aim to replicate Western models of rural medicine. It arises from China's unique healthcare geography—where population density, resource disparities, and a policy emphasis on "strengthening the county" converge into a national agenda for health equity. The goal is to cultivate practitioners who can respond first, stabilize safely, and sustain long-term community trust.

5.1 Vision: The First Responders of Public Health

In the Chinese context, the "first responder" is not an isolated emergency role but the frontline stabilizer of a vast, tiered system. The envisioned generalist surgeon is one who embodies three intertwined

values:
People-centeredness: to ensure that every clinical decision serves the person before the disease.
Readiness at the scene: to transform knowledge into immediate, safe, and context-sensitive action.
System stability: to secure the "bottom web" of the medical network, preventing escalation of manageable cases and protecting referral efficiency.
This vision sees grassroots medicine not as a place of limitation, but of quiet capability—where working precisely, even under modest conditions, becomes both a duty and a quiet form of pride.

5.2 Three-Tiered Competence

Building upon international frameworks and local realities, the training model emphasizes a three-tiered competency architecture:
Emergency Recognition and Initial Response—The ability to identify life-threatening conditions (airway obstruction, hemorrhage, shock) and initiate stabilization.
Basic Surgical and Pre-Transfer Procedures—Competence in essential operations (abscess drainage, wound debridement, fracture immobilization, minor laparotomy when necessary), combined with precise criteria for when to transfer.
Chronic Surgical Follow-Up and Continuity Care—Managing postoperative wounds, stoma care, chronic trauma rehabilitation, and coordination with higher-level institutions.
Each layer of competence strengthens not only technical ability but also the practitioner's situational judgment—knowing when not to act is as critical as knowing how to act.

5.3 Four-Stage Training Pathway

The proposed pathway follows a four-stage progressive model integrating education, residency, and continuous support:
Undergraduate Phase: Introduce a "First Response and Surgical Literacy" module within clinical curricula. Through simulation-based modules and community emergency projects, students develop situational awareness and moral readiness.
Standardized Residency: Establish "Generalist Surgery Tracks" within general practice or surgical residency programs, combining rotations in emergency, trauma, and community hospitals to consolidate essential procedural skills.
County-Level Rotation: Implement one-year placements in county hospitals as mandatory for rural-directed graduates. This phase cultivates adaptability to resource-limited environments and inter-departmental coordination.
Continuous Remote Support: Leverage digital infrastructure—AI-assisted triage, 5G-enabled telesurgery guidance, and provincial mentorship networks—to maintain skill refreshment and emotional resilience among rural practitioners.
This four-stage structure forms a looped continuum rather than a linear pathway: knowledge flows outward from tertiary centers to peripheral hospitals, while local experience continuously feeds back into academic refinement.

6 Discussion

The cultivation of first-response generalist surgeons in China is not only a matter of technical formation, but also of moral orientation. At its heart lies a quiet conviction: that humility, steadiness, and sustainable progress matter more than temporary heroism.

6.1 Moral Humility and Gradualism

At the core of this pathway stands the principle of "steadiness—sustainability—stepwise progression" — steadiness, sustainability, and gradual advancement.
It stands as a counterpoint to the illusion of instant mastery or omnipotence. A physician becomes reliable not through speed or spectacle, but through disciplined repetition, ethical restraint, and long-term formation.
Moral humility, in this sense, does not weaken professionalism—it anchors it. The first-response generalist learns that medicine begins with presence, not perfection: to be there, to know just enough to stabilize, and to act within the lines of safety. Each small competence earned is a promise kept to the patient; each careful decision becomes part of a lifelong apprenticeship to responsibility.
Gradualism also reflects the Chinese medical tradition—walking steadily, step by step, toward capability. It values durability more than brilliance, structure more than improvisation, and quiet dependability more than episodic heroism [6]. In the context of grassroots healthcare, this virtue is not decorative; it is essential for safety and trust.

6.2 Avoiding Hero Narratives

A first-response generalist is not a lone warrior against chaos. They belong to a medicine of teams, of systems, of norms.
Their purpose is not to replace specialists but to buy time—to hold the line until more advanced resources arrive. In doing so, they preserve both life and system integrity.
Avoiding the hero narrative means redefining excellence. In grassroots healthcare, excellence is not dramatic rescue but dependable readiness; not personal glory but collective stability.
When the system works, there is no spectacle—only coordination, communication, and competence quietly saving lives.
This ethos transforms the image of the generalist surgeon from "a substitute" to a stabilizer of systems. Their heroism is procedural, not theatrical—rooted in order, not spectacle. The most dignified act in crisis may be not doing everything, but doing

the right thing, in the right order, with the right restraint.

7 Conclusion

The discussion above has traced both the moral ethos and systemic resonance of this model. What emerges is less a technical innovation than a moral reawakening.

The transformation of primary care begins not with capital or construction, but with people who stand in the quiet interval between frailty and catastrophe. Across China, a new generation of physicians is rediscovering meaning in proximity rather than prestige—the call to be present where they are most needed.

To become a first-response generalist surgeon is to accept a humble but profound vocation: to act when presence matters more than perfection. It is the courage to be useful rather than remarkable, to serve not the ideal but the immediate human need.

This model signals a renewal of values as much as a reform of training. By entwining moral purpose with competency formation and systemic design, China's primary care can cultivate physicians who hold communities together, traverse boundaries, and sustain the moral fabric of care itself.

The future of medicine, then, may not unfold only in metropolitan hospitals or robotic theaters, but in the quiet light of county wards and village clinics—where a young doctor, steady and prepared, meets uncertainty with skill, restraint, and compassion.

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