JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S8

From Pre-Hospital To Post-Care: Enhancing Gastrointestinal Emergency Management Through Interprofessional Collaboration

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Abstract

Gastrointestinal (GI) emergencies, encompassing lower and upper GI bleeding, severe inflammatory bowel disease, and acute pancreatitis, are prevalent and critical conditions in emergency medicine. Among numerous systems of classification, one common approach is to categorize GI emergencies according to their underlying pathology, treatment options, and the computational tools that aid in diagnosis–the three being pathology-based (broad versality), treatment-based (specificity), and diagnostics-based (clarity). Such these flexible categorizations accommodate unlimited amounts of clinical knowledge and data into readily understandable simple structures and can vastly enhance the efficiency of patient management under real-life, time- and resource-constrained, clinical setting. A theory of rapid knowledge acquisition and its application to medical education describes how these specialized adaptable classification systems link the individual's perceived real-world entities with abstract theoretical knowledge, immensely facilitating learning, understanding, and clinical reasoning. System jets of priori ergonomic importance, likewise, assist transition from existing mental models to sophisticated knowledge frameworks. For example, the acquisitions of greater amounts of general and specific knowledge (assemblies of jets) stimulate intuitive comparisons of actual cases with more potential omitted-pathologies and treatments-sequences (e.g., type 75 or 79 jets), creating advanced search-systems, while such systems for appropriate knowledge densely arise (i.e., with structures of greater relevant centrality) the authorities of higher principles become increasingly included-able.

Medical residents and attending physicians frequently encounter abrupt and critical GI presentations warranting prompt attention. Moreover, decisive processing of these life-threatening conditions continues to be an unpredictable task within the clinical community (Williams et al., 2019). At the

present time, emergency departments are challenged and pressured to condense progressively accumulating clinical knowledge into logical straightforward manners whereas, on the other hand, various proposed systems are instead scrutinized for deficiencies. For instance, a commonly referenced classification of GI emergencies consists of five pathologic constellations: a) esophageal; b) fermentation (of intestinal) and defecation items; c) lower bowel obstruction; d) pancreatic (upper RDC); and e) circulation failure (upper RDC).

Keywords: Pre-hospital care, post-care, gastrointestinal emergencies, emergency management, interprofessional collaboration, patient outcomes, multidisciplinary team, coordinated care, healthcare integration, acute care.

1. Introduction

Gastrointestinal (GI) emergencies encompass a broad spectrum of acute clinical problems that severely threaten patients' health and are precipitated by diverse aetiologies, both GI and non-GI-related. For example, upper GI bleeding can arise from varices related to portal hypertension or from a peptic ulcer, while lower GI bleeding may emerge due to colonic diverticulosis or ischaemia. Although the specific diagnosis may take hours to ascertain and the optimal therapeutic approach could differ significantly depending on the aetiology, the nationality, and the individual's comorbidity profile, a diagnosis itself barely offers reassurance. Therefore, special consideration must be afforded. As a general rule, patients who present in an unstable condition despite proceeding through an anaesthetised phase subtly remain in danger, and further components continually progress through the plumbing installation. Rapid decision-making at the ED level, often reliant on incomplete information, occupies a crucial role in continuously defining therapy. Health Systems Engineering (HSE) apportions decision-making leadership commensurately across the ED and triage, delineating the forward options while formally cataloguing all knowledge pertaining to vital statistics and events until the patient's entry into the anaesthetised/-induced condition. Consequently, the HSE assistant is burdened with three objectives: expediting the recording of data, enabling others to furnish supplementary information that develops mutual understanding, and allowing concurrent interrogation of other cases.

Consequently, GI emergencies represent a prime opportunity for interprofessional collaboration. Regrettably, the current paraphernalia of Knowledge Exchange and HSE categories does not presage team-based collaboration among EMS, ED, and inpatient personnel across regional systems. A fugacious, spontaneous interaction—a minuscule fissure of interprofessional collaboration—represents the sole overarching mechanism facilitating communication between EMS and ED personnel. Even among those conversant with the aim of the first consultation and the importance of access conditions for expedited treatment, obstacles obstruct the completion of inter-institutional work. Even with dispersed systems, coordination or the establishment of a shared mental model across non-concurrent pre-hospital and ED stations is feasible.

2. Conceptual Framework for Interprofessional Collaboration in Gastrointestinal Emergencies

Interprofessional collaboration at the pre-hospital stage can enhance gastrointestinal emergency management by improving early identification and rapid access to appropriate care, minimizing avoidable delays. Pre-hospital assessments of abdominal pain severity do not consistently incorporate life-threatening conditions, nor do formal scoring systems take into account whether patients are already on-route to the emergency department (ED) (Karam et al., 2017). In high-acuity cases brought to the ED, providing general practitioners, general practitioners out of hour services, emergency medical dispatch centers, and emergency medical service (EMS) nurses with detailed

guidance about signs, symptoms, and co-existing conditions that indicate the need to activate an acute gastrointestinal pathway could accelerate triage and treatment (Khademian et al., 2013). Implementing a multidisciplinary communication platform prior to patient arrival could further facilitate interprofessional interaction and enhance collaborative practice. Transmission of pre-hospital findings, use of optional accelerators, and real-time consultation requests would promote shared situational awareness and enable collection of vital information for diagnosis, risk assessment, and intervention strategy (Leeman et al., 2017).

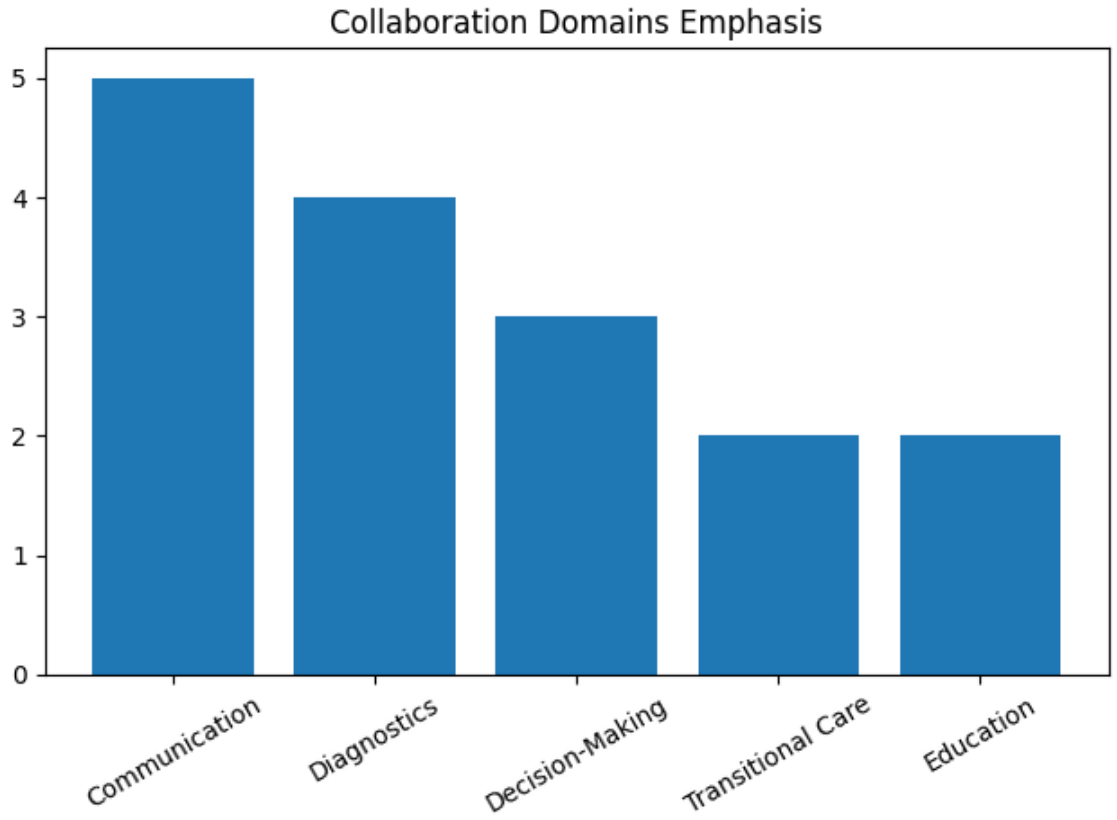

Figure 1. Collaboration Domains Bar Chart

3. Pre-Hospital Phase: Triage, Stabilization, and Early Coordination

Timely and structured responses to patients with gastrointestinal (GI) emergencies, before arrival at the emergency department (ED), can significantly enhance outcomes through life-saving interventions, reduction of complications, and optimized use of hospital resources. Pre-hospital systems of care need to explicitly address the management of these conditions in order to promote teamwork and collaboration among health professionals. During the pre-hospital phase, gastrointestinal emergencies should be act as a signal for early team preparation, consistent with existing recommendations (Quinn et al., 2018) (José Meléndez-Lugo et al., 2020). Gastrointestinal emergencies represent a significant burden on emergency medicine worldwide. Timely and structured responses before arrival have been shown to enhance outcomes through life-saving interventions, reduction of complications, and optimized use of hospital resources (Twomey et al., 2018). Nevertheless, many health systems fail to treat gastrointestinal emergencies as a pre-hospital triage signal for urgent activation of the receiving team and transfer to the routing care unit.

Pre-hospital personnel need to prioritize communication of gastrointestinal emergencies, which activate specialized in-hospital resources. Systematic triage criteria should ensure that proposed early activation occurs only for sufficiently high-acuity cases, preventing activation of the entire team for every gastrointestinal presentation. Standard platforms for documentation of incoming information should favor straightforward and consistent reporting of the pertinent data that enables early consideration and team activation. Access to guidance on institutional ED protocols should facilitate the identification of gastrointestinal cases meeting in-hospital activation criteria, supporting improved inter-professional coordination throughout the pre-hospital phase.

4. Emergency Department to Acute Care: Diagnostic Pathways and Shared Decision Making

Many patients presenting with gastrointestinal (GI) emergencies in the Emergency Department (ED) are transferred to General Internal Medicine after an admission decision. The differential diagnoses commonly considered for patients with GI emergencies in these acute care settings (e.g., patients with suspected acute pancreatitis) may differ from those in pre-hospital care and triage to the ED. Thus, collaborative diagnostic pathways must extend to the ED-to-acute care transition following initial assessments and clinical decisions in the ED. At this stage, interprofessional teams in different settings make decisions to initiate acute care by specifying inpatient pathways and protocols, refining prior diagnoses, and confirming indications for testing. Various patients with GI problems who are discharged from the ED despite receiving treatments and testing also exemplify situations where collaborative decision-making, especially concerning admission vs. discharge, remains pertinent. The ED-to-acute-care interprofessional activities tackled can be categorized into differential diagnosis and risk assessment; evaluation of the need for diagnostic testing and a review of the requested tests across settings; and communicating and ensuring consent for the tests (Malpass, 2017) , (Leeman et al., 2017) , (N Bernstein et al., 2020).

5. Diagnostic Imaging and Laboratory Integration Across Settings

Timely access to appropriate diagnostic imaging and laboratory studies is essential to determine potential causes of gastrointestinal (GI) emergencies. Early interprofessional communication, such as providing differential diagnoses and risk-stratified testing options, decreases delays from ED to acceptance by acute care services (J. Towbin et al., 2016). To facilitate timely assessment of imaging studies and laboratory tests, medical agencies should integrate data from imaging studies and laboratory results, utilize standard orders when possible, and establish cross-institutional notification and report transmission protocols. Access to standardized, cross-institutional reports for images enhances procedural safety (Sorace et al., 2012). Enables physicians and diagnostic imaging or laboratory personnel in acute care settings to prioritize these studies and schedule interventions expediently (Regina Silva Reis et al., 2015). Establishment of a limited number of interoperable data elements provides an option for an early initial assessment of images. Following GI emergency cases notify patients and care team members of GI consult acceptance to keep care logs precise.

Interoperability of diagnostic imaging and laboratory services eliminates the need for duplicate and repeated studies, allowing participating professionals to integrate findings from previous tests into the assessment of cases. Authors have specified techniques and modeling concerning GI cases, and widespread adoption improves health system-wide case recognition. Timely assessment of GI-related provocations supports faster review and the opportunity for alternative, non-invasive evaluations prior to arteriographic exploration. Establishment of prioritization protocols occurs when imaging elements meeting official institutional agreements are incorporated. Assurance that the required imaging type remains preserved permits cross-system requests even if reporting solutions are not available or prior authorization is mandated. Designation of GI cases occurring after-hours enables sharing observations as required to adjust care plans.

6. Therapeutic Interventions: Pharmacologic and Procedural Interventions Delivered Across Continuum

Many pharmacologic and procedural interventions are delivered across the different acute and post-acute phases of gastrointestinal emergencies. Relevant pharmacologic treatments included in the emergency department triage algorithm and acute care pathways are listed in Example Copied below (Williams et al., 2019). The route of administration is indicated. In addition to dosing, key team roles and responsibilities in the pre-acute and post-acute phases are specified. Safe prescribing practices are emphasized when delivering drugs across the continuum: verification of patient allergies and active medications, review of medical history, and confirmation of clinical indications.

Example: Pharmacologic and Procedural Interventions Delivered Across the Acute and Post-Acute Continuum

* Volume resuscitation (intravenous or intraosseous administration). Bolus or infusion (e.g., 500ml crystalloid over 30–60 minutes) (Yuan et al., 2024).

* National Early Warning Score (NEWS) documentation (platform-dependent). Document initial or revised NEWS score on the scorecard of the standardised pre-printed acute care plan.

* Omeprazole (PO/NG feeding tube). Loading dose: 80mg. Continuous intravenous infusion: 8mg/h.

* Tranexamic acid (PO/NG feeding tube). Loading dose (as an adjunct to specific indications): 1g administered over 1hr.

* Prophylactic antibiotic (IV administration). Common agent: ceftriaxone. Must define at acute care equipment level and specify at connectivity level (e.g., electronic ordering).

* *Endoscopy* nasogastric tube insertion: *protocol* (team member) roles and responsibilities specified to support team decision-making, inform the patient's family, and educate the patient'. Assessment of suction on the tube to exclude tracheal insertion.

* Additional documentation at acute care stage is prescribed (e.g., *suction checked and confirmed*). Team roles are also clarified in *procedure checklists* for *nasogastric tube insertion, endoscopy, and related procedures*.

Prior to procedure booking, team members are consulted on patient suitability for interhospital transfer. Preparation for possible bleed during transfer may also be triggered. When a procedure must be booked but patient concern is anticipated, preparatory medications can be prescribed. Teams are informed if procedures are completed or cancelled at the receiving institution.

7. Post-Acute Care and Transition Planning: Rehabilitation, Follow-Up, and Readmission Prevention

Effective management of gastrointestinal (GI) emergencies, especially those requiring hospital admission, often necessitates post-acute rehabilitation, follow-up, and transition planning. These activities can significantly enhance patient care and prevent readmissions. For instance, multidisciplinary post-hospital visits by interprofessional teams—including nurses, pharmacists, and social workers—have been shown to bolster safety and facilitate knowledge transfer, particularly for fragile patients already at high risk following an acute care episode (M Baldwin, 2016). Within the GI domain, procedures addressing problems such as strictures, fistulae, and malignancy also benefit substantially from comprehensive post-acute support, making it essential

to define target rehabilitation goals and develop structured transition plans involving timely follow-up, education, coordinated referrals, and community resources.

The nature of prescribed rehabilitation and needed follow-up depends on the specific GI condition addressed. Overall, GI-related activities such as intravenous fluid and nutrition, feeding tube management, ostomy care, and parenteral vitamin supplementation are frequently observed. Transitioning from in-patient to out-patient care after gastrointestinal emergencies is similarly complex, often involving detailed follow-up concerning source control, pharmacotherapy, cancer surveillance, and nutrition. Various alternatives exist to avert aggravation, with organizations like the Agency for Healthcare Research and Quality (AHRQ) providing classification systems to assist in decision-making.

8. Education and Training for Interprofessional Teams

Interprofessional education and training for teams in essential and non-essential services strengthens skills for working effectively across multidimensional care settings (C. Rider et al., 2019). Curricula designed for interprofessional education can emphasize clinical leadership, team organization, and professional perspectives within the specific context of gastrointestinal emergencies. A selective, longitudinal, and multidisciplinary curriculum targets pre-hospital, emergency department, acute care, and post-acute interventions in the management of these emergencies at an academic medical centre (Flentje et al., 2016). Premises for team-based education of elements emphasize that structured training programmes extend beyond brief workshops. Adverse situations encourage and reinforce collaboration. Priority assignments determine measures for simultaneous interventions. Rapid escalation occurs when anticipated events at multiple steps require aligned planning. Principles for training and assessment of teamwork skills include both synchronous didactic sessions and formal simulation.

Integration of different types of curricula and training further enhances communication and coordination across settings. Mapping institutional-wide teams supports efforts toward a support team data repository, specification of hand-over systems resident safety improvement teams—a current major focus. This integration helps clarify the interprofessional competences and skills specific to each deployment setting. Structured venues facilitate participation across disciplines and staff classes, allowing domain- and facility-specific. Methods and metrics for structured teamwork training, based on frameworks from healthcare and other sectors, can complement dissemination and watershed instances across the institution.

9. Health Systems Engineering: Communication Protocols, Handoffs, and Information Continuity

Timely and accurate transfer of information between health care practitioners is vital for high-quality health care delivery (Lynn Jepsen, 2011). Continuity management of patients treated across numerous different locations by many diverse professionals is a considerable challenge for any complex health system. The notion of the organization of health care services is referred to as ‘Health Systems Engineering’ (HSE). HSE examines how health organisations (and associated processes) can be optimised to deliver timely and accurate care, decreasing the chance of adverse events and missed opportunities for patients (Pokojová & Bártlová, 2018). One of the pressing problems facing complex health systems is detailed communication protocols for inter-professional handoffs, the point in a patient’s pathway that determines what happens next.

Handling unexpected events and uncertainties, the overwhelming number of patient cases, and the variety of settings and healthcare professionals involved makes the process of transitioning care particularly complex. Helping establish the necessary protocols to overcome this challenge is essential for building a robust HSE framework.

10. Quality Improvement, Metrics, and Research Gaps

Conventional emergency medicine research focuses on sequences of care within a single delivery phase. However, when the delivery of a health service is divided into phases, each requiring distinct interprofessional communications, team reformation, and fresh decisions about diagnosis and treatment, continuity becomes problematic. Interventions occurring across such phases provide a unique opportunity to study the impact of interprofessional collaboration on improving care quality in the absence of formal structures established to ensure continuity (Hansen et al., 2020).

The opportunity for GI emergencies is amplified because they are frequently delivered by emergency medical services (EMS) in the pre-hospital phase; the emergency department (ED) is a second phase of delivery; and acute care constitutes a third phase at the hospital site (W. Glickman et al., 2010). Among acute care settings, there is an opportunity for interprofessional collaboration that remains unexplored and unmeasured. At many hospitals, a subset of GI emergencies is cited by the Centers for Medicare & Medicaid Services as associated with high readmission rates.

Metrics to support continuous improvement can be defined for each phase. In addition, a broader research agenda can be articulated that works in synergy with actively progressing policies and that is independent of formal mechanisms for monitoring interprofessional collaboration across distinct phases of delivery.

Table 1. Care Phases and Interprofessional Activities

Care Phase	Core Activities	Disciplines	Outcome
Pre-hospital	Recognition & stabilization	EMS, Dispatch	Faster triage
ED	Diagnostics & initial care	ED staff, Lab, Radiology	Early diagnosis
Acute Care	Endoscopy & therapy	GI, Medicine	Definitive care
Post-acute	Follow-up & rehab	Nursing, Pharmacy	Reduced readmission

11. Ethical, Legal, and Patient-Centered Considerations

Gastrointestinal (GI) emergency management involves conveying sensitive diagnoses and discussing complex treatment pathways among patients, families, and interprofessional clinical teams. These discussions may be initiated in prehospital and emergency department (ED) settings or before transfer from the ED to an acute care setting. Ethical dilemmas can arise surrounding the assessment of a patient's autonomy, situation, and knowledge base, particularly when potentially life-threatening conditions are suspected (Kumar et al., 2023). Such discussions care critical to the establishment of mutual trust and respect for patient agency and sovereign choice. Engaged teams possess not only clinical expertise but also consider the ethical, legal, and patient-centered aspects of care.

Interprofessional (IP) teams convening at various points along the continuum of care face numerous ethical and legal dilemmas and need to be aware of the full range of patient-centered issues associated with each clinically urgent or safety-critical decision that leads to a request for timely consultation. These include privacy of personal health information, equitable access to care irrespective of social class, race, gender, other socio-economic factors, the need for informed consent—and consideration of the minimal amount of information that is necessary for compliance

with regulations while still allowing the assessing provider to convey what they think is essential for selection of the most appropriate consultation team as well as continuity of patient-centered care across the system.

12. Policy Implications and Organizational Readiness

Gastrointestinal (GI) emergencies are common and often present at the emergency department (ED) (Karam et al., 2017). Many GI emergencies may require additional diagnostic testing, staging, or therapeutic interventions outside ED capabilities. Such cases may be transferred from the ED to an acute care setting, yet evidence suggests that interprofessional collaboration between the ED, acute care, and post-acute teams is often lacking (Leeman et al., 2017). Providing appropriate prehospital GI guidance while providing clear GI patient handoff from ED to the acute care setting affords better GI case management continuity. Prehospital, ED, and acute care provider time coordination prevents avoidable delays and contributes to optimal patient outcomes.

Public health policies that create opportunities for enhanced EMS–ED and ED–inpatient collaboration in GI care are greatly needed. Evidence suggests that rural and regional settings with limited access to first-line rapid diagnostic imaging and testing capacity enact specific public health policies that may enable GI collaboration efforts. Implementing collaborative GI management models will likely require thoughtful engagement that assesses individual organizational readiness for collaboration, the extent to which public policy advocates champion collaboration, and the resources already implemented in these key facilities.

13. Case Studies Demonstrating Effective Interprofessional Collaboration

Interprofessional collaboration plays a crucial role in the management of patients presenting with gastrointestinal (GI) emergencies, encompassing diverse settings from pre-hospital care through to post-acute care, with a focus on teaming, communication, and continuity of care. Implementation of interprofessional and inter-organizational collaboration, dialogue, and shared management is pivotal in developing system-wide partnerships that bridge pre-hospital care by the emergency medical services (EMS) with urgent care at the emergency department (ED), support a bi-directional integration of laboratory and imaging diagnostics, and bolster the private-sector health system continuum during rehabilitation, follow-up, and readmission mitigation (Karam et al., 2017).

Situational partnership approaches involving EMS-ED teamwork are notably absent in private-sector health systems, demonstrating the need for insightful and pragmatic knowledge-sharing opportunities based on real-life experiences. Despite the growing awareness of the need for collaborative healthcare, research regarding collaborative processes for GI emergencies remains scarce, leading to the consideration of selected paradigmatic case studies to elucidate perspectives and practices.

14. Conclusion

Gastrointestinal (GI) emergencies affect many people each year, accounting for an estimated 19 million emergency department (ED) visits in the United States (Karam et al., 2017). Due to their sheer volume, these presentations can overwhelm the capacity of the health care system, particularly within the ED where individuals often experience longer waits — emphasizing the need for a structured approach within the continuum of care.

The framework presented here strives to provide a systematic approach to GI emergencies and outlines how coordinated decision-making can benefit patients and providers alike, reducing the likelihood of unnecessary interventions that can place additional burden on already constrained health care systems.

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