Medical Research Archives

European Society of Medicine

OPEN ACCESS

Published: April 30, 2024

Citation: Venkataraman A, Lim SHC, et al., 2024. From Fragmentation to Integration in Emergency Medicine: Providing Care Our Patients Deserve, Medical Research Archives, [online] 12(4). https://doi.org/10.18103/mra.v12i4.5279

DOI
https://doi.org/10.18103/mra.v12i4.5279

ISSN: 2375-1924

RESEARCH ARTICLE

From Fragmentation to Integration in Emergency Medicine: Providing Care Our Patients Deserve

Anantharaman Venkataraman*[1], Steven Hoon Chin Lim[2], Lim Jia Hao[1], Jeremy Choon Peng Wee[1]

[1] Department of Emergency Medicine, Singapore General Hospital, SingHealth Emergency Medicine Academic Clinical Program, SingHealth Duke-NUS Academic Medical Centre, Outram Road, Singapore 169608, Singapore
[2] Accident & Emergency Department, Changi General Hospital, SingHealth Emergency Medicine Academic Clinical Program, SingHealth Duke-NUS Academic Medical Centre 2 Simei St 3, Singapore 529889, Singapore

***Corresponding Author:** anantharaman@singhealth.com.sg

ABSTRACT

The emergency care systems of most communities around the world have multiple components through which patients move and which are, at best, disjointed and not well coordinated. Illnesses and injuries which begin in the community and frequently preventable often do not have the benefit of bystander assistance or dedicated immediate emergency ambulance care and arrive at Emergency Departments that are crowded. Patients often spend long hours in these Emergency Departments and, if requiring inpatient care, have to wait many hours before an inpatient bed becomes available. Those requiring further convalescent care may often find inadequate arrangements available for them to recover smoothly. The end result is delays and adverse clinical outcomes that are often not measured or even appreciated.

This report discusses each of ten components of the emergency care system as in exists in most communities, including injury and illness prevention, the community burden of emergencies, bystander first responder care, ambulance-based second responder care, emergency department crowding and its contributory factors, transitions of care to the inpatient departments and community convalescent care units, coordination of emergency departments in the community, the patient's family and, of course, the emergency patient. The effects of fragmentation in each of these components are described and strategies to address each mentioned.

There is a need for a patient-centric, integrated approach to the provision of emergency care in any community which can break down the barriers created by fragmented care and provide the seamless, high-quality care that all our patients deserve.

Introduction

In many communities around the world, healthcare systems are facing fragmentation in a variety of ways that lead to dysfunction in the provision of patient care, especially amongst those with multiple chronic co-morbidities[1-4]. Despite increased expenditure on healthcare, including in the United Kingdom (UK), the United States of America (USA) and some of the countries of Europe, there have been increased referrals, duplication of services and lack of communication between the different services these patients consume. All of these result in adverse health outcomes for the patients [2, 5, 6].

The whole spectrum of services that patients consume has experienced fragmentation to the extent that patients' expectations of a reasonable standard of healthy living have not been met. Greater fragmentation has been noted in patients with an increase in the number of co-morbidities both in the USA and in Korea[7, 8]. Discordance has been noted between specialist hospital-based services and primary care[9]. Even within the hospital system of countries such as Singapore and the USA, fragmentation has been amply noted between different specialist groups and between ambulatory services and inpatient services[10, 11].

The implications of such fragmentation of healthcare in the community, especially amongst those with chronic diseases, has also appeared to result in an increased utilization of Emergency Departments by such patients[12].

Healthcare systems around the world are very complex groupings of many microcosms of health-related systems and organisations trying to work together to enhance patient flow and care. Their complexity, the presence of many different stakeholders, depending on the country and the community, and their needs contribute to the multiple areas of fragmentation referred to earlier. It is almost impossible to discuss these complex inter-relationships in a single paper, or address these various challenges without adopting a whole-of-society approach to the problem of fragmentation.

The objective of this paper is, however, not to discuss the fragmentation that exists across the spectrum of healthcare, nor to discuss its impact on potentially inappropriate Emergency Department patient attendances. Rather, the objective is to review the issue of fragmentation within the emergency medical system's scope of care, and across Emergency Departments in a community so as to provide a more focused perspective on the challenges that fragmentation brings to our clinical practice and the standards of clinical care that we provide within Emergency Medicine not just within one or two countries, but around the world. It is also not an understatement that unless we can begin to bring order to our own house, we cannot hope to address the chaos that would likely exist in the larger community of healthcare practice.

Definitions

The Oxford dictionary defines "fragmentation" as "the process or state of breaking or being broken into fragments". In terms of a community, we may regard this as a fragmentation of society into a collection of interest groups, and especially if these fragments do not relate well to one another. Fragmentation of care in the medical literature has been described mainly for chronic care. None exists for fragmentation of entire emergency care systems. Since there is no common definition of an emergency medicine community, we will consider such a community as the range of areas where emergencies occur and care provided within a political or geographical jurisdiction. Fragmentation in emergency care may be regarded as the creation of separate groups of entities (interest groups) or sub-entities or processes that are not working together in a synchronous manner to achieve what is optimal for the patient.

Conversely, the Oxford dictionary defines "integration" as "the act or process of combining two or more things so that they work together". In the context of an emergency healthcare system in a community, this would refer to the various groups or entities that make up the community having a system of work processes that promotes seamless and hassle-free flow of patients, care regimens and patient care activities that attempt to achieve the best possible outcome for the key stakeholder for which the system is created, viz. the emergency patient.

If one were to use the World Health Organisation (WHO) concept of an emergency care framework (Figure 1), this would pertain to the system of emergency care for a single patient reaching a single Emergency Department (ED) in a locality[13]. In terms of a community, we will need to add on the availability of numbers of different EDs (with their slightly different structures and care systems) that exist within a political jurisdiction, such as a district, province, state or country. It is also essential to consider preventive care aspects, as outlined by the WHO, which can help reduce the number of emergency patients. Additionally, the framework should include community facilities such as primary care clinics, rehabilitation centers, and home healthcare services, to which EDs may refer or discharge patients for continued care and follow-up.

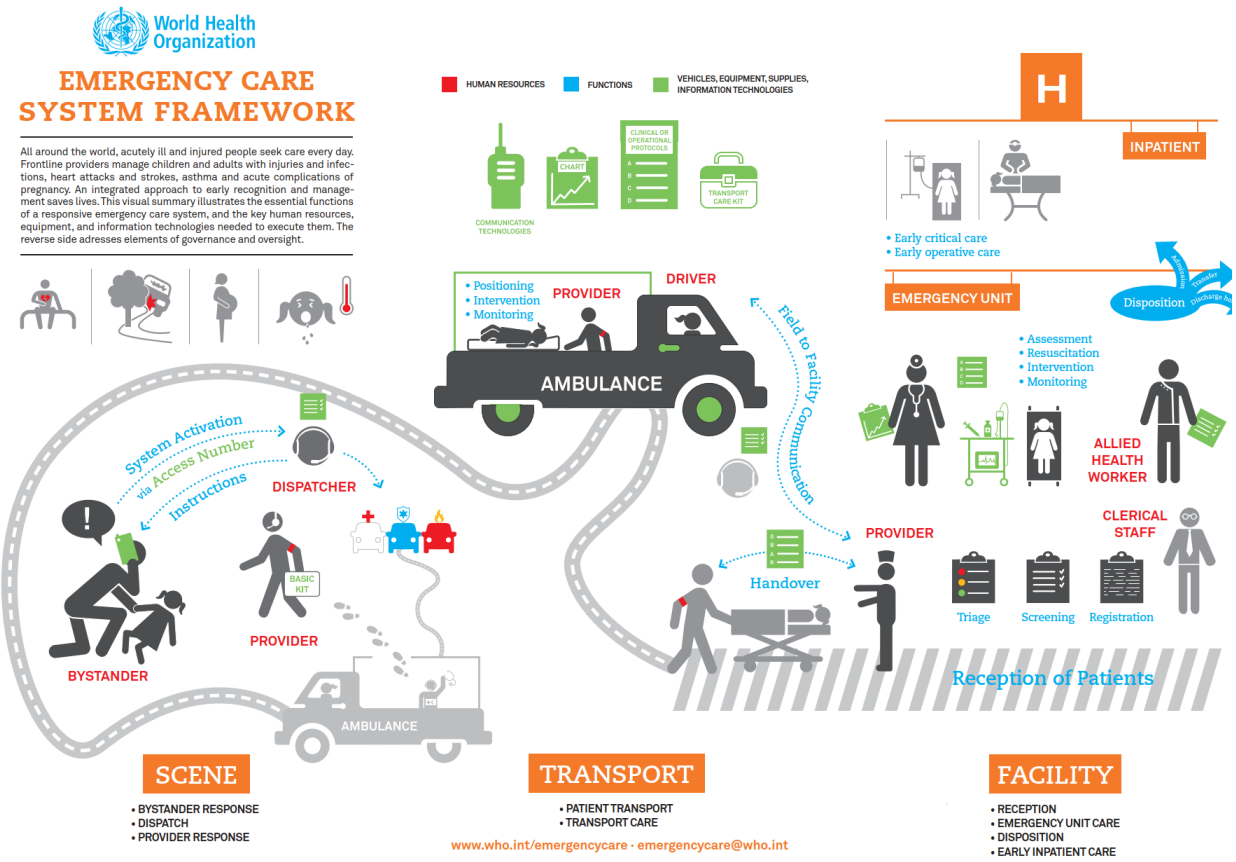

Figure 1: The World Health Organisation's Emergency Care System Framework

In addition, there would be a need to consider each of the components of the framework, such as the scene, the bystander (first responder), the ambulance service provider (second responder), the Emergency Department's resources and processes and its interactions with the rest of the hospital, including other clinical and allied health departments and community convalescent and support facilities. Not forgetting, there is a very important component that transcends all these, viz. the patient, for whom this whole system exists.

Components and care processes within the Community's Emergency Care System

There are ten components that constitute the elements of what could be generally alluded to a Community's Emergency Care System. These will be discussed briefly and how they contribute to fragmentation.

a. Prevention of illness and Injury

Though EDs generally manage a mix of injured patients and those with non-traumatic communicable and non-communicable illnesses, very few, if any, have any say in the injury and illness prevention systems of their communities[14, 15, 16, 17]. Emergency Medicine intersects with public health in a number of areas, such as injury prevention, response preparedness to terrorism and natural disasters, and as the healthcare source of last resort for many individuals. Emergency physicians treat patient with health problems every day by the timing and context of disease presentations. Some of these injuries and diseases could be prevented or their effects mitigated through the insights of emergency physicians, emergency medicine organizations and their allies. While Emergency Physicians, having to deal with many of the associated consequences of trauma, should have insight to allow them to be leaders in injury prevention, there is scant evidence today of the role played by emergency physicians in public health and injury prevention committees and activities.

b. The scene

This refers to the community environment and the burden of diseases in the community that result in the need for emergency care of varying degrees. Emergencies begin in the community. Most emergency physicians have limited awareness of the global burden of emergency diseases in their own neighbourhood or community. Dr Junaid Razzak and colleagues provided some simple matrices of what could be used to determine these[18]. He defined emergency medical diseases as

those where interventions within minutes to hours are required to improve health outcomes. However, the community burden of emergency medical diseases is not yet used in any country to determine resources that need to be allocated for emergency care. Therefore, most countries tend to use existing emergency department attendance data at public hospitals to project future demand. This only addresses planning at individual ED level and does not adequately address the community's needs for emergency care. However, emergency care is a dynamic entity. It is generally presumed that the earlier in the phase of disease or injury that appropriate interventions can be introduced, the shorter would be the recovery phase, the lesser would be the resources required to manage the disease during its emergency phase and the earlier would the patient be returned to an economically productive role in society, therefore decreasing the overall community cost of healthcare[19]. This is best illustrated in Figure 2 below.

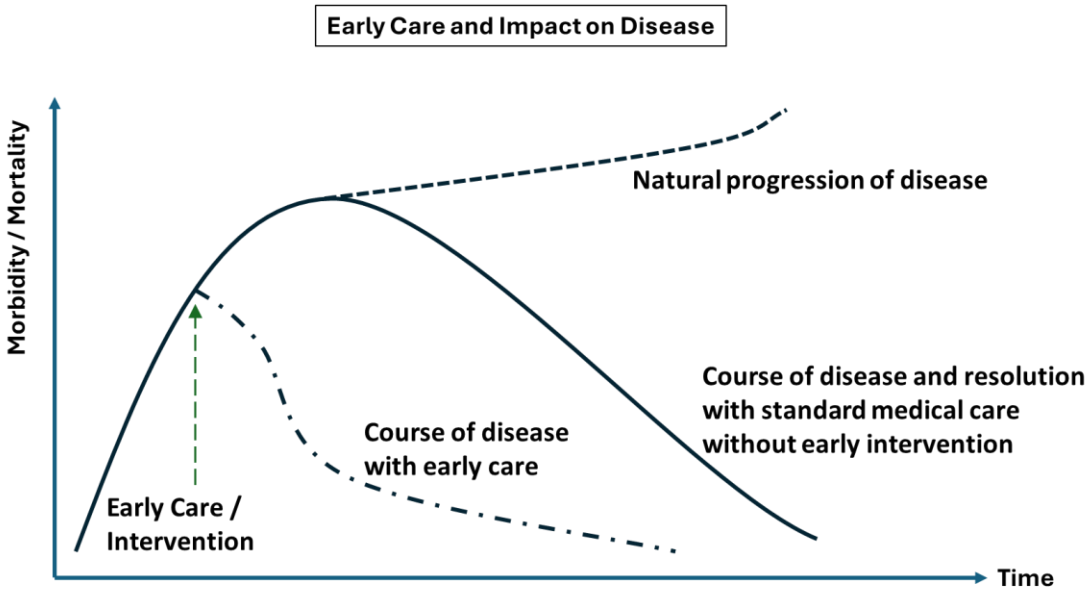

Figure 2: Early emergency care and its impact on disease

Many countries, including some with well-resourced communities, take great pride in declaring that their Emergency Departments are the community safety net[20]. Such an approach has resulted in many EDs managing a large number of primary care patients who should best be seen in a primary care setting and instead are using precious high-cost resources for their care.

c. *The bystander*

i. In the event of an emergency, in terms of acute illness or injury, there is usually a member of the public with the patient. The public member could either be a member of the family, a neighbour, work colleague or any community citizen in a public area. If assistance is needed to immediately attend to the emergency, that member would be in the best position to do so, if they knew how. Sometimes such a person may not be by the person's side at the time of occurrence of the emergency, but may be there within a matter of minutes, or occasionally a few hours. This person, being the first with the ability to potentially intervene with one or more actions that may help reverse the emergency process, becomes the first responder. A common term to address the first responder is "bystander".

ii. There is ample evidence to suggest the benefits of bystander action in emergencies[21, 22]. Bystander action has been noted for a variety of emergencies[23]. The rate of bystander response in various communities has, traditionally, been very variable and between 10% and 65%, [22, 23, 24, 25].

As the first link in the emergency care chain, the bystander response is currently the weakest. Consequently, many stroke patients do not arrive at the hospital early enough for thrombolytic therapy [26]. Chest pain patients often wait for too long before seeking care and may collapse, while trauma patients in many resource-challenged communities may not have easy access to skilled care[27, 28]. Emergency physicians generally wait for these

patients to arrive at the ED, rather than taking proactive measures to develop initiatives that ensure early recognition of these illnesses and injuries and the prompt activation of emergency care systems. The lack of early access to emergency care is a symptom of a fragmented emergency care system.

d. *The ambulance system(s)*

i. Ambulances represent one link between the site of onset of emergencies and the EDs of hospitals. The other similar links include private vehicles and other forms of public transport. The difference between emergency ambulances and other modes of transport would be that the ambulances can, potentially, institute life-saving and sustaining treatments and even alert the receiving EDs of the impending arrival of the emergency patient.

ii. In many communities, only a minority of emergency patients utilize their emergency ambulance services and, thus, do not avail themselves of the numerous interventions that can be instituted by emergency ambulance crew that may be potentially life and limb saving[29].

iii. In many communities, ambulances serve mainly as transport vehicles with little done in terms of active medical interventions[30]. The reasons for these are many, some being lack of empowerment, lack of training and lack of manpower and equipment resources.

iv. Some communities do not have a community-wide emergency ambulance service and depend on hospital-based ambulances to transport patients from the sites of illness or injury[31].

v. Fragmentation of care can occur in many areas under the purview of the ambulance services[32]. The ambulance service's principal components, viz. notification (from time of call to when team is activated), activation (from receipt of activation to dispatch), response (from dispatch to arrival at scene), on-scene (from arrival at scene to departure), transport (departure from scene to arrival at the hospital) and alerting the receiving hospital prior to arrival all play vital roles in timely, effective and integrated care. These are of major concern in most low-and middle-income countries.

vi. There are many types of ambulance services in most communities. Some are licensed by the state, others operate without any clear licence or care protocols[33]. Most ambulance operators function fairly independently with little oversight by the state. This has led to wide variations in quality of care provided by different ambulance services. The relative lack of common standards of professional oversight over the ambulance services that exist within a community, another symptom of the fragmentation of ambulance support for emergency patients, has resulted in these variations. The consequences of inconsistent or poor-quality care are borne by the patients who use or do not use these services. The relative under-utilization of emergency ambulances for many emergency patients is a matter that needs careful study regarding the potential benefits that may accrue with their usage, including the downstream benefits to the healthcare system.

e. *The Emergency Departments*

i. Emergency Departments form a vital link in the healthcare service delivery system of most communities. For patients, regardless of ability to pay, the EDs are usually supposed to be available every hour of the day or night. Once patients, most of whom initially present with an undifferentiated array of symptoms, enter the ED, they have expectations of being seen promptly, their symptoms appropriately evaluated, treatments instituted with minimal delay and them beginning the road to recovery. At the end of the encounter, they would expect to be either discharged home with the appropriate medications and / or treatment advice and arrangements for further care, or admitted to an inpatient or convalescent facility for continuation of care till adequate recovery is achieved. Some patients may need to be observed for a prolonged period in the ED to evaluate the impact of initial treatments delivered before a decision on discharge or inpatient care is made, and a few others may appropriately require transfer to some form of convalescent or palliative care that would enhance their care process.

ii. In reality, most of the activities mentioned in the previous paragraph are not achieved smoothly for the following reasons:

1) In many communities, ED staff are not involved in coordinating with their ambulance services in terms of system integration. Ambulance crew do not use the same triaging systems as EDs resulting in duplication of triage efforts. There is often lack of interprofessional

education between prehospital care and ED professionals that further contributes to fragmentation.

2) Most emergency departments see a fair number of primary care patients who should have been better and appropriately cared for by the community's primary healthcare system. However, owing to issues with access to prompt or affordable primary care resources in most communities, many such patients tend to use the ED as their source of primary care[34 35]. Though this reflects a failure of the community's primary care system, which requires action by the local health authority, common inaction by the system has led to the presence of primary care patients in the ED as an almost permanent feature in most jurisdictions.
3) Many emergency care leaders justify the presence of primary care patients in their EDs by stating that they serve as the social safety net for their community[36]. However, it is worth considering whether the financial benefits of treating primary care patients in the ED may contribute to a reluctance to redirect these patients to more appropriate lower acuity care settings. This contributes to crowding which has become a persistent challenge for EDs worldwide[37, 38]. Unfortunately, few communities have implemented comprehensive strategies that combine public education on the appropriate use of EDs with efforts to increase access to primary healthcare services, which could help manage the influx of primary care patients in these resource-intensive settings[39].
4) Ambulance crews often have limited real-time situational awareness of the degree of crowding at their destination EDs, on ED resource availability and capacity, leading to situations where they arrive at an ED that is too overwhelmed to accept new patients. This results in ambulance diversions, where the crew must transport the patient to another ED, sometimes located further away. The adverse consequences of ambulance diversions on patient outcomes are well-documented[40]. These diversions reflect a lack of integration and coordination of emergency care resources within a community, leading to suboptimal patient care and potential ethical dilemmas[41]. Despite the known negative impact, ambulance diversions persist as a common occurrence in many communities, highlighting the need for better systems to track and manage ED resources in real-time.
5) On entering the ED, patients are faced with a large number of procedures which include triage, registration, clinical consultation including resuscitations, treatment, investigations, sometimes extended observation and finally disposition. Each of these processes comes with a waiting time and a procedure time. Even for individual processes, EDs have physicians with different practice styles that may potentially result in slightly different clinical outcomes. For those patients who are being admitted as inpatients, there is often an added waiting time for beds usually owing to access block which may result in adverse patient outcomes. All these, often referred to as ED throughput, contribute to the crowding that is rampant in most EDs and their adverse clinical consequences and reflect the lack of process integration in the various EDs[42].
6) Patients with behavioural health emergencies or substance abuse crises often face fragmented care due to the siloed nature of behavioural health and emergency services. Lack of integrated protocols, specialized training for ED staff, and timely access to psychiatric resources can lead to suboptimal care and outcomes.
7) Fragmented health information systems and lack of interoperability between EDs, hospitals and other care settings can lead to incomplete patient records, duplicate testing and medical errors. Inability to access critical patient information at the point of care can compromise emergency treatment decisions.
8) The factors contributing to ED crowding and the varying levels of attention given to this problem across communities is a sad reflection of the state of emergency care in most countries of the world [43]. Despite the persistent nature of ED crowding for more than three decades, the lip service often given to the problem indicates a larger disease of

the healthcare system that needs urgent attention.

f. Coordination of Emergency Departments

i. One of the lessons we have learnt growing up in the small city state of Singapore is that all Emergency Departments need to use a similar language when discussing ED metrics or when the issue of resource allocation arises. Therefore, for a more than a 20-year period from 1989 till 2010, all public Emergency Department Chairs met frequently under an Emergency Departments Coordinating Committee to work out common criteria for triage, training of emergency medicine specialists, organization of emergency nurse training and other areas, including criteria for use of short-stay observation wards. This allowed the use of a common language amongst ED staff and helped the Ministry of Health in ensuring a more equitable resource allocation system based on common parameters used. This has become less apparent after 2010 when the Committee was disbanded and the local health authority began to discuss with each ED on a one-to-one basis, rather than as a coordinated entity. We have also noted that in many regional and international communities, most ED staff seldom communicate with each other and may have very different systems of training and internal organization allowing little scope for comparison of ED matrices and for allocation of community resources. The disintegration of communication and loss of sharing between EDs that have occurred over the last many years has been of concern to the senior leadership of these departments. It is also likely that the lack of communication we have seen amongst EDs in regional communities contributes to their lack of coordination in use of local resources and in programs they have tried to create for the community.

ii. One area which has required coordination of ED resources has been in the area of disaster management. This has always been more challenging in jurisdictions with no prior mechanism for coordinated action. Coordination, to be effective and efficient, requires availability of coordination structures, regular meeting amongst senior staff across EDs, clear roles, mandates and sufficient authority.

iii. Community ED coordination refers to the exchange of information, resources, and other efforts to enhance situational awareness allowing them to share real-time information on the nature, extent, and location of an emergency, preventing duplication of efforts and ensuring the right resources are delivered to the right place at the right time[44].

iv. However, despite its recognized importance, challenges exist in inter-ED communication and collaboration. The different EDs may make use of multiple communication and electronic medical record systems making it difficult to establish seamless connections for information sharing. They may use different terminology and jargon, leading to misinterpretation and confusion during critical moments. The lack of training in inter-departmental ED communication protocols and procedures can hinder effective coordination between agencies. Their diverse organizational cultures may struggle to understand and adapt to each other's communication styles

v. These challenges underscore the importance of incorporating coordination as an adaptive mechanism that enables EDs to function effectively and efficiently within the broader context of the community's healthcare system.

g. Hospital Inpatient Systems

i. The current situation whereby EDs are almost always overcrowded, mostly owing to patients having to wait for an inpatient bed, is not tenable for the long term. There needs to be more discipline in the judicious use of inpatient resources for patients passing through the ED.

ii. The possible causes of access block can include the disinclination of clinicians to discharge patients due to lack of or barriers to coordination with community-based care models, inefficient flow in the discharge process, and insufficient bed capacity[45].

h. Community Convalescent Care Systems

i. All EDs have patients with intermediate medical issues that after initial care can be managed out-of-hospital. Often families are unable to care for these patients and they need community convalescent facilities for their recovery before they may be sent back home or to a longer-term nursing care facility.

ii. Often the requirements for sending such patients to convalescent care facilities are onerous and require completion of documents and a waiting time for approval

that may sometimes take days or even weeks. There would be a need for speedier processes to allow some of these patients direct and immediate access to such community care facilities so as to address the patient's intermediate care needs and not clog up hospital inpatient facilities or ED beds.

iii. There is a need for transitional care strategies to ensure the coordination and continuity of care as patients transfer between EDs and community health and support services. Studies have demonstrated that such strategies can help reduce readmissions and provide better care for the elderly, though seldom utilized[46].

i. The Patient's Family

i. EDs that are not family-friendly tend not to discuss care plans with family members within the hour of the start of the ED consultation process

ii. The presence of the family during emergency care has been a controversial issue. Many emergency sectors do not allow families to be close to their loved ones during their ED care. This is because, their presence in the clinical area adds to the crowding that is already caused by many other factors.

iii. The absence of a close family member next to the ED patient often results in insufficient inputs from the family regarding the home environment, discussing with the family the likely causes of the patient's presentation and how the family may be intimately involved in the immediate care, use of community care facilities and rapid recovery of the patient – lack of integration with an important stakeholder in the emergency care framework.

j. The Patient

i. The ED is of no value without its prime stakeholder – the patient. Active engagement of the patient is critical towards ensuring that the care provided addresses all aspects of his/her needs. Yet, in many communities, all too often, after initial contact with the patient, further needs are determined by the healthcare staff with some communication with the next-of-kin. The patient then often feels left out of the care decision-making process and this cannot be in the best interests of the patient. It is sad that this important aspect of patient engagement is not adequately addressed in many EDs.

ii. The patient's experience with emergency care provision may often seem fragmented with concerns of disorientation, impatience and frustration on the part of the patient[47]. These need to be carefully studied and measures introduced for them to be addressed.

Outcomes of fragmentation in the emergency care process

In chronic care systems, fragmentation of care is often characterized by inadequate transfer of information and unclear treatment responsibilities. Its adverse consequences include economic inefficiency, inequality in health, unnecessary in-hospital admissions, inappropriate medication use, depersonalization of the patient and increased mortality[4]. For emergency care, however, the adverse outcomes may be identified by areas where fragmented emergency care occurs. We may list these as follows:

a. Prevention of illness and injury
   - More injuries and illnesses and of greater severity
   - Lack of resources to manage illnesses and injuries in the community
   - Increased cost of healthcare for acute illnesses and injuries
   - Increased years of life lost as a result of illness or injury

b. Scene of illness and injury
   - Lack of common strategies to address major diseases encountered by the EDs
   - Inability to compare outcomes for common diseases that may present to the EDs in a community
   - Inability to organise common community-wide resources to address common diseases / injuries
   - Inability to organise resources to right-site emergency care in the community
   - Increased crowding, boarding and access block in EDs, failing those who need definitive care and having an increase in numbers of primary care patients coming to EDs resulting in an increase in economic burden

c. The bystander
   - With lack of bystander action patients arrive in EDs in a worse condition as reflected by worsened revised trauma scores for injured

patients and poorer vital signs for those with major illnesses. There would be a need to conduct baseline studies on the current condition of major trauma and ill patients with specific illnesses arriving at EDs in a community to better understand the impact of bystander action.

d. The ambulance systems
    - Non-integrated ambulance systems would likely result in longer time frames from onset of injury or illness to arrival at EDs for major illness and injuries
    - Clinical outcomes may be expected to be poorer with poorly organized ambulance care systems with low rate of emergency ambulance usage
    - For critically ill or injured patients longer waiting times may be expected if there is no early warning to the receiving ED on the impending arrival of such patients
e. The Emergency Departments
    - EDs that do not have proper reception and triage systems will contribute to delayed triage of arriving patients and delays in shunting these patients to the appropriate clinical areas of the ED
    - Lack of well-organised triage systems can lead to delays in institution of principal investigations and treatments for critically injured or ill patients as well as inappropriate allocation of resources to EDs
    - Disorganised ED throughput systems are more likely to result in long waiting times to obtain results of critical investigations
    - All the above can result in delays in early decision making on definitive management plans for the patients and a greater likelihood of patient deterioration
    - A poor throughput process is also likely to result in prolonged times spent by patients in the ED, especially for patients not requiring extended observation care
    - Good clinical outcomes for critically ill or injured patients will be less likely if ED throughput systems are sub-optimal
    - An inefficient ED process is more likely to contribute to unnecessary ED crowding
f. Coordination of Emergency Departments
    - Lack of coordination of EDs in a community is often seen in inability of EDs to apply common triage systems across their jurisdiction
    - There will also be failure to achieve common management protocols for critically ill or injured patients leading to unsought-for comparison of quality of care provided by different EDs.
    - Uncoordinated ED systems usually do not conduct joint emergency medicine educational programs. Such non-coordination also results in lack of joint disaster exercises which, in turn, result in inadequate and uncoordinated disaster response by EDs.
    - Neither do they achieve common conduct of joint research projects
g. Hospital Inpatient systems
    - Lack of coordination and integration with hospital inpatient systems is often seen in inability to achieve shared clinical pathways for critically ill patients
    - Such EDs are also usually unable to achieve seamless provision of care to patient requiring inpatient treatment
    - They usually manifest with long waiting times for inpatient beds
    - In such institutions, one rarely sees involvement of inpatient care teams in the care of patients in the ED after the decision to admit has been made and the patient registered as an inpatient
    - Such institutions usually fail to agree on common criteria for inpatient management of emergencies
    - They also usually demonstrate delays in access to hospital resources such as allied health, laboratory support and clinical service support departments.
h. Community Convalescent Care Systems
    - In communities with lack of organized convalescent care

systems, prompt transfers of appropriate ED patients to community convalescent facilities within a few hours of referral is usually the exception
- There is also poor or no resolution of requests for further management in community healthcare facilities within those few hours after such requests are made which can result in reattendances to these EDs or poorer clinical outcomes.

i. The Family
- One rarely sees education of family members in appropriate patient care procedures prior to discharge from the ED
- The absence of this very important stakeholder thus leads to non-provision of useful information and opportunities for involving them in the care of the patient
- Theu also usually manifest with delays in instituting arrangements to move patients to the next point-of-care, viz. the patient's home, community care facility or inpatient ward.

j. The Patient
- All of the above, if occur in a dysfunctional community emergency care system, will adversely impact on the care of the individual patient
- Usually, such systems do not demonstrate documentation of discussion or agreement with the ED patients on their care plans.

There are no known active measurements of fragmentation in the emergency care system, unlike what may exist for chronic care systems. The symptoms as described above would be indicators that such fragmentation has occurred. These occur in practically every jurisdiction in the world. The challenge for us is to address these symptoms, identify the root causes of these and use the opportunity to move towards integration of the various processes that exist in emergency care.

Moving towards integration in emergency care

Emergency physicians need to be keenly aware of the associated physical and emotional consequences of lack of prevention activities to the patient, their family, and their community[48, 49]. They are also the first recipients of patients with acute illness and injury and need to be concerned at the unnecessary numbers of preventable illness and injury that turn up at their doorstep. This unique insight provides emergency physicians an opportunity to:

a. be leaders in injury prevention research, policy, and patient and provider education. They need to proactively take the lead in injury prevention research. Research is the cornerstone of our evidence-based practice and informs our ability to advocate for injury prevention interventions and provides meaningful information to our patients and trainees.
b. advocate for evidence-based injury prevention policies in a non-partisan fashion, ensuring that they are able to benefit from well-crafted, data-driven injury prevention policies.
c. provide injury prevention counseling and education to their patients, families and communities in a respectful and evidence-based manner.
d. teach the next generation of emergency physicians, and other allied health professionals about injury prevention. Therefore, we must support the development of leaders in the fields of injury prevention research, advocacy and education.

There are many ways to engage and advocate in this area, such as through public policy, educational programs and disease screening efforts. There is obviously a potential for the greater involvement of Emergency Physicians in these through research, policy making and public education. It is not enough to just know the overall burden of emergencies in each community. Understanding the locations and the settings in which these emergencies occur through, for example, geospatial analysis research, there has to be some effort in determining how the diseased person should move, or how resources may best be moved to serve the individual patient. This refers to right siting of disease management and patients.

Bystanders can play a critical role as immediate responders during emergencies, including immediately responding and activating the community's emergency ambulance system. Emergency medicine specialists can and should play a major role in the training of bystanders in the community and creating that much needed cadre of first-responders.

It is important that the vital second link in the emergency care system of communities also be strengthened so that for every emergency patient, there should be instituted emergency care as early as possible by trained ambulance crew and this continued till they arrive at the appropriate hospital's ED. There is a need for common standards of professional oversight over the ambulance services that exist within a community. This needs to go hand-in-hand with a system of quality control of care that should extend over all ambulance systems that operate in the community, by a community-based emergency care directorate. Emergency physicians in many communities have an opportunity to actively pursue actions that can help bridge the gap between the time and site of illness or injury and the patient's arrival at the ED. Strengthening this vital second link in the emergency care system is important for every community. By ensuring that trained ambulance crews institute emergency care as early as possible and continue providing care until the patient arrives at the hospital's ED, patient outcomes can potentially be improved. Emergency physicians can play a key role in advocating for and supporting initiatives that enhance prehospital care and coordination with ambulance services.

Every patient who enters the ED should be seen promptly, symptoms appropriately evaluated, treatments instituted with minimal delay so that the patient begins the road to recovery. At the end of the encounter, the patient may be either discharged home with the appropriate medications and / or treatment advice and arrangements for further care, or admitted to an inpatient facility for continuation of care till adequate recovery is achieved. For EDs to better ensure smooth patient flow, the following may be considered:

- Initiate discussion with the primary health care system(s) and even the local health authority and other relevant stakeholders in the community to work out how access to primary care may be enhanced so that there can be right siting of primary care patients. Consideration will also need to be given to public education on the proper use of EDs and on the availability of primary care clinics.
- Initiate discussions with local emergency medicine leaders on the distribution of ambulance cases, seeking to enhance equity and reduce catastrophic surge situations which necessitate ambulance diversions. With the utilization of innovative solutions, digital transformation and predictive analysis, they may seek common agreement towards phasing out ambulance diversions in the local community.
- Work with the hospital to address manpower and resource issues that hinder the implementation of immediate triage of patients arriving at the ED
- Consider how senior physicians and nurses in the ED may together have early institution of principal investigations and treatments for arriving patients, including maximizing use of appropriate point-of-care tests to speed up the investigative work to improve throughput.
- Work with the hospital's laboratory and imaging services, including front-loading advanced imaging, to achieve short turn-around times for these and use these early results to institute early management plans for the patients.
- With the above one should be able to work with Departmental nursing and other ancillary services to reduce length of stay in the ED for patients not requiring extended observation care.
- Identify a set of critical clinical conditions for which improved clinical outcomes can be achieved and make these departmental targets

Emergency Departments that exist in a common geographical or political jurisdiction such as a district, province or state should work with each other to achieve common targets for patient care. One method would be to form an Emergency Medical Services Council for that jurisdiction, members of which would be the Chiefs of each of the EDs there and, possibly, other stakeholders. The Council should be given authority and an infrastructural framework by the local health authority to function effectively. Such a council can explore implementing common triage systems, achieving common management protocols for critical illnesses, conducting joint educational programs for their emergency doctors and nurses, joint research projects and common quality targets. Such a council may also be able to explore the operational and logistic issues that confront the provision of emergency care within their jurisdiction and work with the appropriate regulatory authorities and local other agencies to achieve seamless and hassle-free care systems for their patients. They will need to pay attention to the entire patient journey from prevention to hospital discharge to be able to drive coordinated emergency patient care.

The existence of clear communication channels amongst local EDs facilitates better coordination between them ensuring that actions and strategies

are aligned and focused on achieving a common goal. This is also more likely to result in quick responses, minimizing the impact of emergencies and potentially saving lives. To make coordination easier to effect, one should build on existing coordination mechanisms and ongoing functioning of coordination bodies, rather than begin setting these up before and after the onset of crisis situations in the community. Finally, organisations responsible for coordination require sufficient capacity, including staff, funding, communication infrastructure and other resources, and learning from previous emergencies. Effective coordination also requires firm support by high-level political leadership and the wider healthcare system and incentives for collaboration[50].

In relating to the rest of the hospital, each ED should work towards achieving shared clinical care pathways, while adopting value-based care principles especially relevant for an identified set of critical patients or common clinical problems encountered. For those patients who require inpatient treatment, there will be a need to work with the rest of the hospital in achieving clear inpatient admission criteria, ensuring that inpatient colleagues attend to patients requiring inpatient care soon after the inpatient admission registration is completed, regardless of the location of the patient, and implement measures to obtain an inpatient bed within 30 minutes of admission registration. Joint meetings with relevant inpatient departments may be helpful, in this respect. What is also needed are care protocols that adopt a more holistic approach to the care of the patient, with significant and close coordination of care with family members, 24-hour in-hospital and community-based multidisciplinary care support systems, active efforts at restoration of function, fall prevention and medication reconciliation, and the creation of dedicated spaces to manage these processes in very busy, crowded environments[51]. The achievement of the above requires ED to have clear effective communication channels with inpatient clinical and clinical support departments to achieve common understanding on priorities of care and pathways to be explored for better patient disposition mechanisms.

Solutions to address access block have been suggested, including the setting up of observation units within the ED which have been able to contribute to some relief of the access block and overcrowding[52]. However, incorporation of carefully planned clinical management protocols and adequate support staff needs to be worked into these units.

Early discharge of low-risk, almost fully recovered in-patients to create bed capacity for the incoming sick patients may be considered and this requires a reverse triage process that categorises the levels of risk of discharging in-patients earlier[53]. The use of discharge lounges in the hospital for patients to wait until transport and other administrative discharge arrangements are completed have also been suggested[54]. Some jurisdictions have also suggested increasing the number of acute beds and corresponding staff strength in the hospitals.

Similar arrangements also need to be made with community convalescent care systems by communicating with them. To aid in this process, joint communication by a community Emergency Medicine Council may have better prospects for achieving set targets.

The presence of family members in emergency care is beneficial not only for the patient and the family. It also provides benefits to patients that are related to safety, physical and emotional comfort. For the health professionals this allows the possibility of guaranteeing continuity of care and showing how care is provided[55]. Emergency Departments should aim to achieve discussion of patient care plans with family members within one hour of patient consultation and initiate training of appropriate family members in the relevant care procedures that would be consistent with the patient's progress in the home environment. At the same time, EDs should make arrangements for prompt transfer of patients from the ED to their homes or other community care facilities. Integration of care between emergency teams and Hospital-at-Home (HaH) teams would allow some selected ED patients to be right-sited for home treatment and recuperation, thus conserving bed capacity for sicker patients.

The achievement of all of the above would, undoubtedly, reduce the number of emergencies occurring in the community and the severity of their illnesses or injuries when they present to the EDs, when they make the patient journey through the emergency care system. Patient engagement would be required and this may be defined as a process through which patients, families, their representatives, as well as health professionals are working in active partnership and are doing so at multiple levels across the health care system[56]. Patient-centered care involves shared decision-making and results in a greater ability to engage patients in information-sharing. A more informed patient makes better choices and can communicate more effectively with care providers resulting in greater emergency care efficiency and reducing of

waste. Research also indicates that informed patients often prefer lower cost and less intensive treatment[57]. In addition, it is also very important that for every patient we encounter in the ED, that we discuss the care plans with them so that the patient is in the know as to what to expect and are able to actively participate in their management. These discussions should be clearly documented in the ED case notes to allow proper continuity of care.

Conclusion:

In 2006, the Institute of Medicine in the USA produced a report entitled "The Future of Emergency Care in the United States Health System"[58]. The report stated that the American emergency care system is highly fragmented and variable and tried to suggest solutions to this. However, fragmentation is not just a feature of the US emergency care system. The emergency care system in most communities around the world is broken and fragmented. This is an international crisis that needs to be addressed. Fragmentation in emergency care systems is a pervasive issue that adversely affects patient outcomes, healthcare costs, and the overall efficiency of emergency services. By recognizing the various components of the emergency care framework and understanding how fragmentation manifests within each, emergency physicians and healthcare workers can take proactive steps towards integration.

Key strategies for moving towards integration include:

1. Engaging in injury prevention research, policy and education
2. Right-siting emergency care resources and primary care patients
3. Training community bystanders as first responders
4. Establishing common standards and quality control for ambulance services
5. Streamlining ED processes to ensure prompt triage, investigation, treatment, and disposition
6. Forming local EM Councils to coordinate ED practices and protocols
7. Collaborating with hospital inpatient departments to create shared clinical pathways and efficient admission processes
8. Partnering with community convalescent care systems for smooth patient transitions
9. Actively involving patients and families in care plan discussions and documentation

By adopting a patient-centric, integrative approach to emergency care, we can break down the barriers created by fragmentation and provide the seamless, high-quality care that our patients deserve. This transformation requires a concerted effort from all stakeholders, including emergency physicians, hospital administrators, prehospital services, primary care providers, and community partners. Only through such collaboration and system-wide integration can we hope to achieve the best possible outcomes for patients and communities.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

References:

1. Bell C, Prior A, Frølich A, Appel CW, Vedsted P. Trajectories in outpatient care for people with multimorbidity: a population-based register study in Denmark. *Clin Epidemiol*. 2022;14:749–62.
2. Spicer N, Agyepong I, Ottersen T. et al. 'It's far too complicated': why fragmentation persists in global health. *Global Health*. 2020; 16, 60. https://doi.org/10.1186/s12992-020-00592-1
3. Stange KC. The problem of fragmentation and the need for integrative solutions. *Ann Fam Med*. 2009; 7(2):100-3. Doi: 10.1370/afm.971. PMID: 19273863; PMCID: PMC2653966.
4. Prior, A., Vestergaard, C.H., Vedsted, P. et al. Healthcare fragmentation, multimorbidity, potentially inappropriate medication, and mortality: a Danish nationwide cohort study. *BMC Med*. 2023; 21: 305. https://doi.org/10.1186/s12916-023-03021-3
5. Lund Jensen N, Pedersen HS, Vestergaard M, Mercer SW, Glümer C, Prior A. The impact of socioeconomic status and multimorbidity on mortality: a population-based cohort study. *Clin Epidemiol*. 2017;9:279–89.
6. Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *BMJ*. 2015;350:h176–h176.
7. Kern, L. M.. Whether Fragmented Care Is Hazardous Depends on How Many Chronic Conditions a Patient Has. Fragmented Care Chronic Conditions Overuse Hospital Services | *Commonwealth Fund*. 2018; Retrieved September 19, 2022, from https://www.commonwealthfund.org/publications/journal-article/2018/oct/fragmented-care-chronic-conditions-overuse-hospital
8. Joo JY. Fragmented care and chronic illness patient outcomes: A systematic review. *Nurs Open*. 2023 Jun;10(6):3460-3473. Doi: 10.1002/nop2.1607. Epub 2023 Jan 9. PMID: 36622952; PMCID: PMC10170908.
9. Timmins L, Kern L, O'Malley A, Urato C, Ghosh A, Rich E. Communication Gaps Persist Between Primary Care and Specialist Physicians. *Annals of Family Medicine*. 2022; 20(4), 343–347. Doi:10.1370/afm.2781
10. Kailasam M, Guo W, Hsann YM, et al. Prevalence of care fragmentation among outpatients attending specialist clinics in a regional hospital in Singapore: a cross-sectional study. *BMJ Open*. 2019;9:e022965. Doi:10.1136/bmjopen-2018-022965
11. Kaltenborn Z, Paul K, Kirsch J. et al. Super fragmented: a nationally representative cross-sectional study exploring the fragmentation of inpatient care among super-utilizers. *BMC Health Serv Res*. 2021; 21: 338. https://doi.org/10.1186/s12913-021-06323-5
12. Liu CW, Einstadter D, Cebul RD. Care fragmentation and emergency department use among complex patients with diabetes. *Am J Manag Care*. 2010 Jun;16(6):413-20. PMID: 20560685.
13. Reynolds TA, Sawe H, Rubiano AM, et al. Strengthening Health Systems to Provide Emergency Care. In: Jamison DT, Gelband H, Horton S, et al., editors. Disease Control Priorities: Improving Health and Reducing Poverty. 3rd edition. Washington (DC): *The International Bank for Reconstruction and Development / The World Bank*. 2017 Nov 27. Chapter 13. Available from: https://www.ncbi.nlm.nih.gov/books/NBK525279/ Doi: 10.1596/978-1-4648-0527-1_ch13. Last accessed 11 March 2024.
14. Ehrenkranz PD, Ahn CJ, Metlay JP, Camargo CA Jr, Holmes WC, Rothman R. Availability of rapid human immunodeficiency virus testing in academic emergency departments. *Acad Emerg Med*. 2008; 15: 144–50.
15. Al-Tayyib AA, Miller WC, Rogers SM, et al. Evaluation of risk score algorithms for detection of chlamydial and gonococcal infections in an emergency department setting. *Acad Emerg Med*. 2008; 15: 126–35.
16. Pollock DA, Lowery DW, O'Brien PM. Emergency medicine and public health: new steps in old directions. *Ann Emerg Med*. 2001; 38: 675–83.
17. Clery M, Khaldun J. Emergency Physicians as Community Health Advocates. *Annals of Emergency Medicine*. 2019; 74(5): S62-S65.
18. Razzak J, Usmani MF, Bhutta ZA. Global, regional and national burden of emergency medical diseases using specific emergency disease indicators: analysis of the 2015 Global Burden of Disease Study. *BMJ Global Health*. 2019;4:e000733.
19. Anantharaman V, Lateef F. Acute Medicine in the Pre-hospital environment. A Clinical Approach to Medicine. Chapter 14, Editors Ong YY, Woo KT, Ng HS, Tan P, Tang OT, *World Scientific*, 2nd Edition. 2005; 239 – 259
20. Salhi RA, Macias-Konstantopoulos WL, Ryus CR. From the Editors - Future Directions to strengthen the Emergency Department Safety Net. *West J Emerg Med*. 2023 Sep;24(5):919-920. Doi: 10.5811/westjem.60719. PMID: 37788032; PMCID: PMC10527835.

21. Fischer P, Krueger JI, Greitemeyer T, et al. The bystander-effect: a meta-analytic review on bystander intervention in dangerous and non-dangerous emergencies. *Psychol Bull*. 2011; 137(4):517–537. [PubMed: 21534650]
22. Bednarz K, Goniewicz K, Al-Wathinani AM, Goniewicz M. Emergency Medicine Perspectives: The Importance of Bystanders and Their Impact on On-Site Resuscitation Measures and Immediate Outcomes of Out-of-Hospital Cardiac Arrest. *J Clin Med*. 2023 Oct 28;12(21):6815. Doi: 10.3390/jcm12216815. PMID: 37959280; PMCID: PMC10650602.
23. Faul M, Aikman SN, Sasser SM. Bystander Intervention Prior to The Arrival of Emergency Medical Services: Comparing Assistance across Types of Medical Emergencies. *Prehosp Emerg Care*. 2016 ; 20(3): 317–323. Doi:10.3109/10903127.2015.1088605
24. Kua PHJ, Ng KC, Anantharaman V. A pilot survey on bystander first aid for childhood injuries. *Asian EMS Journal*. 2015; 1. (1): 16-20.
25. Bakke HK, Steinvik T, Eidissen SI, Gilbert M, Wisborg T. Bystander first aid in trauma - prevalence and quality: a prospective observational study. *Acta Anaesthesiol Scand*. 2015 Oct;59(9):1187-93. Doi: 10.1111/aas.12561. Epub 2015 Jun 19. PMID: 26088860; PMCID: PMC4744764.
26. Al Khathaami AM, Mohammad YO, Alibrahim FS, Jradi HA. Factors associated with late arrival of acute stroke patients to emergency department in Saudi Arabia. *SAGE Open Medicine*. 2018;6.
27. Frisch SO, Faramand Z, Li H, Abu-Jaradeh O, Martin-Gill C, Callaway C, Al-Zaiti S. Prevalence and Predictors of Delay in Seeking Emergency Care in Patients Who Call 9-1-1 for Chest Pain. *J Emerg Med*. 2019 Nov;57(5):603-610. Doi: 10.1016/j.jemermed.2019.07.012. Epub 2019 Oct 12. PMID: 31615705; PMCID: PMC7104914.
28. Beltrán Guzmán I, Gil Cuesta J, Trelles M, Jaweed O, Cherestal S, van Loenhout JAF, et al. Delays in arrival and treatment in emergency departments: Women, children and non-trauma consultations the most at risk in humanitarian settings. *PLoS ONE*. 2019;14(3): e0213362. https://doi.org/10.1371/journal.pone.0213362
29. Ravindra P, Bhat R, Karanth N, Wilson W, Lavanya BN, Umra S, Mahesh S. Patterns and Predictors of Emergency Medical Services Utilisation by Patients Attending the Emergency Medicine Department of a Tertiary Care Hospital in India. *J Emerg Trauma Shock*. 2022 Apr-Jun;15(2):99-104. Doi: 10.4103/jets.jets_83_21. Epub 2022 Jun 27. PMID: 35910313; PMCID: PMC9336641.
30. Kironji, A., Hodkinson, P., de Ramirez, S.S. et al. Identifying barriers for out of hospital emergency care in low and low-middle income countries: a systematic review. *BMC Health Serv Res*. 2018; 18: 291 . https://doi.org/10.1186/s12913-018-3091-0
31. Williams DM. The Myth of the Perfect Model. *EMS World. Global learning Network*. 2006. https://www.hmpgloballearningnetwork.com/site/emsworld/article/10322477/myth-perfect-model. Last accessed 8 March 2024
32. Bhattarai HK, Bhusal S, Barone-Adesi F, Hubloue I. Prehospital Emergency Care in Low- and Middle-Income Countries: A Systematic Review. *Prehosp Disaster Med*. 2023 Aug;38(4):495-512. Doi: 10.1017/S1049023X23006088. Epub 2023 Jul 26. PMID: 37492946; PMCID: PMC10445116.
33. Ebben RH, Vloet LC, Verhofstad MH, Meijer S, Mintjes-de Groot JA, van Achterberg T. Adherence to guidelines and protocols in the prehospital and emergency care setting: a systematic review. *Scand J Trauma Resusc Emerg Med*. 2013 Feb 19;21:9. Doi: 10.1186/1757-7241-21-9. PMID: 23422062; PMCID: PMC3599067.
34. MacKichan F, Brangan E, Wye L, Checkland K, Lasserson D, Huntley A, Morris R, Tammes P, alisbury C, Purdy S. Why do patients seek primary medical care in emergency departments? An ethnographic exploration of access to general practice. *BMJ Open*. 2017 May 4;7(4):e013816. Doi: 10.1136/bmjopen-2016-013816. PMID: 28473509; PMCID: MC5623418.
35. McFadzean IJ, Edwards M, Davies F. et al. Realist analysis of whether emergency departments with primary care services generate 'provider-induced demand'. *BMC Emerg Med*. 2022;22: 155 . https://doi.org/10.1186/s12873-022-00709-2
36. Ong EHM, Ornato JP, Cosby C, Franck T. Should the Emergency Department be society's health safety net? *J Public Health Policy*. 2005 Sep;26(3):269-81. Doi: 0.1057/palgrave.jphp.3200028. PMID: 16167554.
37. Pines JM, Bernstein SL. Solving the worldwide emergency department crowding problem – what can we learn from an Israeli ED? *Isr J Health Policy Res*. 2015; 4: 52 . https://doi.org/10.1186/s13584-015-0049-0

38. Anantharaman V, Seth P. Emergency department overcrowding. In: Kayden S, Anderson PD, Freitas R, Platz E, eds. Emergency Department Leadership and Management: Best Principles and Practice. *Cambridge University Press*. 2014;257-269.
39. Anantharaman V. Impact of health care system interventions on emergency department utilization and overcrowding in Singapore. *Int J Emerg Med*. 2008 Apr;1(1):11-20. Doi: 10.1007/s12245-008-0004-8. Epub 2008 Mar 14. PMID: 19384496; PMCID: PMC2536176.
40. Shen YC, Hsia RY. Association between ambulance diversion and survival among patients with acute myocardial infarction. *JAMA*. 2011 Jun 15;305(23):2440-7. Doi: 0.1001/jama.2011.811. Epub 2011 Jun 12. PMID: 21666277; PMCID: PMC4109302.
41. Geiderman JM, Marco CA, Moskop JC, Adams J, Derse AR. Ethics of ambulance diversion. *Am J Emerg Med*. 2015 Jun;33(6):822-7. Doi: 10.1016/j.ajem.2014.12.002. Epub 2014 Dec 9. PMID: 25616586.
42. Joseph JW, White BA. Emergency Department Operations: An Overview. *Emerg Med Clin North Am*. 2020 Aug;38(3):549-562. Doi: 10.1016/j.emc.2020.04.005. Epub 2020 Jun 10. PMID: 32616278.
43. O'Connor L, Warren C. Emergency Department Overcrowding: A Manageable Crisis. *FTI Consulting Insights*. 27 April 2023. https://www.fticonsulting.com/insights/articles/emergency-department-overcrowding-manageable-crisis#:~:text=Overcrowded%20EDs%20face%20operational%20challenges,staffing%20and%20(lost)%20revenues. Last accessed 9 March 2024.
44. Utilities One. Communication for Health and Emergency Services: Improving Interagency Communication for Efficient Emergency Response. https://utilitiesone.com/blog/communication-for-health-and-emergency-services. Last accessed 9 March 2024.
45. Chan SS, Cheung NK, Graham CA, Rainer TH. Strategies and solutions to alleviate access block and overcrowding in emergency departments. *Hong Kong Med J*. 2015 Aug;21(4):345-52. Doi: 10.12809/hkmj144399. Epub 2015 Jun 19. PMID: 26087756.
46. Leong S, Ong RHS, Ng M, Ang ASH, Lim SHC. Transitional care strategies at emergency department for elderly patients: A multi-centre study in Singapore. *Ann Acad Med Singap* 2023;52:182-9
47. Elmqvist C, Fridlund B, Ekebergh M. More than medical treatment: The patient's first encounter with prehospital emergency care. *International Emergency Nursing*. 2008; 16(3): 185-192. ISSN 1755-599X. https://doi.org/10.1016/j.ienj.2008.04.003.
48. American College of Emergency Physicians. Role of the Emergency Physician in Injury Prevention and Control for Adult and Pediatric Patients. *ACEP Policy Statements*. June 2020. https://www.acep.org/patient-care/policy-statements/role-of-the-emergency-physician-in-injury-prevention-and-control-for-adult-and-pediatric-patients Accessed on 2 March 2024.
49. Smith GS. The physician's role in injury prevention. *Journal of General Internal Medicine*. 1990; 5 (2): S67-S73.
50. Gooding K, Bertone MP, Loffreda G, et al. How can we strengthen partnership and coordination for health system emergency preparedness and response? Findings from a synthesis of experience across countries facing shocks. *BMC Health Serv Res*. 2022; 22: 1441. https://doi.org/10.1186/s12913-022-08859-6
51. Lim SHC, Ong CEC, Ang ASH, Lee KP, Lee JMH, Anantharaman V. Integrated care at the emergency department: an investment for better health. *Singapore Med J*. 2023 May 12; Doi: 10.4103/singaporemedj.SMJ-2022-030. Epub ahead of print. PMID: 37171447.
52. Schrock JW, Reznikova S, Weller S. The effect of an observation unit on the rate of ED admission and discharge for pyelonephritis. *Am J Emerg Med*. 2010;28:682-8
53. Kelen GD, Kraus CK, McCarthy ML, et al. Inpatient disposition classification for the creation of hospital surge capacity: a multiphase study. *Lancet*. 2006;368:1984-90
54. Cowdell F, Lees B, Wade M. Discharge planning. Armchair fan. *Health Serv J* 2002;112:28-9.
55. Barreto MS, Garcia-Vivar C, Matsuda LM, Angelo M, de Oliveira MLF, Marcon SS. Presence of the Family during Emergency Care: Patient and Family Living. *Texto & Contexto Enfermagem* 2019. Available from http://dx.doi.org/10.1590/1980-265X-TCE-2018-0150. Last accessed 10 March 2024.
56. Collier S. Patient and Family Engagement in the Emergency Department. Content last reviewed December 2017. *Agency for Healthcare Research and Quality*, Rockville, MD. https://www.ahrq.gov/hai/cauti-tools/archived-webinars/patient-family-engagement-ed-transcript.html Last accessed 10 March 2024
57. Heath S. Why Patient Education Is Vital for Engagement, Better Outcomes. *Patient*

Satisfaction News. Patient Engagement and Health Quality. Patient Engagement HIT. 28 February 2022. https://patientengagementhit.com/news/why-patient-education-is-vital-for-engagement-better-outcomes Last accessed 10 March 2024

58. Institute of Medicine Committee on the Future of Emergency Care in the U.S. Health System. The future of emergency care in the United States health system. *Ann Emerg Med*. 2006 Aug;48(2):115-20. Doi: 10.1016/j.annemergmed.2006.06.015. PMID: 16857459.