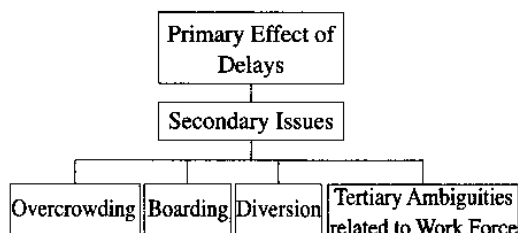


MODERN CHALLENGES OF THE UNITED STATES EMERGENCY MEDICAL CARE SYSTEM: INTERRELATED CONCERNS WITH MULTIPLE CAUSES

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Editor's Tag: *This article is a pre medical entrance project work of a First Year Medical Student in USA, published unedited to provide an idea about the scholastic and performance level of medical students. The author is a son of two alumni of CMC, Drs Fazlul H Yusuf and Nurun Nahar Yusuf who are practitioners of good standing in USA with academic affiliations.*

The issues facing emergency medical care in the United States are complex, interrelated, and systematic. Although a complete resolution may not be available, the issues plaguing many emergency departments across the United States can be mitigated. These issues are defined by the primary effects of delay in treatment for emergency patients. Secondary issues may cause primary effects. Such issues include overcrowding, boarding, and diversion of patients. Secondary issues are the major scope of discussion since they are directly related to the primary effect of a delay in treatment. Along with these issues, there are tertiary ambiguities related to work-force supply. These tertiary ambiguities may cause the primary effect, a delay in treatment, however they may also be influenced by the primary effect as well. In their entirety, issues, ambiguities, and effects of the emergency medical crisis are concerns of public health. The causes of these concerns are a combination of factors. Ultimately, given the interrelated nature within and between the concerns and the causes, it is difficult to provide a working solution. Still the healthcare system may select a number of interventions to deal with the crisis. The primary effect, secondary issues, and tertiary ambiguities of the emergency medical care system of the United States are so frequent and prevalent that a patient may experience it first hand upon a random visit to any emergency department. A description of the issues, an explanation of the ambiguities, a discussion of possible causes, and some solutions are described in this abridged research paper.



Diagrammatic Representation of the Challenges to US Emergency Medical Care: Flow Chart of Primary Effects and Secondary Issues: Ven Diagram of Causal Realms

Description of a crisis

A crowded waiting room is a sign of the primary effect of delay. Delays are the increase in time that it takes for a patient to receive treatment from a doctor in the emergency department. Delays are caused by secondary issues (overcrowding, boarding, and ambulance diversion) and it is a dangerous primary symptom of a healthcare system that needs serious overhaul and reform. It is dangerous because of the threat to life (Breaking Point, US Senate, Kellerman). The whole principle of emergency medicine is quick access to a definitive source of medical intervention (Emergency 16). It has to be quick because in certain emergency situations body tissues are extremely vulnerable to the harsh and lethal effects of disease, illness, and injury (Emergency 16). Such conditions include heart attacks, strokes, shock, and motor vehicle accidents. An emergency department with a full-fledged staff of doctors and nurses can provide definitive medical intervention because they possess the necessary training and equipment, all in one convenient place. They can save lives effectively. Also seen in the waiting room are effects of overcrowding, a secondary issue causing the primary effect of delay. The Institute of Medicine (IOM) defines overcrowding as the backlog and build up of patients in the emergency department (Breaking Point 20).

Because of this build up, the ability for the hospital to function as an emergency facility is compromised. Dr. Rick Blum, from the American College of Emergency Physicians (FACEP) states "you don't

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have the capacity and you don't have the personnel to support you in that job. You don't have the space to put patients" (US Senate). Dr. Blum's frustration is commonplace, and it is not because of a lack of skill, but a lack of resources and power in the face of a systemic issue. He gets to the meaning of overcrowding by claiming that there is no space for patients. Diversion is a secondary issue which occurs in the beginning of the volunteer's account. It happens when the emergency department fills to the point where incoming Ambulance patients should be transported to other hospitals (Breaking Point 4). With this alternative comes the possibility that the new receiving department may be less equipped or specialized to do the job. In 2003 a federal study concluded that there were 501,000 diversions for that year alone (Breaking Point 21). This translates into one ambulance being told to turn around per minute. Despite 75% to 80% of patients walk in to emergency departments without ambulance assistance, ambulance diversions pose a serious threat since this is the most probable means of going to the hospital for a patient in a motor vehicle accident or severe trauma (US Senate). In Los Angeles, paramedics may have severely injured people taken to non-trauma facilities because they have to follow established protocols regarding transportation times, which they are legally obliged to follow by (Breaking Point 21). However, a greater factor affecting both the adequacy of the patients' destination and the time it takes to transport the patient there is the closure of numerous emergency departments in the Los Angeles area. Patients in the main emergency room ward experience boarding in the emergency department. Boarding is another secondary issue, happening when a patient is kept in the department although he or she is admitted and should be taken to an inpatient bed (Breaking Point 20). The patient may be completely stable, and may not require anymore emergency care, however the emergency department boards the patient until an inpatient bed opens up. Dr. Robert Bass, FACEP and Executive Director of the Maryland Institute for Emergency Medical Services said boarding "ties up precious space, equipment, and staff that cannot be used to handle and manage the needs of incoming patients" (US Senate). The result of boarding, as described by Dr. Bass, is essentially a resource conflict where limited space and equipment is used up unnecessarily and the staff is diverted from newer patients.

A nationwide study indicates that 73% of the 90 hospitals surveyed board 2 or more patients on a typical Monday evening (Breaking Point 4). Such practices may result in patients staying in the department for as long as up to 2 days (Breaking Point 4). These figures are signs of failure and embarrassment to health care executives and management officials. The preceding data justifies boarding as a critical secondary issue that is devastating hospitals across the United States. Delays caused by overcrowding, boarding, and diversion plague these centers of definitive care, causing systemic malfunction because of the increasing time it takes for the patient to receive necessary care. The effect of these concerns is completely antithetical to the principle and foundation of an emergency medical system which is supposed to take care of people when they need help immediately. Dr. Arthur Kellerman, Professor and Chair at the Department of Emergency Medicine at Emory School of Medicine, can give a broader idea of the concerns that patients, hospitals, communities, and emergency medical care providers are facing across the United States. He emphasizes data from an IOM Report which highlights a net decrease in the number of active emergency departments while annual emergency visits to hospitals rise (Kellerman 1301). Specifically, by 2006 there is a 26% increase in visits to emergency department visits, but there is a decrease in emergency departments by 9% (Kellerman 1301). There are more emergency patients and fewer places for them to go. The broad context of the concerns contributes to the specific symptoms of a stressed health care system suffering primarily from delaying, and secondarily from overcrowding, boarding, and diversion. Along with these primary effects and secondary issues, the emergency medical care system faces tertiary ambiguities issues related to the workforce.

A tertiary ambiguity is something that may exacerbate the secondary issues and primary effect. It may also be the result of a secondary issue or some other cause. Tertiary ambiguities involve the workforce. Workforce related tertiary ambiguities can influence and worsen the primary effect of delays (just like in the example). This does not imply that the workforce is wholly accountable for the fractured system; rather, the workforce may be exhausted by the secondary issues and other healthcare matters. The workforce ranges from

Emergency Medical Technicians (EMT/s) to specialized surgeons (Breaking Point 209). What is very important to note is that many of the hospital care providers are uncompensated for the services they provide in the emergency department. This is a major problem that the Institute of Medicine's Committee on the Future of Emergency Care (Committee) highlights. Starting at the level of the trauma surgeon, the American College of Surgery's warnings of a low surgeon work force is re-emphasized in the emergency/trauma field. This deficiency presents an imperative social concern because the leading cause of death for American patients under the age of 44 years is trauma (life threatening injury) (Breaking Point 217). The economic repercussions of this are especially apparent considering that the ages presented are pre-retirement, and therefore these patients represent the United States' workforce. Given this information one may assume that trauma specialists remain high on the nation's healthcare agenda, but the evidence contradicts this. In fact, according to a study from the American College of Emergency Physicians two thirds of Emergency Department directors from across the nation said that they did not have enough specialists on call (Barometer 2). The result of this is a delay in patient care. This happens because a patient has to wait that much longer to see a specialist or may not even see one. Since one patient is already waiting for a specialist in the emergency ward, the wait will start to cause a backlog as newer patients come to the emergency room. Specialties and staff other than trauma are also in high demand but the supply is lacking. Such specialties entail vascular, orthopedic surgery, neurosurgeons, plastic surgeons, hand surgeons, obstetrician-gynecologists, neurologists, ophthalmologists, nurses, and dermatologists. The delays due to the lack of specialists are commonplace, and the ramifications are fatal. Furthermore, the Joint Commission for the Accreditation of Hospital Organizations (JCAHO) issued an alert in 2006 that 21 percent of fatalities or permanent injuries are due to the lack of on-call specialists available to provide timely care (JCAHO). In a survey of 12 city hospitals across the country, the Center for Health Systems Change (HSC) reported that more patients were waiting longer times for specialty care in the emergency department (In the House 2). For the emergency patient population, the lack of on-call specialists and staffing shortages remain serious issues that delay care and harm health.

Discussion of the causes

The causes of overcrowding, boarding, and diversion are debatable however the literature indicates three sources: institution, society, and law. The institutional realm has to do with hospital and EMS infrastructure issues (general problems regarding many hospitals and EMS systems in the United States). The social realm considers the economic factors as well as general health care issues (uninsured and safety net care). The legal realm focuses on the Emergency Medical Treatment and Labor Act (EMTALA).

Institution

From the institutional standpoint overcrowding-related symptoms are the result of several hospital-related issues generally having to do with resources and management. Resource wise, the hospital needs space for patients. Systematically, hospital beds are decreasing, and have been since the 1990s (Kellerman 1301). More specifically, patients are boarded in the emergency department because inpatient hospital beds are fully occupied or there isn't enough staff to take care of patients that are admitted. Because of patients being boarded, staff may have to divert attention from newer incoming patients to make sure boarded patients are doing fine. This results in increased waiting times (the time before a patient sees a doctor) or delays. Because of these inherent delays, directly caused by the lack of inpatient beds, patients are at greater risks for long term illness and injury (Breaking Point 25). Also, the risk of care provider mistakes increases in situations related to boarding (Breaking Point, Vicciello 8).

The situation is literally critical, since patients with the most life-threatening problems may stay in the emergency department longer because of the small supply of intensive care beds (Kellerman 1301). Despite its critical nature, it is also prevalent since a 2002 study of Level I Trauma Centers show that hospitals are filled to capacity (Kellerman 1301). Because hospitals are filled, patients may be boarded. Because patients are boarded, emergency departments may overcrowd. Because emergency departments overcrowd, patients may not receive timely care. And because patients do not receive timely care, patients may be more prone to the serious consequences of emergency illness and injury. The management approach to hospital infrastructure deals with information technologies (IT), coordination, and communication between the

different parties involved in providing both emergency care and inpatient care. Boarding of patients in Boston Medical Center occurred partially due to management issues in the surgery department (Litvak). As a result of elective surgery procedures during a contiguous three day block, the emergency room suffered major boarding issues (Litvak). According to Dr. Eugene Litvak, an industrial efficiency expert at Harvard and a recipient of a Robert Wood Johnson Foundation grant, "bunching up anything this way -- including surgeries -- is inefficient. A better way is to smooth out the flow" (Litvak). This is a basic principle of industrial efficiency. It makes sense to have things continue at a steady flow; they result in more organized, stable, and adaptable systems. When a system has bottlenecks and backlogs, there may be negative consequences, such as those observed in the emergency medical crisis of the United States. The time cost related to inefficient systems can be applied to an array of situations such as industry and emergency medical care. Overcrowding in Boston Medical Center was dealt with by distributing the elective surgery days more evenly through the week. Another intervention was a consolidation in the direction and transfer of patients throughout the entire hospital. These interventions decreased waiting in the emergency department, a sign that boarding was being alleviated. Also, diversions were drastically reduced by 40% that of 2001 levels (Litvak). Not only are management and oversight of patient flow throughout the hospital important, but emergency physicians now have more access to IT than the average physician (Corey). The so-called electronic health record containing someone's medical history can be made using IT. According to President George W. Bush, this innovation is expected to reduce medical errors and health care costs (Miller). The expected benefits also include the staff using less time writing things down, which means more time with patients (Viccellio 10). These benefits, however, are not apparent according to other data (Miller). Still, IT may help organize the issues facing emergency departments.

Society

The social realm of the emergency medical crisis requires long term solutions and progressive reform. This is because the issues facing the emergency medical care industry reflect the issues facing the general healthcare system. Emergency departments and emergency medical care professionals give

safety net health care to millions of Americans, whether or not they are insured. These safety net hospitals are mandated by law to provide emergency medical care (Viccellio 7). They usually serve a disproportionate amount of patients who are poor or uninsured. Safety net care in the emergency department entails emergency physicians providing some form of medical care that is more along the line of primary care (medical treatment you get in a doctor's office). In 2003, only 50.4% of all visits to the emergency department were life-threatening or urgent (requiring immediate medical attention) (Breaking Point 44). Although other safety net health care facilities may be available, like community health centers and school-based clinics, emergency departments are the dominating choice of safety net patients (Breaking Point 47; Safety Net 1). The result: emergency departments now have to deal with non-urgent patients as well as emergency patients. Now more patients can come to an emergency department although the department may not have more capacity. This will result in boarding, diversion, and overcrowding. Due to the increased utilization as a safety net, many services offered by the emergency department go uncompensated. When the emergency department allows this to happen, it will inevitably increase its operating costs. If this is the case, a seemingly scalable emergency department economy begins to destabilize and eventually collapse. The scalability of the emergency department can be argued to be a function of patient volume (Bamezai et al). As patient volume in the emergency department increases, the marginal cost per treatment of individual should decrease, assuming that an emergency department is an economy of scale. If the marginal costs are greater than the actual price of treatment, then the emergency department is not an economy of scale. Since the emergency department has a given amount of equipment and staffing always on call, some experts expect that always having emergency departments filled with patients is a good thing. This is because there is a constant cost implied with the constant supply of emergency staff and medical equipment. In this case, the marginal costs are less than the actual price of care. The argument against this says that providing these services in times that they aren't needed are inherently expensive (Bamezai et al. 484). Furthermore, there is a point where too much safety net care actually becomes more costly than the listed

price that insurers may charge for emergency department care (Bamezai et al. 485). Given this argument, an emergency department is not a scalable economy. If the payers do not take this into account, their pricing schemes may underestimate the true cost of emergency care. As a result, doctors and other services will be uncompensated. As uncompensation increases, doctors may take less on-call shifts at the emergency department. With fewer doctors left to treat patients, the delays to care increase. As delays to care increase, patients end up overcrowding the emergency department. A study performed in California by Dr. Anil Bamezai et al., from the RAND Corporation for policy improvement and the University Of Southern California School Of Policy, Planning, and Development, examined these issues of emergency department cost structure. Their conclusion was that emergency departments (at least those in California) greatly understate the marginal costs when fixing prices, with a Trauma Level Emergency Department costing an average \$192/visit, but having an estimated average marginal cost of \$412 (489). This refutes the arguments that emergency departments are economies of scale. This is important because the pricing of an emergency department may not be adjusted to factor in the safety net care of the hospital. This is a major variable that Bamezai et al. refer to as case mix measures. The more uninsured, Medicaid, and non-urgent cases there are, the more costly it becomes to treat the patients in the emergency department. As a result, the whole emergency department may go uncompensated for services it provides, placing a financial burden on staff and resources, which have increasing effects on overcrowding of hospitals and hospital delays.

Law

EMTALA effects the legality related to the emergency medical crisis has to do with. It mandates "all Medicare-participating hospitals with emergency departments must provide a medical screening exam, followed by stabilization and further care or transfer as needed, regardless of the patient's ability to pay" (Barometer 1). EMTALA also requires hospitals to make sure there is adequate on-call physician coverage to serve the medical needs of patients. Although the original purpose of EMTALA is to prohibit the sending of uninsured patients from one hospital to another just because the patient is uninsured, the law is viewed as being problematic. The major problems arise with

transport of patients to appropriate medical facilities (Breaking Point 101). It should be noted that the Center for Medicare and Medicaid Services (CMS) issued landmark revisions and amendments to the act in 2003 and 2005 (Breaking Point 101). The revisions addressed the transportation issues of EMTALA and the Committee indicates that the revisions were corrective and appropriate. EMTALA is the legal backing for safety net care in the emergency department. Although this is ethically acceptable since it protects patients' rights to seek care in emergencies and illnesses, hospital professionals claim that EMTALA is another cause of overcrowding because patients are coming to the department for non-urgent illnesses (Toiv 4). Along with these claims, on-call physicians are noted for declining positions in the emergency department because of the invariable circumstance of providing uncompensated care with a perceived risk of litigation (Breaking Point 223; Toiv 4). In this sense EMTALA exacerbates overcrowding in the emergency department. It acts as an indirect enforcement measure for physicians and specialists providing uncompensated care at a self-perceived high cost. The government offices charged with the enforcement of EMTALA are the CMS and the Office of the Inspector General at the United States Department of Justice (OIG). Since 1995, 400 state-based surveys on EMTALA compliance have been conducted by the CMS (Toiv 3). About half of the surveys revealed an EMTALA-related violation (Toiv 3). Many of these violations are related to patient-care issues like the failure to provide a proper screening (Toiv 3). If the hospitals sustained these violations, the nation's ability to respond to any kind of emergency medical situation would be rendered nonexistent. Thankfully, it is common for hospitals to correct many of the violations in a timely manner, before a 90-day Medicare provider termination process occurs (which is overseen by the CMS) (Toiv 3). The same general history applies to the OIG enforcement of EMTALA. The total number of physicians fined by the OIG since 2001 is 28 (Toiv 4). The total monetary fines imposed by the OIG on 194 hospitals and 19 physicians, from 1995 to 2001, is 5.6 million dollars. Distributed evenly amongst hospitals and physicians, this approximates \$26,000. These figures do not indicate any significant risk for hospitals in terms of monetary repercussions as result of EMTALA litigation. After speaking with a physician from a hospital in

New York City, when on-call, the hospital may provide legal coverage for the physician. So the financial risks due to EMTALA-compliance are low, which contradicts EMTALA-litigation as a cause of on-call specialists shortage resulting in overcrowding. A counter-argument to this is that malpractice liability encompasses a broad spectrum of legality, not just EMTALA. Thus, on-call specialists fears of litigation may be justified (malpractice issues are beyond the scope of this study). The analysis of EMTALA enforcement demonstrates violations continue to occur, indicating a need for enforcement and education. Does it justify a causality of delay? Non-urgent patients may arrive to the emergency department for pseudo-primary care; however the ACEP Task Force on Boarding (the ACEP Boarders) does not consider this a cause of overcrowding (Vicciello 7). Still, uninsured people are 4 times more likely to use the emergency department than the insured (Toiv 10). Considering this, along with the mandate that anyone who goes to an emergency room must be seen by a physician, EMTALA shares a causal role in emergency department overcrowding. Despite this role, there should be doubt as to whether EMTALA litigation has any real influence on overcrowding due to care provider's fears of being sued. Along with the three causal realms, the tertiary ambiguities may be interpreted as a cause of secondary issues as well. As the emergency medical work force decreases, the maximum number of patients that can be treated at any given time may decrease. This results in delays, as patient volume in the emergency department increases. It also results in the secondary issues because of the same reason.

Conclusion

The pervasive challenges to the emergency medical care system pose a serious social concern because of the hindered ability to respond to life-threatening illness or injury. This concern is complex and can be viewed on many levels. The levels result in issues within issues. Furthermore, these issues can all be interpreted as being interrelated. For example, it is clear that the primary effect of delays can be caused by all the secondary issues and the tertiary ambiguities. In fact, the analytical approach to overcrowding may ideally be to measure the time taken to see a doctor. However, delays can influence secondary issues and tertiary ambiguities. Such is the case of multiple delays in the treatment of many patients in the emergency department due to a large

influx of patients who enter with destabilized conditions, requiring many staff and resources to stabilize them. This form of delay will result in the overcrowding of more stable and safety net patients who arrive to a busy hospital's doors. The overcrowding happens because the staff is preoccupied with other patients. Remember, however, the multiple delays gave rise to more overcrowding. A cycle develops as more overcrowding results in further delays. Interrelatedness of the causes is present as well. The social concern of safety net care is given a legal basis via EMTALA. The hospital infrastructure and operation may be subject to EMTALA and other federal regulations. Technology added to the hospital may create more cost-effective treatments possible, resulting in lower costs and/or prices but it will be subject to privacy legalities. Finally, the complex interrelation between causes and concerns (the effects, issues, and ambiguities) poses critical challenges to solutions. The fact that tertiary ambiguities fall in the category of concerns as well as causes justifies the duality and interrelatedness of causes and concerns. Extending the argument, the secondary issue of overcrowding can result in increased costs due to greater usage of equipment and hospital amenities. These costs are known to play causal roles economically. Thus, the duality of causes and concerns creates a seemingly vicious cycle, perpetuating the system to a state of constant crisis. Despite the interrelatedness of the causes and concerns, hospitals addressing the crisis take creative steps. To address this crisis from the causal front would not prove successful since, a cause may be related to a concern. Rather, a multi-fronted attempt with a causal concern-based approach may ameliorate the crisis. The goal of such an approach would be to mitigate the short-term primary effects and secondary issues while addressing tertiary ambiguities, as well as confronting long-term the institutional, legal, and social or economic causes. Some things that hospitals can do to relieve the crisis of the modern emergency department may be done on level of the whole hospital. For example, admitted emergency patients should be moved to inpatient units and hallways of other patient care units. Distributing the emergency admissions load through the whole hospital may ease stress, as opposed to leaving them in one department (Vicciello 5). Also, hospitals may try to coordinate the surgery schedule of elective patients to avoid an

uneven distribution of elective surgeries. The uneven flux of elective surgeries throughout the week has been shown to result in boarding and overcrowding (Vicciello 5, Litvak). The preceding interventions are straight from ACEP Boarders' report. Essentially these require hospital wide reform. Raising awareness throughout the hospital of the causes and concerns of delayed emergency medical care is critical for the hospital to take the necessary steps to improve the situation for patients. It's critical because "only when all stake holders agree that the problem is systemic... can solutions be implemented... that will protect everyone's access to emergency care" (Vicciello 4). After raising awareness, hospital-wide protocols may be developed to address the secondary issues of the emergency department (Vicciello 11). Within the emergency department, steps can be taken to ameliorate delays in patient care. Things like bedside registration coupled with a quick registration at entrance may help minimize delays (Vicciello 9). Fast tracking patients with non-urgent medical problems (cuts and scrapes) to special fast track units may help organize the emergency department and decrease delays for emergency patients. Adding an observation unit for admitted emergency patients does reduce overcrowding as well. The observation unit is usually run by the emergency department. This option comes at the cost of setting up space for people to observe (Vicciello 5). Ancillary services can measure their performance and turn around times to decrease delays as well (Vicciello 10). For example, labs can try to improve the time in which they return analyses of specimens. Even improvement in seconds per specimen analyses may result in one more open bed in the emergency department. Another way to look at it are turn around times of transporting services inside the hospital and housekeeping. Both determine how quick an emergency patient may move into an empty in patient bed because a transporter has to move the patient and housekeeping has to prepare the room before the patient arrives. If there is an increase in the time it takes to do either, the patient may be boarded and add to the delay of care of other patients in an overcrowded emergency department. From personal experience, auxiliary services like volunteers can do a lot to lessen delays in the emergency department. First, volunteers can run errands for ancillary staff that requires nothing else but man power like

sending labs or grabbing additional equipment from other departments. This allows ancillary staff to do their jobs faster or handle other critical tasks. Additionally, volunteers may help in triage and registration, guiding patients through the process of filling forms and taking them to their beds in the main floor. As a result triage nurses, technicians, and other clinicians have more time to assess and treat other patients. In the emergency room ward, volunteers can provide blankets, and feed patients (after getting consent from clinical staff) tasks that clinical staff would otherwise have to perform resulting in the delay of care of other patients. Having volunteers in emergency department is a cost effective approach to dealing with delays, overcrowding, and boarding. The solutions provided above target the infrastructural causes of emergency medical care delays. Everything from hospital-based reforms to volunteers in the emergency department may play a role in minimizing delays, and improving secondary issues like overcrowding. Socio-economic causes may be more complex and may need intervention from the industry as well as government, education, and the public. Legal issues regarding EMTALA are being confronted in Congress; however work still needs to be done. Improving emergency medical care in the United States is a modern challenge, but people are taking notice, action is being taken, and hope begins to take shape, as the struggle for timely emergency medical care continues.

Disclosure

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