

FACULTY OF PRE-HOSPITAL CARE

Student and Trainee Group

Essay Competition: 3rd Place

Topic: 'Making Decisions with Incomplete Information: The Reality of Pre-Hospital Care'

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Introduction

Uncertainty and incomplete information are not occasional challenges of pre-hospital care; they are defining characteristics of the specialty. Paramedics encounter elements of uncertainty at every stage of the resuscitation process for out-of-hospital cardiac arrests (1), one of the most practised protocols in emergency medicine, yet they regularly make rapid and appropriate decisions despite this uncertainty. In pre-hospital care, waiting for complete information may compromise patient outcomes.

Incomplete information in the pre-hospital setting is not confined solely to clinical information. It extends to gaps in logistical and environmental information which can all shape decision-making as significantly as the patient's clinical status does. In this essay, incomplete information refers to objective gaps that a clinician faces, whereas uncertainty refers to a conscious awareness of being unsure (2). I argue that uncertainty is the inevitable consequence of incomplete information, rather than a failure of clinical judgement.

Pre-hospital care's reality has therefore become an ability to recognise that a sufficient standard of information has been met in order to justify a clinical and logistical decision that lies in the best interests of the patient, rather than eliminating all uncertainty.

Clinical Incomplete Information

Pre-hospital clinicians frequently act without the full clinical picture that their hospital counterparts are granted, acting rapidly with a breadth of care in a crucial period that contributes significantly to patient outcomes (3). Imaging and blood tests are not immediately available at the scene of pre-hospital

emergency care, but a study found that paramedics are sufficiently accurate at identifying the condition of a patient (4). This evidence suggests that pre-hospital clinicians achieve good diagnostic accuracy despite limited access to investigations. Pattern recognition of symptoms and basic patient statistics inevitably replaces the investigations that a hospital setting is more conducive to. A lack of clinical information due to limited investigations in a pre-hospital setting could be identified as clinical uncertainty, uncertainty about the patient's diagnosis and treatment, stemming from a type of epistemic uncertainty, which is a lack of information that leads to a lack of knowledge (2). This form of uncertainty requires pre-hospital clinicians to respond with examination and reassessment in response to incomplete information, seeking working clinical diagnoses rather than definitive ones.

A danger of incomplete information is the construction of a false sense of certainty that arises from a level of bias from pre-hospital clinicians. Selectively seeking information that corresponds with an initial assessment may create this false certainty, which is why experienced pre-hospital clinicians frequently challenge their own diagnoses and approach the patient through a more reflective lens.

This incompleteness of clinical information is what makes pre-hospital care so dynamic and unique. A pre-hospital clinician may treat a patient and observe their response to the treatment, generating clinical information from a lack thereof. Frequent re-assessment of a patient is an essential component of trauma and emergency care (5). Repeated primary A to E surveys is therefore a manner in which pre-hospital clinicians update their decisions as new clinical information emerges. Certainty is therefore not treated as a target to reach but rather a threshold of information at which an action is justifiable and appropriate.

Logistical and Environmental Incomplete Information

A lack of clinical information is only one part of the incomplete information that a pre-hospital clinician faces. Decisions are often shaped by the environmental and logistical circumstances in which a patient event occurs. The safety of a scene, extrication time, and backup arrival times are just a few of the many factors that pre-hospital clinicians must consider on top of the patient's clinical profile (6). In the setting of stadiums and events, no amount of planning can make the crowd's behaviour and movements completely predictable, and so good quality of care comes back to doing the best one can with a sufficient threshold of information.

Pre-hospital care carries with it a significant amount of risk. Decisions must be made adhering to extremely limited timeframes, and errors in this complicated decision-making process can be detrimental and often fatal to the patient's outcome (7). Therefore, pre-hospital care has developed as a specialty to accommodate this crucial fact. Pre-hospital medicine has developed into a specialty that aims to acutely address the immediate risk to a patient's life whilst comprehensively assessing patients, safely extricating patients, and transporting them to hospital in a timely and humane manner (8).

Clinicians have developed algorithms and practices that prioritise patient safety in an environment where incomplete information presents hurdles at every stage, not just the clinical one.

A Case Study

During my experience as a stadium first responder, I attended a call to a patient who had severe lower limb pain and was unable to move following an incident of overcrowding. The clinical diagnosis in this instance seemed relatively straightforward, with their leg being shortened and externally rotated, a classic deformity of a fractured neck of femur (9). The incomplete information in this relatively straightforward case lay elsewhere, and the more experienced pre-hospital clinicians were better placed to make the important decisions. The football match had gone to extra time, which was almost complete, and thousands of fans were soon to exit, posing an immediate danger to the patient. Working alongside experienced pre-hospital clinicians, I saw that the important decisions were not solely related to the patient's clinical management, but also how and when to extricate the patient safely, not knowing for certain whether security had secured the access routes. This reflects the dynamic nature of pre-hospital medicine.

This experience is one that stands out to me, but one that will be commonplace for qualified pre-hospital clinicians. Incomplete information extends far beyond uncertainty surrounding the clinical diagnosis. The logistical and environmental concerns are often the ones that require the most experience to solve, and therein lies the complexity of pre-hospital care. Decisions are constantly revised and refined as new information becomes available, and this reflects that pre-hospital care is a specialty which relies on decision-making as an iterative process rather than a quest for certainty.

Conclusion

Certainty is often a luxury that pre-hospital care does not have. Imaging is not readily available, investigations are not extensive, and the environment in which the specialty functions often hold logistical and environmental challenges. Hospital diagnoses cannot be directly used to judge the interventions of pre-hospital clinicians, who act based on the incomplete information available at the time of care. The reality of pre-hospital care is that clinicians do not seek complete information, instead they recognise clinically, logistically, and environmentally when there is enough information to act responsibly in the best interests of the patient.

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