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What do Emergency Physicians in Charge do? Qualitative Observational Study

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Title Page

What do Emergency Physicians in Charge do? Qualitative Observational Study

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Abstract

Introduction
The emergency physician in charge role has developed in many large emergency departments to assist with patient flow. We aimed to describe and classify the problem solving actions that this role requires.

Methods
We interviewed senior emergency physicians and performed iterative, qualitative observations, using continuous reflective inquiry, in a single centre. We reviewed and classified these approaches by consensus.

Results
Nine different problem solving approaches were identified. These are; deflecting, front loading, placing, plucking, flooding, targeting, chasing, guiding and juggling These are useful for training and developing our understanding of how to manage an emergency department.

Conclusions
Emergency physicians in charge have a number of problem solving approaches that can be readily defined. We have described and categorised these. These results are potentially useful for developing decision support software.

Introduction

It is increasingly recommended by professional bodies and experts (1-3) that a senior emergency physician is delegated to take overall medical responsibility of running an emergency department This role has evolved and varies between hospitals, but generally aims to maintain situational awareness, ensure flow and optimise resource allocation. This role is analogous to a 'bronze command' in a major incident. In busier times, it is expected that the person performing the role sees few patients, but solves operational problems. As part of a work program developing decision support software and understanding interventions to reduce emergency department crowding, we aimed to describe the approaches to problem solving, or 'heuristics', that an emergency physician in charge can deploy. This qualitative work aims to support current quantitative evaluations and support the development of decision support management tools.

Methods

We performed the study in the emergency department (ED) of Addenbrooke's Hospital, Cambridge, England in 2015. This is a major trauma centre, seeing around 100,000 patients per year of all ages and serves a mixed urban and rural caseload. The ED employs 20 Consultant Emergency Physicians, 32 Junior Doctors and around 150 nurses. The study consisted of an iterative cycle, shown in figure 1. We used continuous reflective inquiry (4). This is a mixed methods qualitative technique that allows the researcher to adapt his observations as new classifications and ideas emerge, see figure 1. The initial phase consisted on developing an entity-relationship model showing how the ED functions from an initial patient 'health event' to discharge or admission, this required 10 hours of observation, by shadowing an emergency physician during his shift. The first entity-relationship model is shown in figure 2. FIGURE 2 ABOUT HERE

Subsequently IH performed a series of semi-structured interviews, the interviewees were prompted with diagrams representing the entity relationship model and interview notes. We purposively interviewed two Consultants and one senior nurse to develop and alter the model. The two Consultants we interviewed were part of the study team (AB and VA). Subsequent analysis and synthesis of the interviews and direct observation was performed by IH without any input from clinicians.

The model went through a series of six iterations with larger changes being made in the early iterations and smaller but still important changes being made in later iterations. Figure 3 shows the third iteration and Figure 4 shows the final entity-relationship model. This included the ICMED measures, which is a consensus based measure of crowding that has been partially validated (5-6).

As this work was considered to be a service evaluation, ethical approval was not required. This was confirmed informally by the Research & Development Department at the host institution.

Results

We identified nine separate 'problem solving' heuristics, these are described in table one. These interact with one another, but offer a distinct classification of problem solving approaches.

TABLE 1 ABOUT HERE

Table 1

Heuristic	Definition	Example
Deflecting	Triaging a patient to alternative care.	Sending a self-presenting patient to an Urgent Care Centre or a GP.
Front loading	Organising investigations for patients early on in their Emergency Department stay.	Ensuring x-rays are organised early for patients with suspected fractures, or CTs for patients with head injuries or suspected renal colic.
Placing	Moving patients to a different area, either to improve the appropriateness if care, or to	Identifying which patients who have arrived by ambulance can sit in the waiting room, or identifying

	free up specific resources.	which patients can go to the observation ward.
Plucking	Picking out patients that need a specific intervention to speed up their progress.	Early referral to liaison mental health services for appropriate patients.
Flooding	Putting a large number of staff in an area to empty an area in advance of a surge.	Allocating extra staff to the paediatric area to cope with an expected surge of children after school hours.
Targeting	Putting specific resource into an area to help flow.	Placing a senior doctor into an area of low acuity to efficiently see lots of patients.
Chasing	Chasing investigations and consultations and decisions from inpatient teams. Managing dissent.	Clarifying which inpatient team will take over further care.
Guiding	Advising staff	Advising junior clinical staff which patients can be sent home safely, and which need to be admitted.
Juggling	Moving resource around to alleviate bottlenecks.	Reallocating a single staff to a resuscitation room case and arranging another staff member to take on their other work.

Discussion

We have described the problem solving approaches, or 'heuristics' that an Emergency Physician in charge could deploy. This work is useful for describing best practice solutions to flow. The heuristics we have identified differ from previous qualitative and quantitative work examining the work of emergency physicians (7), but this study was specifically focused on the emergency physician in charge role, as this is a relatively new role for many hospitals in emergency care. Flowerdew et al also described which attributes were associated with good non-technical skills in trainee emergency physicians, our study identifies the heuristics that Consultants use without any comment on their effectiveness or quality.

There are some important limitations to our work. We conducted this study in a single centre on a small number of emergency physicians and we cannot be sure whether our results would be similar elsewhere, though we think the heuristics are intuitive and have high face validity, though the external validity is not clear. The participating Consultants were part of the study team and this may compromise the validity of our findings. Our study design doesn't allow us to identify which of these heuristics are effective or how these heuristics change during crowded times. We anticipate performing future work to understand the relative effectiveness of these heuristics and how they can be used at times of emergency department crowding.

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Contributorship

VA and AB conceived the study. IH designed and conducted the study. All authors were involved in developing consensus. AB wrote the paper and all authors approved the final version.

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Competing Interests

AB and IH are Directors of Cambridge Clinical Management Analytics, which develops decision support software to understand emergency department crowding.

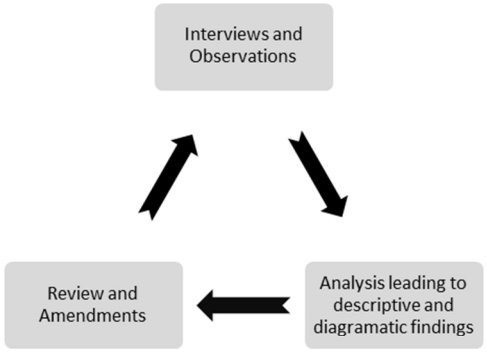

Figure 1
Figure 1
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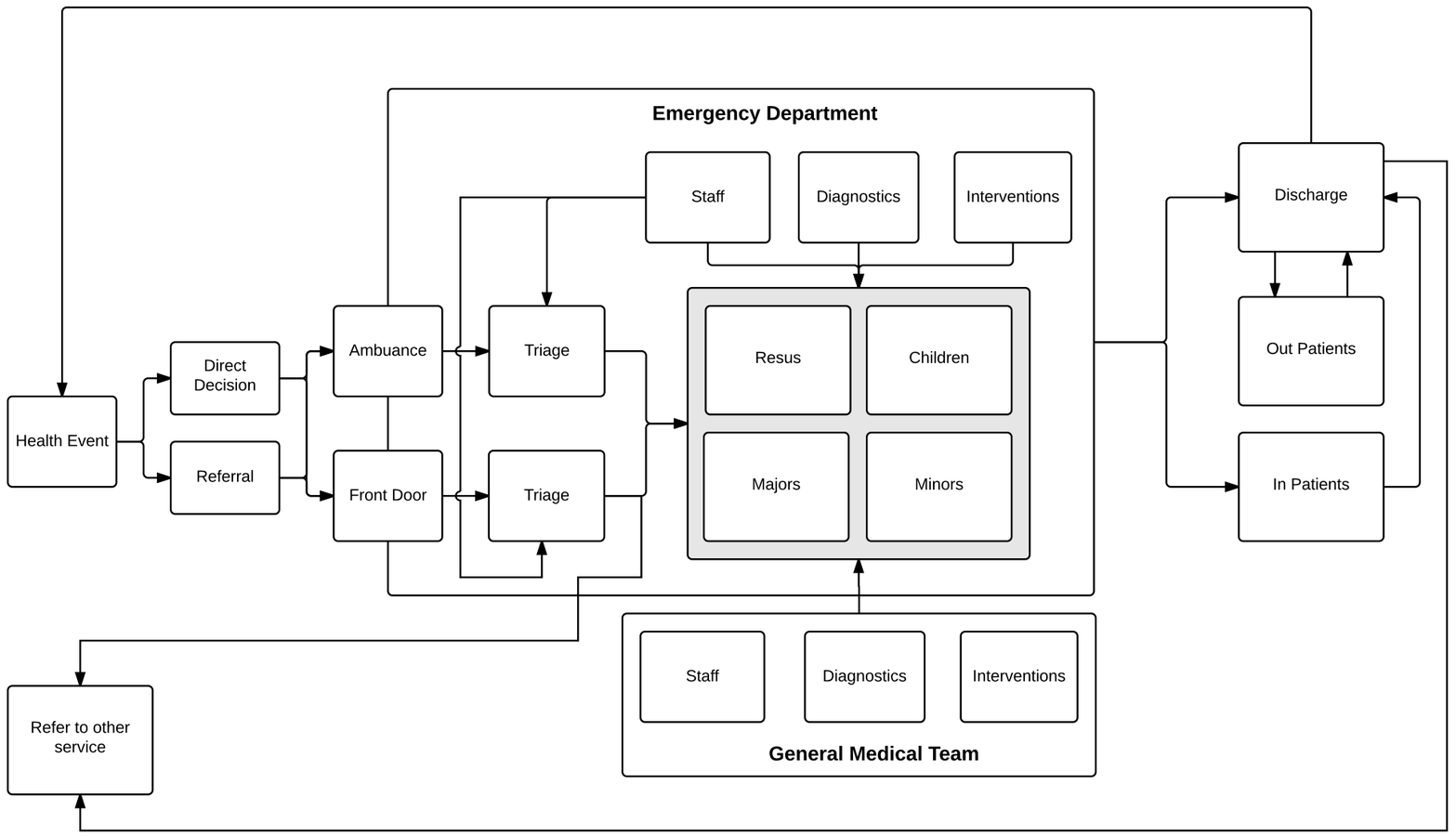
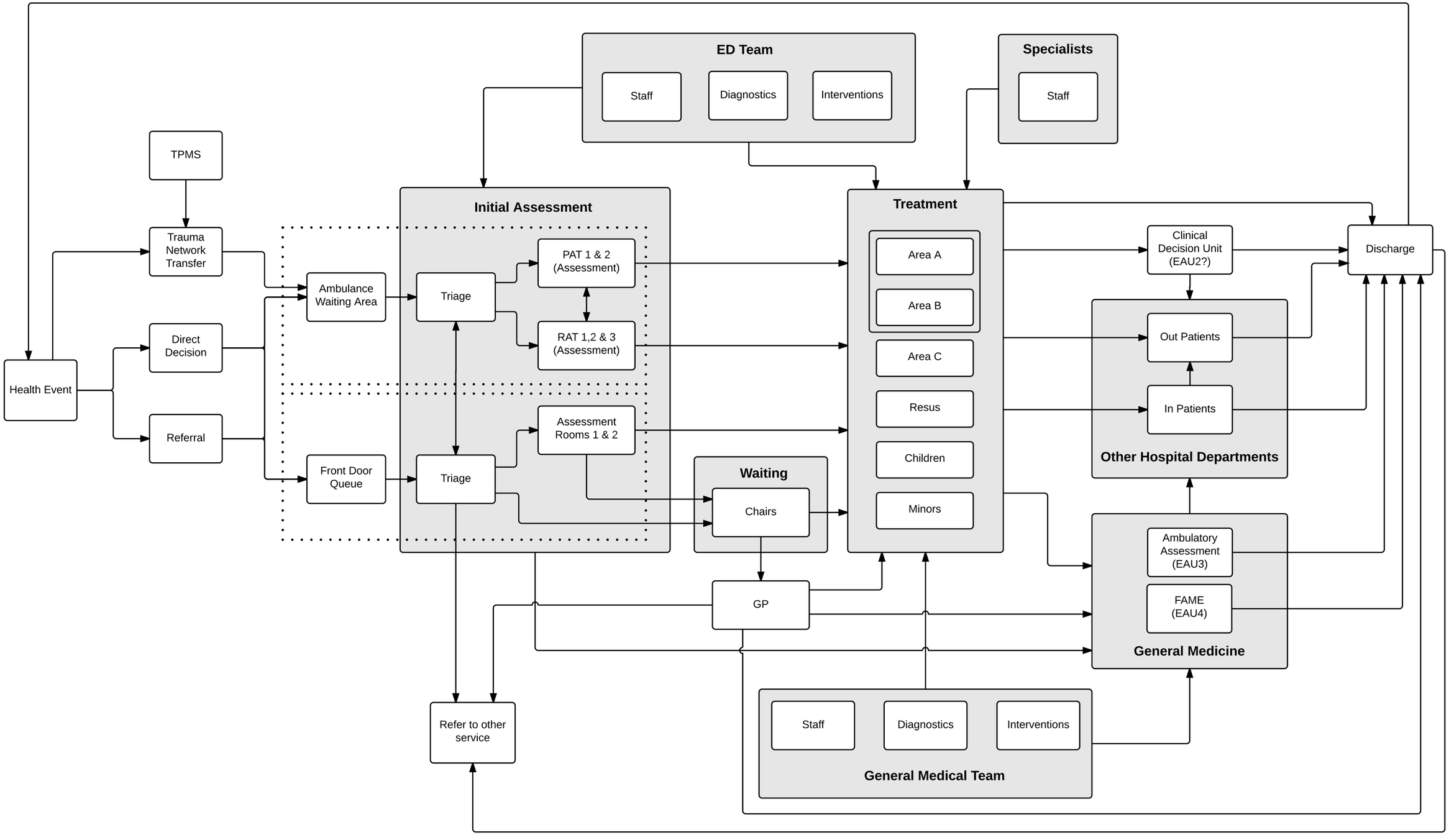

Emergency Department
Staff
Diagnostics
Interventions
Discharge
Direct Decision
Ambuance
Triage
Resus
Children
Out Patients
Health Event
Referral
Front Door
Triage
Majors
Minors
In Patients
Refer to other service
Staff
Diagnostics
Interventions
General Medical Team

ED Basic Model (V03 20JAN15)



ED Basic Model with ICMED (V05 03FEB15)