

Can we fix the NHS ambulance crisis?

The short answer is ... yes

[Dr D.J Hamblin-Brown FRCEM](#)

The proportion of sick patients arriving at our hospitals and overall [attendances have continued to double every few years](#).

The result is long queues of ambulances and EDs once again completely overwhelmed. Overcrowding is an independent predictor of increased mortality in the ED. Patients are being harmed and are dying unnecessarily.

So ... Can we fix the NHS ambulance crisis today? My view is yes. Even without substantial financial

investment, we can make clinically significant improvements by using radical changes to process within and around the ED, supported by appropriate technology.

Full disclosure: I'm going to recommend technology in this discussion. My team and I at [Careful Systems](#) have developed a technological solution that works in these circumstances.

First, a little theory. **If you prefer to skip this – go to the section marked**

“Some Answers ...”

What causes a queue? Queues form when: the **process flow rate** – seeing and disposing of patients – is slower than the **input flow rate** or the **output flow rate** is slower than *either* the input or the process flow rates.

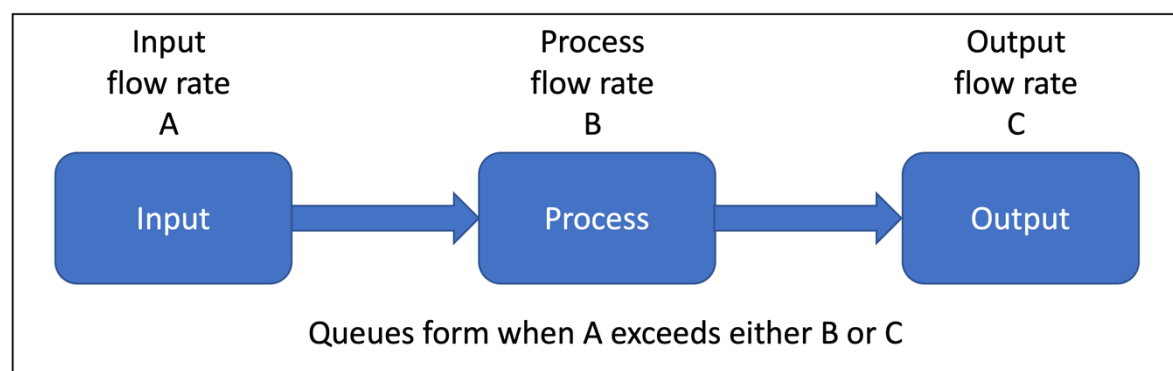


Figure 1: reasons for queue formation

To reduce the likelihood of queues – and dissipate them more quickly – we must **speed up the output and speed up the process**. Which means that we can – within the ED – only can have an effect by reducing processing times.

Let's simplify ED queues and assume there are only two, with some cross-over

- (1) **Minors**: walk-ins and minor injuries
- (2) **Majors**: stretcher-cases on ambulances

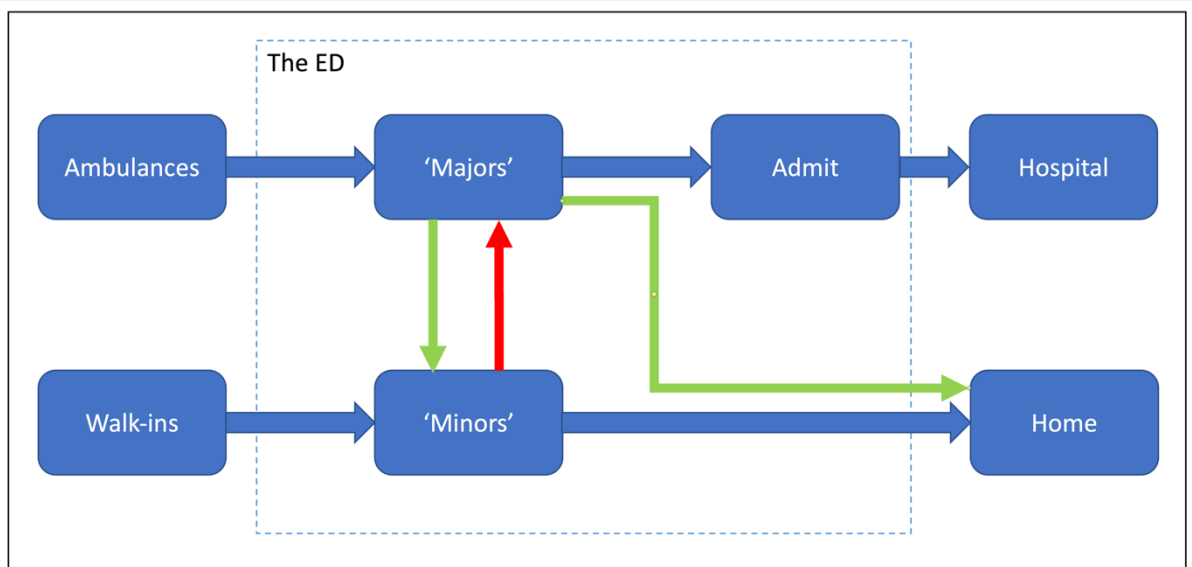


Figure 2: Simplified flow diagram for an ED

For ED patients that need to be admitted – the ‘slowest’ patients – the referral decision is traditionally taken at a review-point, which be several hours into a visit.

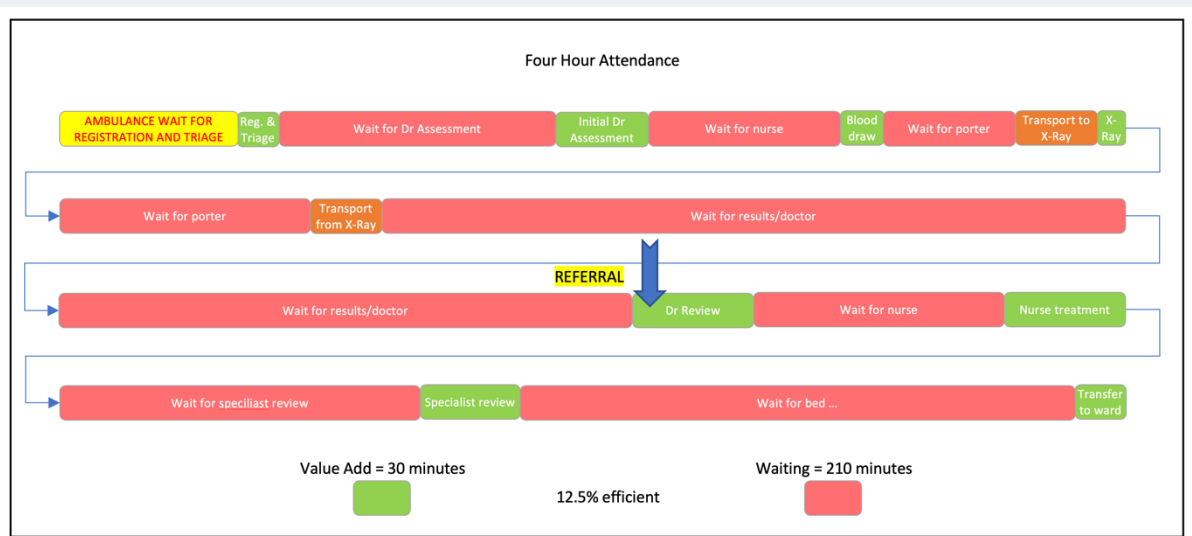


Figure 3: value-add vs waiting times for admitted patient

The problem is the delays that exist between each step. The aim must therefore be to merge as many steps as possible – or to remove steps completely from the department.

To address this, many departments merge the first few steps into ‘Rapid Assessment Areas’.

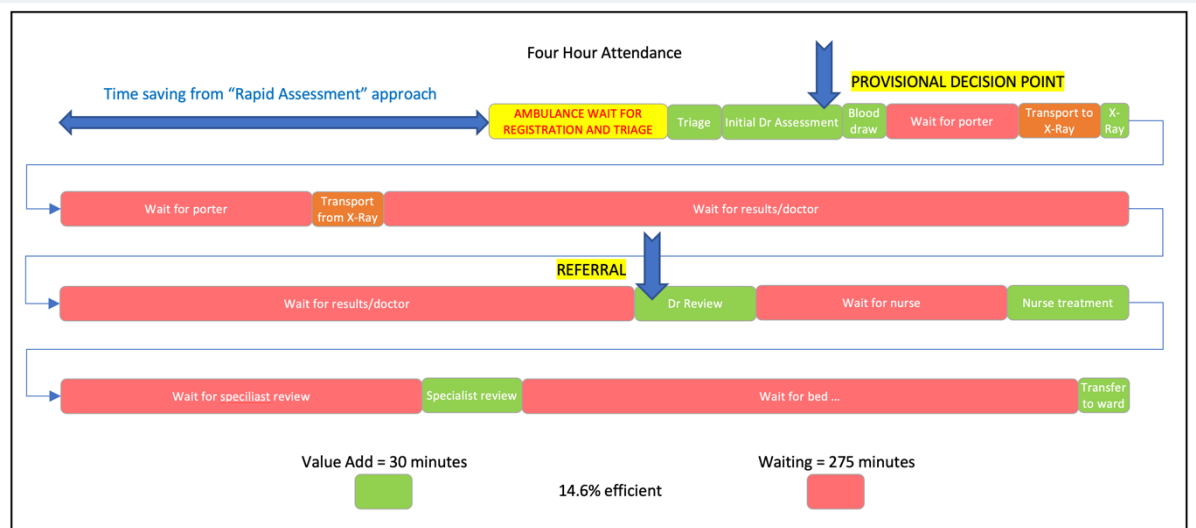


Figure 4: value-add vs waiting times for admitted patient using Rapid Assessment

Such areas have been clearly proven to be effective (see figure 4). The remaining delays are almost all about waiting for results or staff to come free.

One way to reduce all of these dramatically is to make referrals as early as possible, since receiving teams can – even if they resist – accept referrals before definitive test results are available.

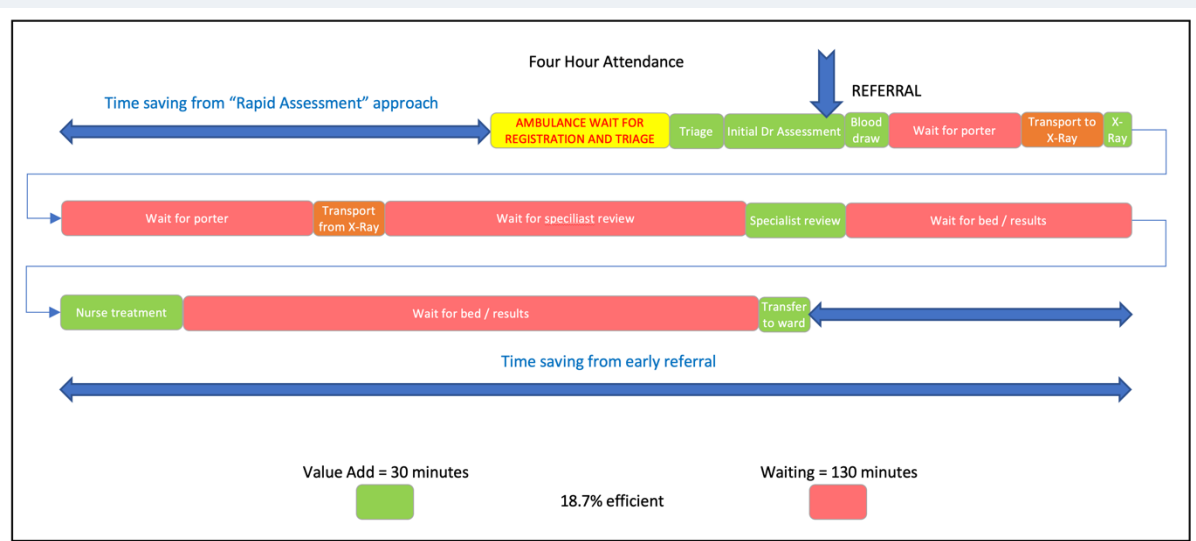


Figure 5: Example value-add vs waiting times for admitted patient using Rapid Assessment and early referral

Early referral and ambulance assessment areas – are good examples of how process change can dramatically reduce throughput, freeing up department space.

Similar, but even more radical changes will be required to deal with the rising number of ambulances.

Some Answers ...

Fixing Ambulance wait for Registration and Triage

The wait for registration and triage is the most visible and pernicious (and for trusts, expensive) problem. How can we register and triage patients earlier?

First: can the ambulance system register the patient to allow the ED team to see what is coming their way? The answer is that this is possible if the ambulances have a system able easily to accept and display clinical messages (e.g. HL7 or FHIR) from the ambulance service.

Second: can we move the Rapid Assessment process, including specialist referral *into the ambulance queue*?. Can the ED team responsible for making early referral decisions actually take this action inside the back of an ambulance?

I recognise the legal, operational and clinical governance challenges here – this is not an easy fix – but it must surely be

possible, given that the alternative is terrible for staff, families and patients.

The team would need, however, a flexible, portable recording system would can allow them to record decisions and plans rapidly for follow-up by other staff inside the hospital without using paper, and without immediate access to the hospital's time-consuming EPR.

Using such a system, patients who can be offloaded safely into the 'Minors' queue would release ambulances without any wait, rapidly reducing turnaround time and rapidly freeing ambulance crews.

Both sides of the transfer would need a system that bridges their EPRs, records information and serves the patient on their journey further into the hospital. It would need to clarify the forward-view, including a task-plan and be able to refer patients *into* hospital teams.

If done successfully, the patients could then bypass any physical presence in the ED having already

been seen and examined by an ED doctor alongside a nurse.

As I implied earlier, our system — the [CAREFUL platform](#) — can do all this and more.

Fixing communication at the back door

ED staff may say: “it doesn't matter how quickly we see the patients, the hospital is full”

That's true, so the question really remains ... can we do the same thing for other departments within the hospital? Late discharge has similarities to the ED problem: it also results from a series of delays and waiting that prevents the patient leaving on time.

Once again, the [CAREFUL platform](#) can provide the bridge between inpatient teams, outreach teams and nursing homes – all using the same platform to plan and expedite patient flow over these institutional boundaries.

For the sake of the patients literally dying while they wait ... we should fix this.