



# CUT THE CANNULA

## A Green ED Quality Improvement Project

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### What was the problem?

I noticed that we were siting too many cannulas. Patients in ED frequently have cannulas because they are often acutely unwell and require iv drugs. However do all ED patients require iv access? This is widely-held dogma among ED staff. I also learned that the emissions impact of a cannula is far bigger than that of venepuncture. Given the number of cannulas sited every day, could this be a simple intervention to reduce our CO2 emissions and single-use plastic consumption?

### What were our measures?

We decided to focus on ED Majors patients only. Resus patients are highly likely to require intravenous (iv) access, and Minors / UTC patients almost never. Our strategy was to make a large initial baseline measurement followed by periodic, smaller and more frequent measurements as we implemented change ideas.

*Measures:* We decided on two principal outcome measures

1. **% patients cannulated**
2. **% cannulas unused.** We acknowledged that in many ED patients, iv access is essential, but many also have a cannula inserted 'just in case' but these are then simply taken out at the end of their ED episode.

After the 2<sup>nd</sup> change cycle and repeat measurement, we calculated the emissions impact of cannulation (and reducing cannulation). We estimated that a **66g cannula with iv extension would produce 1.086kg CO2e** in both its manufacture and disposal (by incineration).

We also sought the views of patients (see below), and staff.

### What was our baseline measurement?

In October 2020, the baseline data showed that **75% of ED Majors patients were cannulated, and 37% had a cannula which remained unused.**

We also interviewed patients who had been cannulated. **68% had a negative view of their cannula** (found it painful, would rather not have had one), irrespective of whether or not they were receiving iv medication.

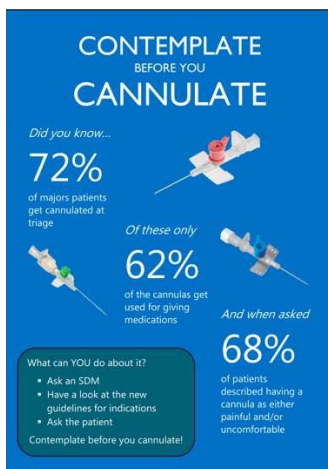
A small series of staff interviews helped us explore barriers to adopting the improvements, including challenging the MDT hierarchy and specific staff groups appearing to request unnecessary cannulas more than others. This allowed us to focus our efforts at direct engagement

### What is our primary aim?

To achieve an unused cannula rate of below 20% for six consecutive months, in patients streamed to the Majors area of Charing Cross ED

## What have our interventions been?

We decided to focus on low acuity patients. These are the patients are most likely to be discharged and least likely to require iv medication



1. **Messaging:** Continuous messaging around the department, focusing on areas where decisions to cannulate are made. We looked at the movement of key staff around the department eg., where the waiting room nurses sit, where blood labels are left for the ETAs (Emergency Team Assistants, who perform most of the phlebotomy / cannulation), near the Doctor-in-Charge desk, and placed posters in their line of sight. We also have a rolling slideshow playing on the large monitor in the Majors staff area, and we have included posters from this project.\*

• **Content:** has included the headline data about our performance against the two metrics. Early on in the project, the patient feedback seemed to resonate with staff more than the emissions impact, which seemed more distant and less tangible. As we progressed, we shifted the emphasis of the project onto sustainability, and this was reflected in our messaging, using surrogate metrics such as long-distance aeroplane journeys or car mileage.\*

2. **Branding:** It's often helpful to create branding of some sort for improvement work, as much of the engagement requires building awareness among staff of the project and its importance. The first tagline for the project was Contemplate Before You Cannulate, which after a while was changed to the punchier Cut The Cannula. We also created a Ghostbusters-style logo.

3. **Direct face to face engagement:** There is often no 'magic bullet' in QI for achieving change, and we relied heavily on old-fashioned reminders and engagement with colleagues, asking them to refer to the cannula guidelines and explaining to them the CO2e impact of unnecessary cannulas.

4. **Department cannulation guidelines:** Based on a consensus view of the consultant body, we created traffic light-based criteria for cannulation. Green was for instances where cannulation was indicated without question eg., sepsis, Amber for 'occasionally' and Red for 'never'. Posters of the criteria were placed in targeted areas as outlined above with Red criteria emphasised and Green de-emphasised \*

5. **Phlebotomy request sheet:** This is the sheet where staff could request blood tests and leave blood labels for the ETAs. Using principles of Nudge Theory, we inserted a small degree of 'hassle factor' into requesting a cannula. Whereas previously one could tick a box to request a cannula, we removed all mention of the word from the sheet, and staff are now required to write 'cannula' as a special request, and the clinical indication for the cannula (ETAs are authorised not to site a cannula if the requestor hasn't justified it on the sheet).\*

6. **Empowering the ETAs:** The ETAs highlighted to us that as Band 3 staff, they often found it difficult to challenge Band 5 / 6 / 7 or medical staff when an inappropriate cannula was requested. We have made it clear both to the ETAs and to the wider MDT that they should be empowered to challenge.

7. **Cannula pack stickers:** We are in the process of rolling these out. These are 2.12 x 3.81cm labels which fit easily on a cannula pack. We plan to stick several of these randomly and periodically on a sample of cannula packs, to act as a nudge in an effort to encourage staff to think twice before they site a cannula.

**CXH ED CANNULATION GUIDELINES**

These guidelines were agreed by the ED Consultants to minimise the number of inappropriate cannulas which are never used

**STOP**  
These patients almost NEVER require a cannula

- Mild bleeding
- Chest pain
- Palpitations (NEWS 0)
- Resolved TIA
- Minor injury
- Back pain
- Mental illness
- Overdose (NEWS 0)
- Headache
- Viral illness
- SOB/Cough (NEWS 0)

**MAYBE**

- TLOC
- Dizziness + Vertigo
- First fit/seizure
- Sore throat
- Renal colic (if active vomiting)
- D&V (if active vomiting)
- Sickle cell Crisis

**GO**

- RESUS patient/ risk of deterioration
- Signs of Sepsis
- High risk Cardiac patients
- Suspected febrile neutropenia
- Severe pain
- Significant bleeding
- ↓ Consciousness
- Major Trauma
- Requiring CT with contrast

**"Just in case" is a MYTH!**  
40% of cannulas inserted were never used\*

**CUT THE CANNULA**

\* Initial measurement in 2021

Imperial Emergency Medicine @Imperial\_EM Imperial College Healthcare NHS

STOP Does this patient really need a cannula?	STOP Does this patient really need a cannula?	STOP Does this patient really need a cannula?
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Currently the message is ‘**STOP**. Does this patient *really* need a cannula?’ but we may consider others such as the emissions impact of each individual cannula. \*

\* included in the project resource pack

## Who are our stakeholders?

**Consultants:** Key to providing the weight behind the cannula reduction strategy. For the most part they are keen on greater efficiency as a whole, and this initiative aligns with that philosophy. The source of the cannulation criteria. The consultant in RAT (Rapid Assessment, where ambulance patients are handed-over) is an important source of influencing better practice and direct oversight to ensure the RAT nurses are not over-cannulating.

**Junior Doctors:** required engagement to ensure they were, as requestors for the most part, on-board with cannula reduction. There have always been 1-2 junior doctors in the team at any time.

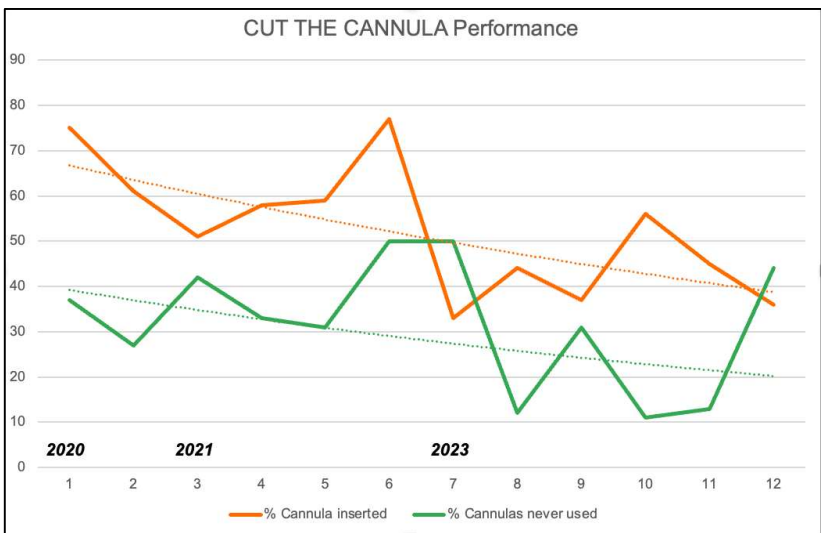
**Band 6 / 7 Nurses:** Usually working in streaming (triage) and RAT and therefore requesting a lot of blood tests +/- cannulas.

**Band 5 Nurses:** often posted as the nurses looking after the Majors waiting room where most of the low-acuity patients with unnecessary cannulas were based. There have always been 2-3 nurse champions in the team at any time, spreading the key messages among their peers through direct engagement.

**ETAs:** Key to the project, there has been at least one ETA in the team from the outset. Have been instrumental in the implementation of the cannulation criteria, the blood test request sheet and in challenging colleagues.

## How have we got on?

The first cycle of change demonstrated significant improvement, with the % **cannulas inserted** and % **cannulas unused** falling to **61%** and **27%** respectively. When factoring in the emissions impact of this improvement, this constituted a reduction of 40 unnecessary cannulations a day and suggests a potential annual reduction in associated carbon of around 19,000 kgCO<sub>2</sub>e with a cost saving of around £95,000.



Data Point	% Cannula inserted	% Cannulas never used
1	75	37
2	61	27
3	51	42
4	58	33
5	59	31
6	77	50
7	33	50
8	44	12
9	37	31
10	56	11
11	45	13
12	36	44

Since then, as is often the case with QI projects, the initial gains were not sustained, and there have been repeated change cycles and renewed improvement initiatives introduced to address this. The run chart below demonstrates while the overall trend is downward, there is still work to do to ensure that transient behaviour change reaches the tipping into habit. This year there has been unused cannulation rate of below 20% for three out of the last five data points, which is encouraging.



## What were the problems we encountered?

**Consistent adoption of the key messages:** Most colleagues bought into the need to reduce cannulation. However there were a small number of senior doctors and nurses who steadfastly adhered to their old habits. This required vigilance from the QIP team to identify 'persistent offenders', followed by direct engagement from me as the consultant sponsor of the project.

This underlined the value of having senior staff on a project, in leveraging their authority to help drive through changes.

**Present Bias:** A cognitive bias whereby people make a choice which gives them immediate gratification, rather than delay that gratification for some as-yet intangible but often greater reward in the future. Present bias is a common problem in the climate emergency, acting as a barrier to people making lifestyle changes which may bring about a little discomfort or inconvenience but which go a little way to reducing emissions.

We addressed this initially by framing the QIP as an efficiency and patient experience initiative, such as leading with the data patients' overwhelming dislike of cannulas. This resonated more with staff and allowed us to gain early traction. We subsequently reframed the project as a Green ED initiative, which staff latched onto.

**Staff turnover:** This is a common challenge in QI, leading to loss of continuity when staff on the project leave the department. Usually more of an issue with junior doctors given the rotational nature of training, we anticipated this by ensuring there was ETA and nurse representation in the project team in order to preserve that continuity. However there was also a high turnover of nurses not in the project team who brought with them their pre-conceived ideas about cannulating all patients. Drop-off in performance could sometimes be ascribed to an influx of new nurses. We have tried to deal with this by reaching out specifically to new nurses by direct engagement, and also by including the Cut The Cannula project in nurse induction ("this is how we do things here")

**Seniority gradient:** Whilst we try to flatten the hierarchy in our department, it's inevitable that staff will defer to more senior grades, and this is what we found when ETAs (Band 3) sometimes challenged staff nurses (Band 5) who insisted on a patient being cannulated. This has been a tough nut to crack. Underlining how the cannulation criteria were defined by the consultants, and asking the ETAs to refer to them when challenging nurses, has gone a little way to address this.

**Negative Recall Bias:** "There was that one time when I didn't cannulate a patient and was told off by a doctor for not doing so / the patient became very sick and we couldn't get a cannula in". Recall bias often favours negative memories, and a few nurses carried this baggage with them. We did a subgroup analysis of patients not cannulated who subsequently required a cannula in our department, which revealed a delayed cannulation rate of 3%. We felt this was an acceptably-low risk.

**"Just in case":** This was directly addressed by underlining the high percentage of patients whose cannula was never used.

## What are the next steps?

In terms of interventions, messaging will continue as always on the rolling slideshow and as posters. We plan to roll out the cannula pack stickers. We are also considering strengthening the branding of the QIP by creating Cut The Cannula badges for staff to wear on lanyards.

The project team has expanded with the addition of four nurse champions who will reinforce the direct engagement piece whilst also taking on some of the other change ideas such as printing and applying the stickers. This is in addition to the ETA and consultant in the team. 1-2 junior doctors will be allocated to the project team in August 2023.

The project will continue until we have achieved our aim of six consecutive months of unused cannulas of below 20%.