

Nitrous Oxide Waste Reduction – King's College Hospital NHS Foundation Trust

Laura Stevenson, Associate Chief Pharmacist



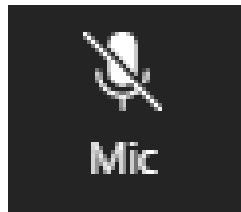
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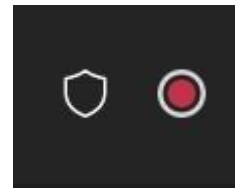
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Housekeeping:

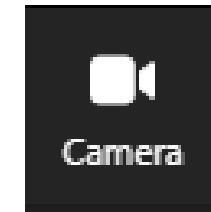
Mute please



Recording



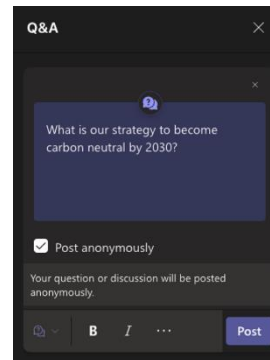
Cameras on!



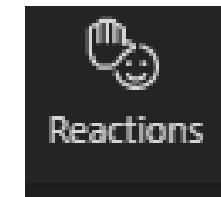
Chat



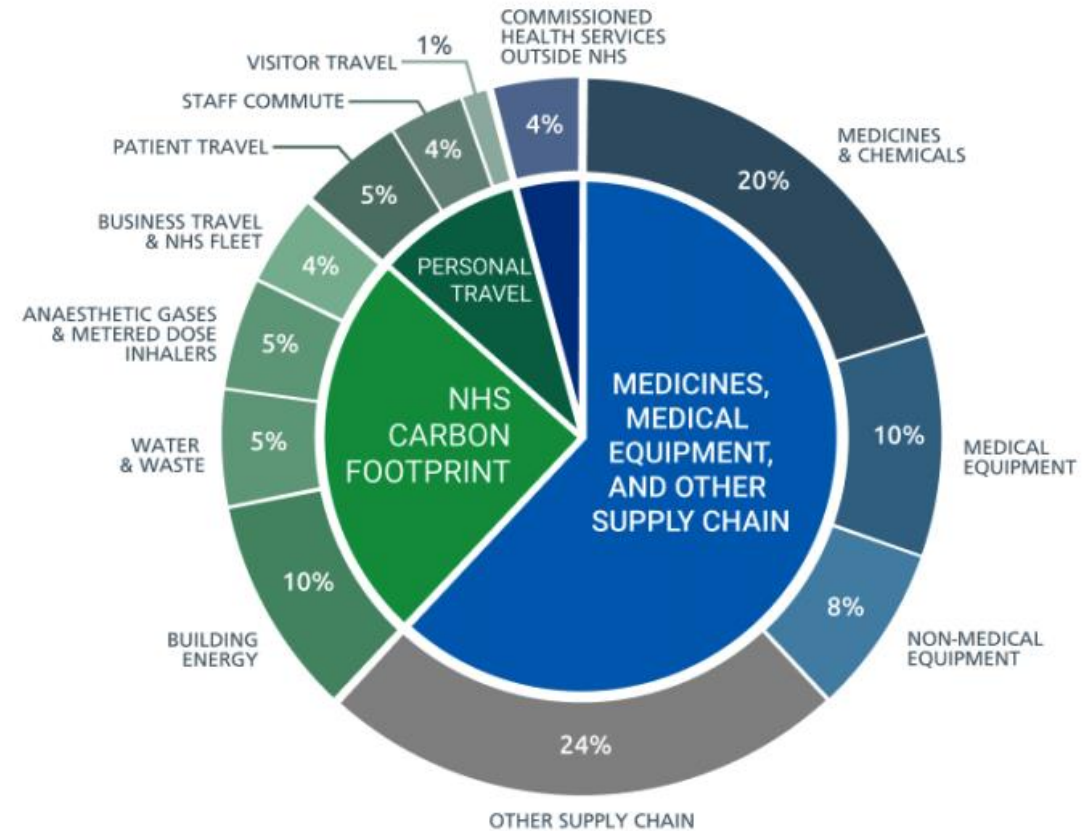
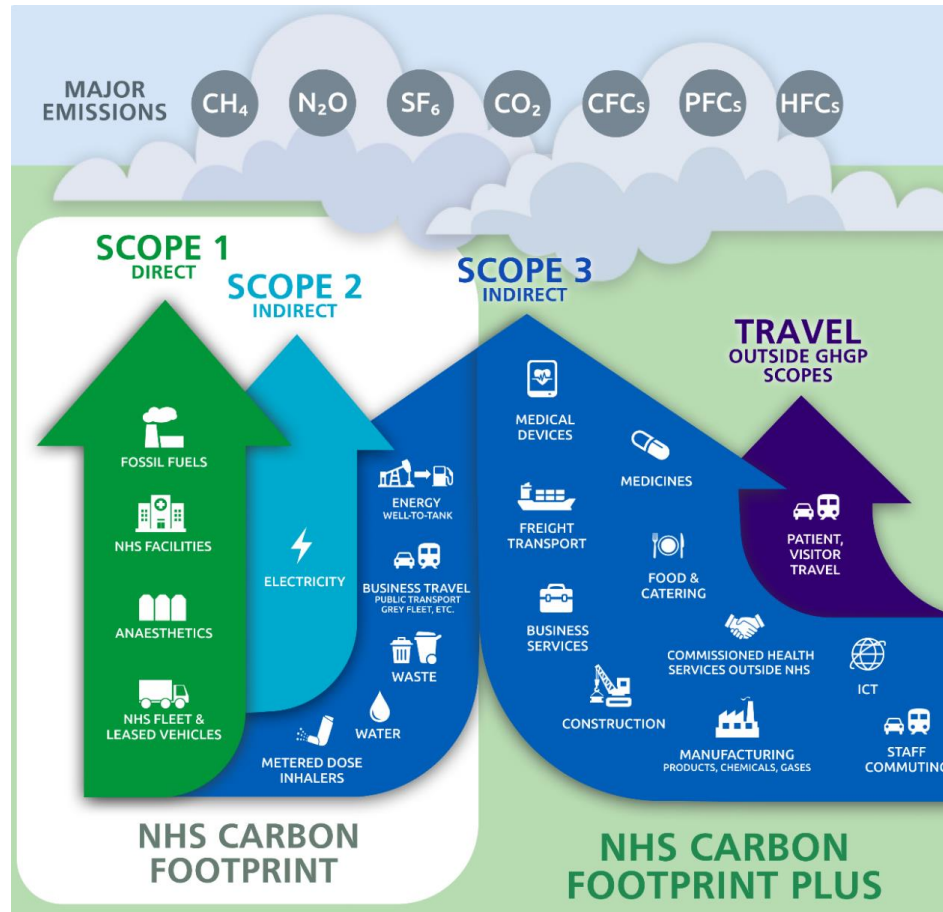
Q&A



Use reactions



The Situation in the NHS



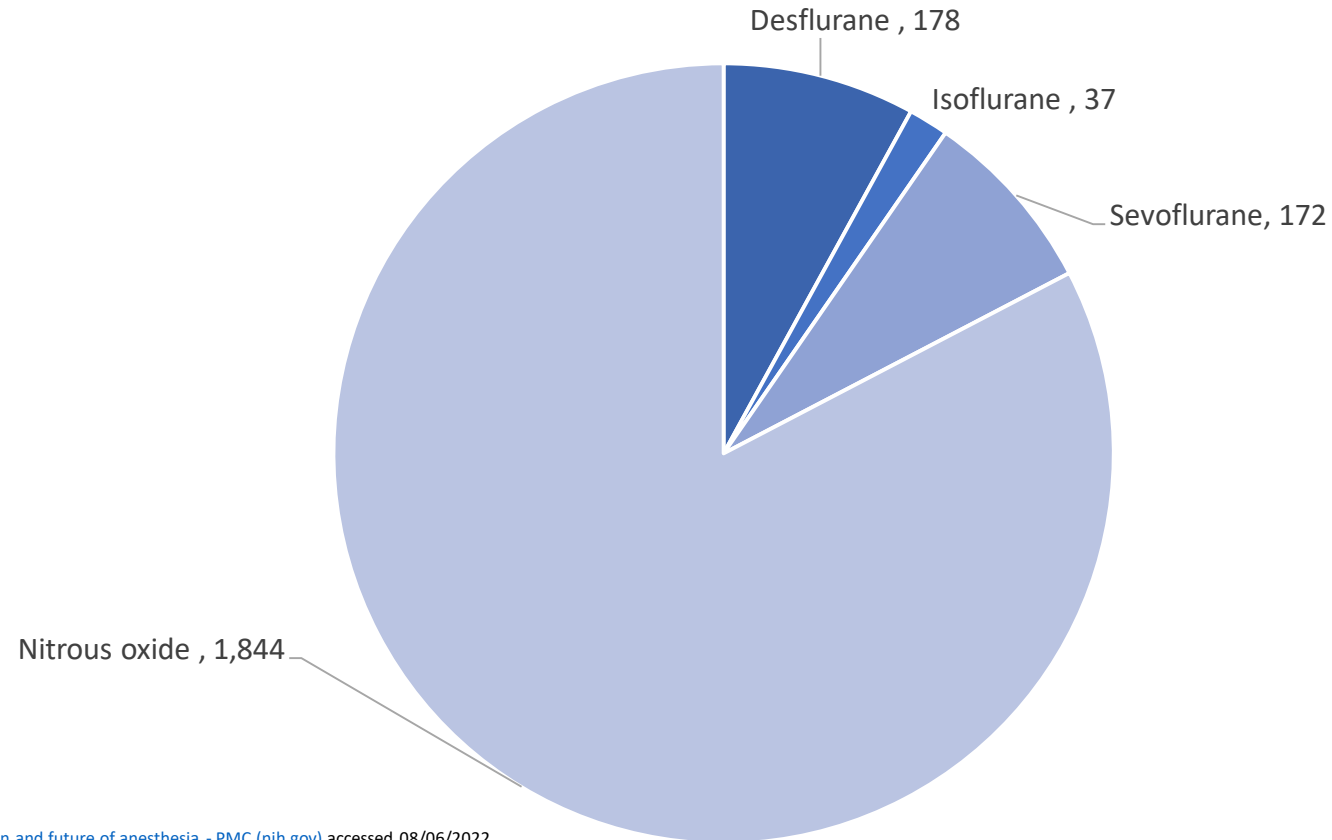
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The Situation at King's College NHS Foundation Trust



Anaesthetic gas footprint at KCH 2020/2021



Data taken from:

[Green Plan \(kch.nhs.uk\)](#) pg 14 accessed 07/06/2022

[Anesthetic gases and global warming: Potentials, prevention and future of anesthesia - PMC \(nih.gov\)](#) accessed 08/06/2022

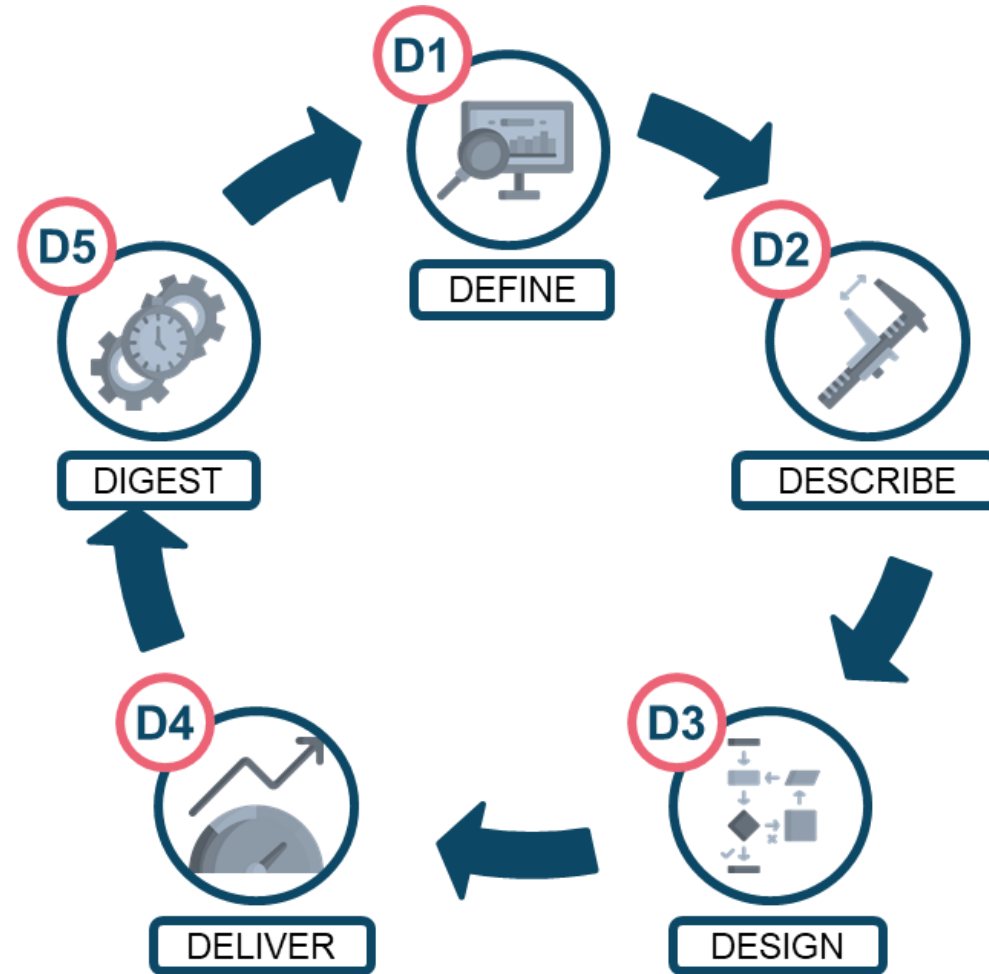
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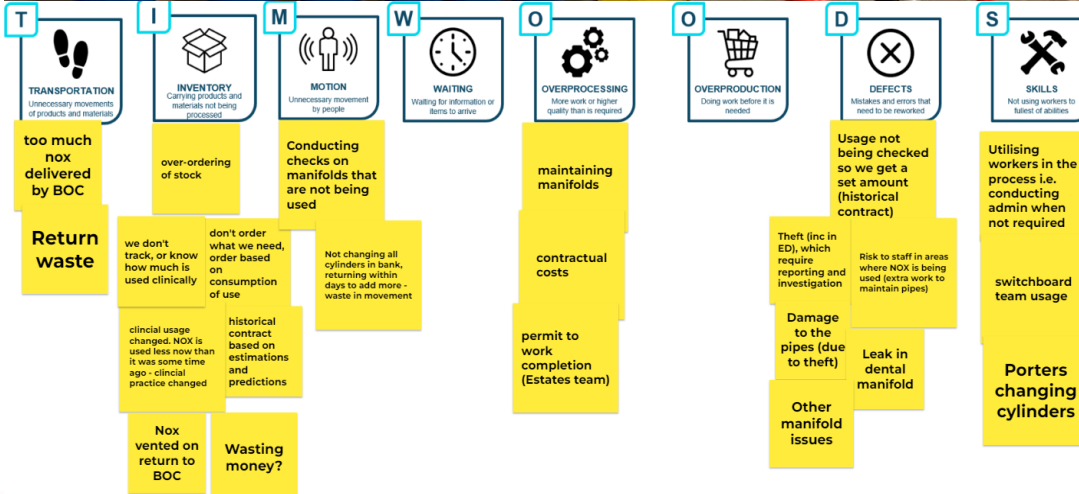
The King's Quality Improvement Method



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Describe



Challenges at this stage:

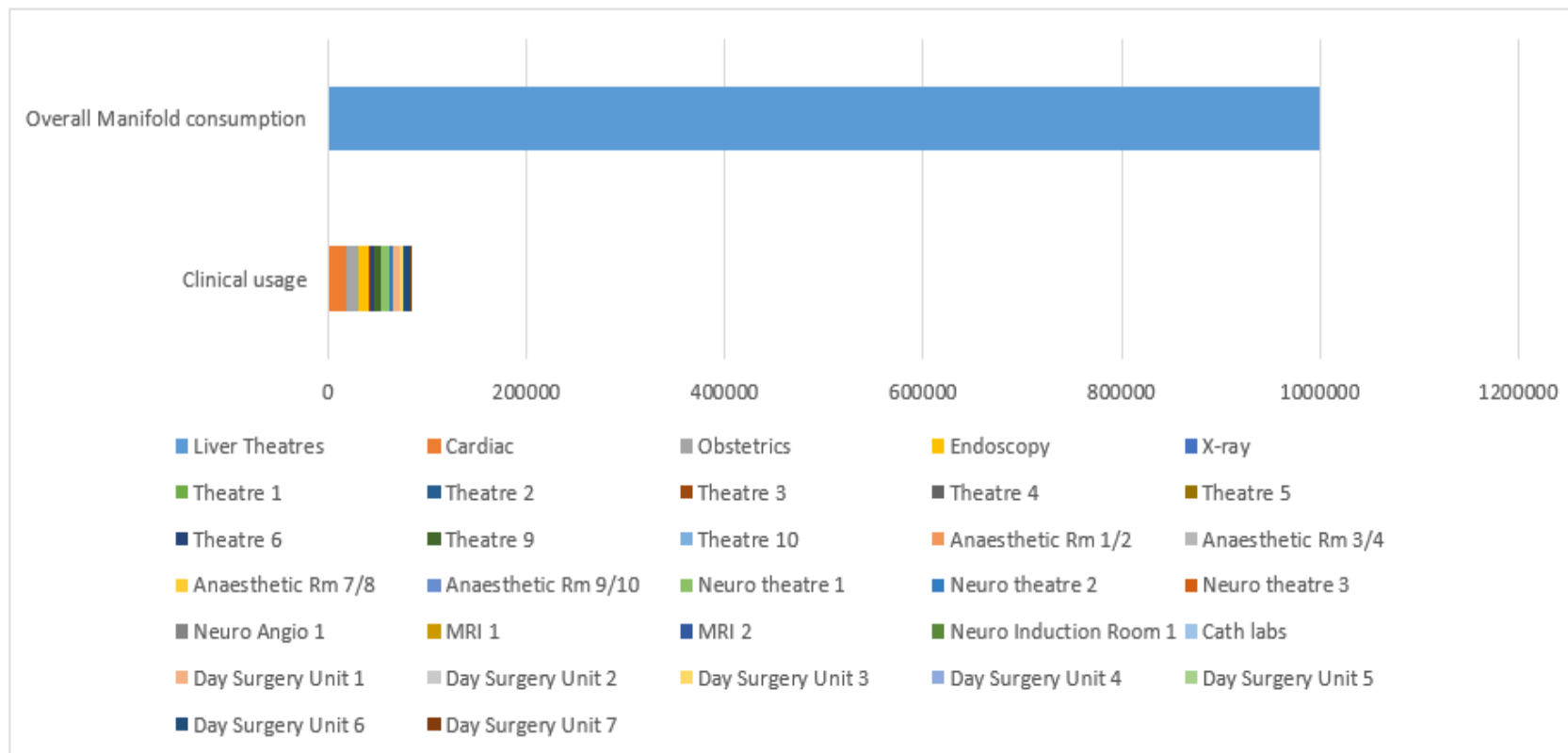
- Access to manifolds
- Collecting data to understand manifold turnover

Recommendations to anyone looking to do something similar:

- TIMWOODS exercise to understand waste is more than leakage
- Communicate to porters
- Visit the manifolds and meet in person!
- Switchboard data can help, if you do not have manifold logbooks

Describe

Overall waste Nitrous Oxide (L)



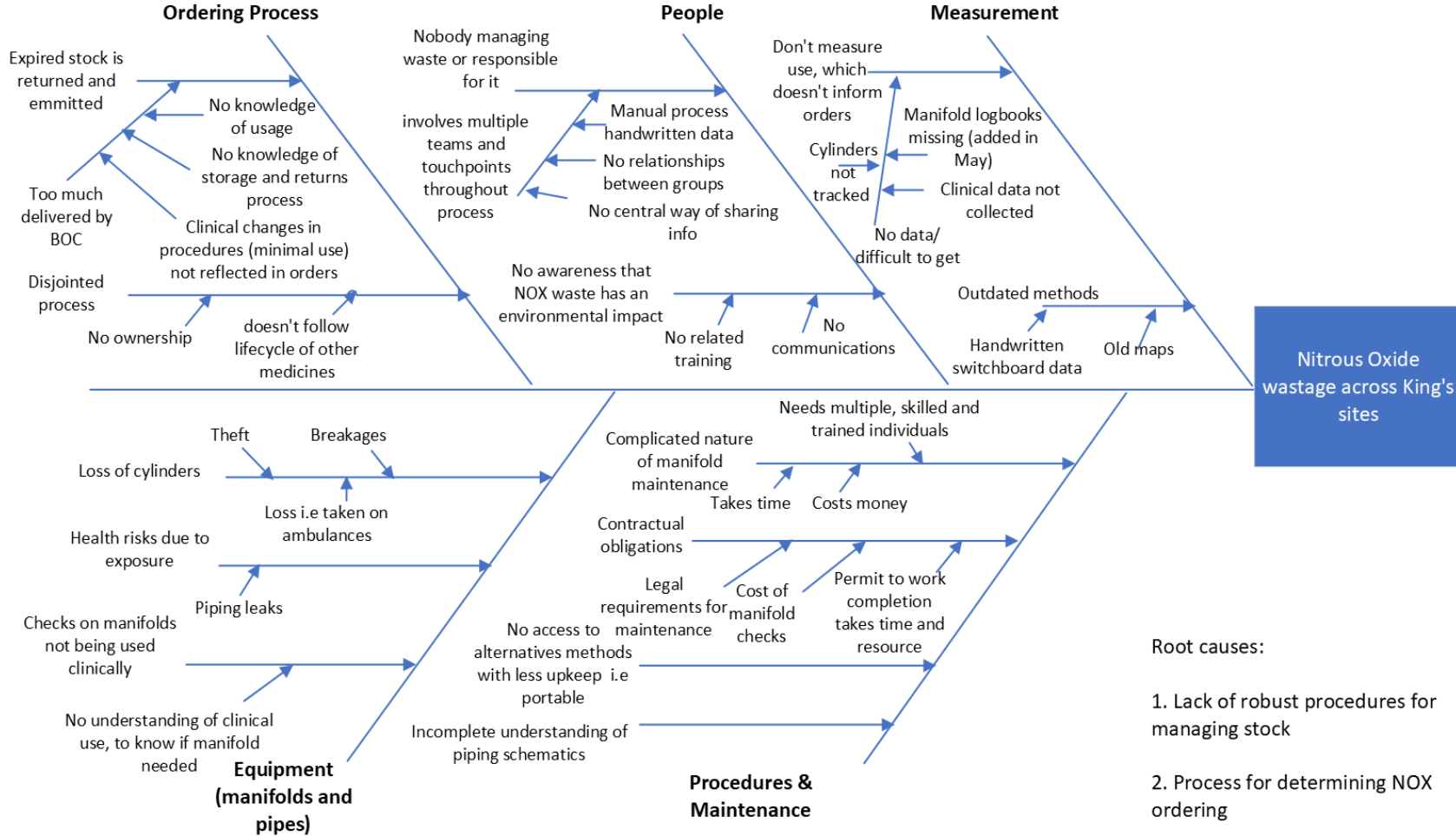
Challenges at this stage:

- Dental use is generally much higher than other clinical areas (not on the chart) the dental audit took longer and was more complicated

Recommendations to anyone looking to do something similar:

- Get all areas onboard to collect data over the same time period, having 1 or 2 areas uncollected gives an incomplete data set which makes it harder to make decisions on action

Describe



Challenges at this stage:

- Bringing key stakeholders on board who are responsible for each area i.e. estates, pharmacy etc

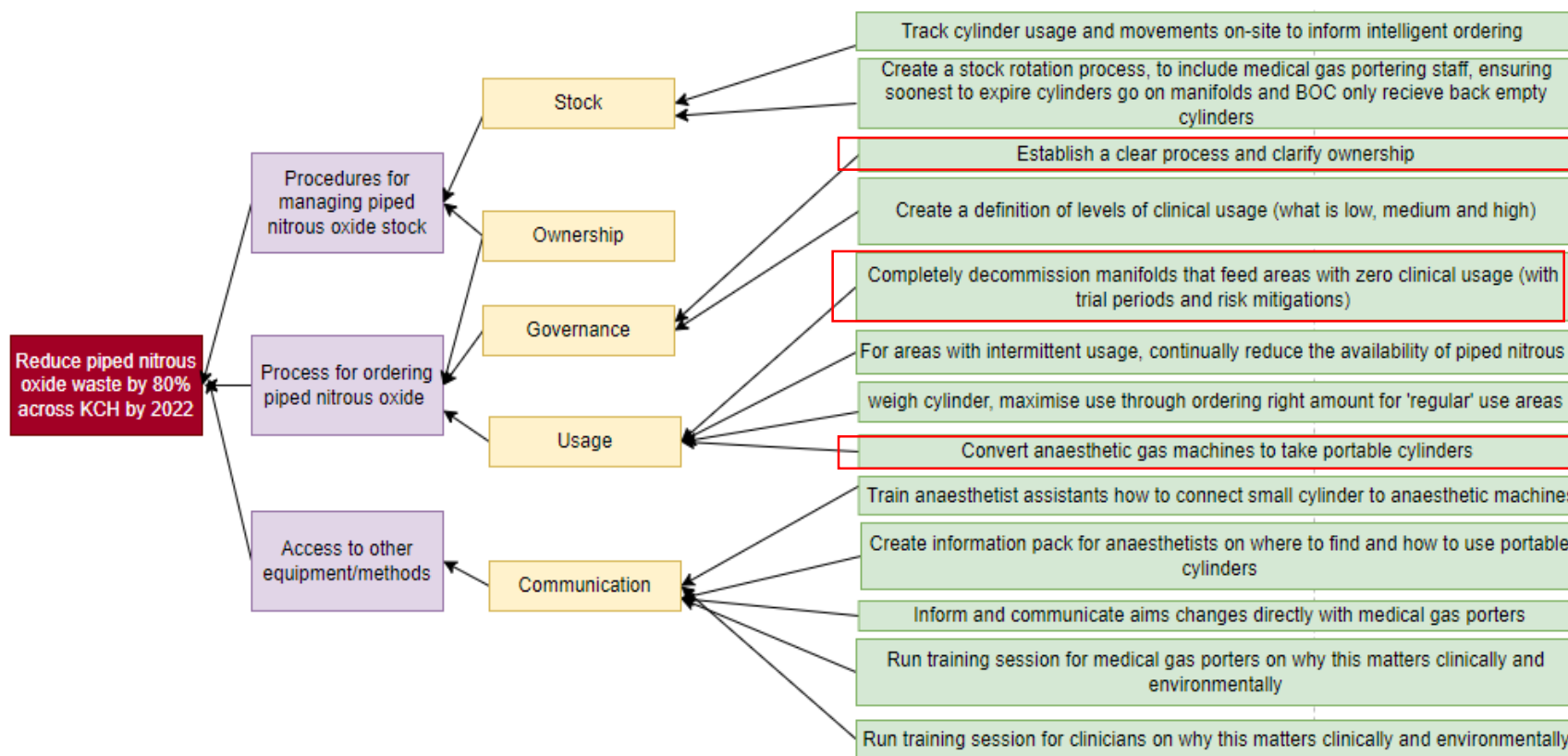
Recommendations to anyone looking to do something similar:

- Taking into consideration patient preference e.g in dental paediatrics manifold systems (hidden inside a wall) can help more anxious patients

Root causes:

- Lack of robust procedures for managing stock
- Process for determining NOX ordering
- Lack of access to alternative equipment

Design



Challenges at this stage:

- Deciding what action to take forward first – what will have the most value and biggest initial impact?

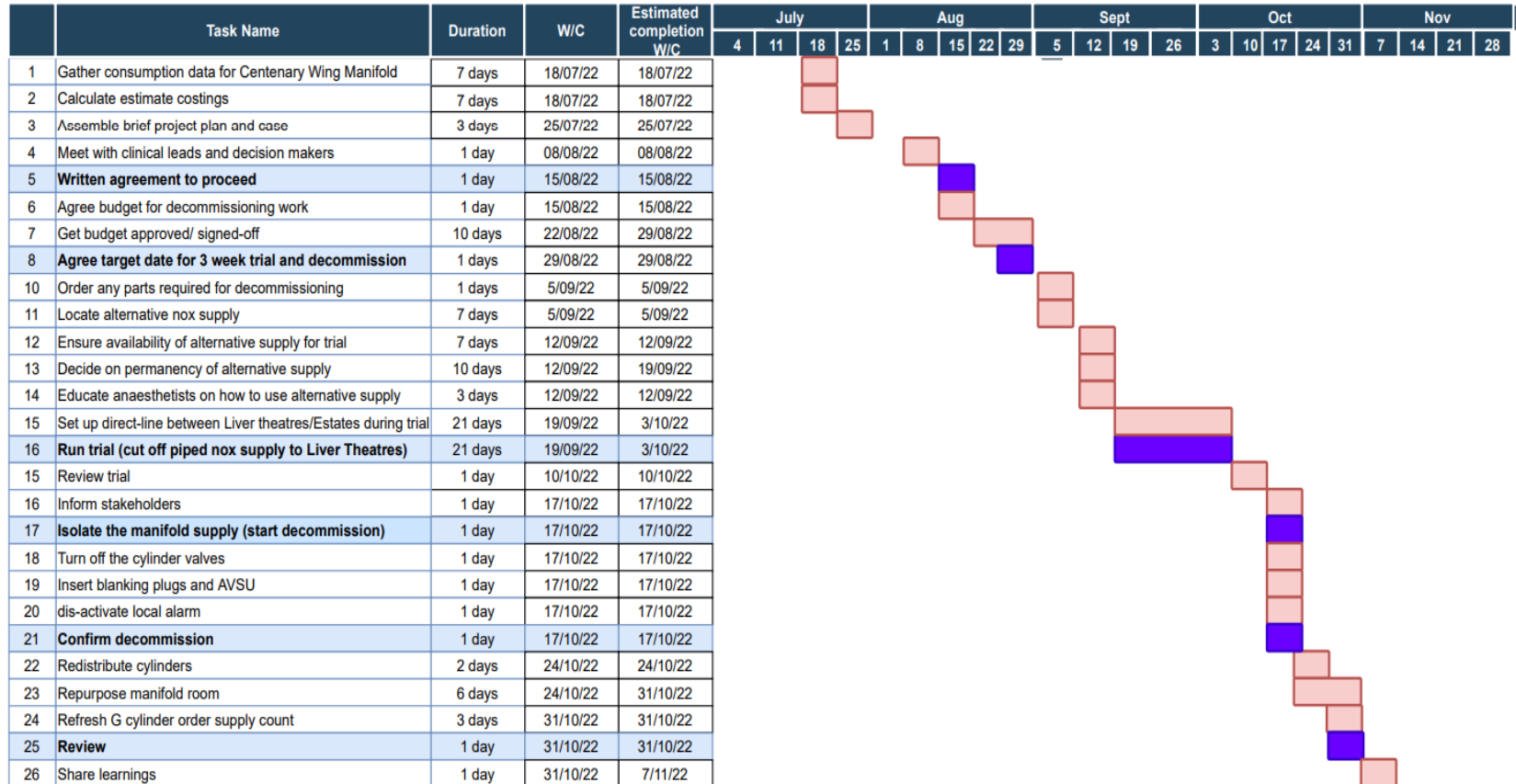
Recommendations to anyone looking to do something similar:

- Look at big impact actions first – showing reduction or decommissioning early on will bring key stakeholders on board as they will see real change

Deliver – Decommission



High-level project plan for Decommissioning Nitrous Oxide Manifold Feeding Liver Theatres (Centenary Wing)



Challenges at this stage:

- Time of CEF colleagues
- Unexpected alarms in clinical areas at Liver theatres

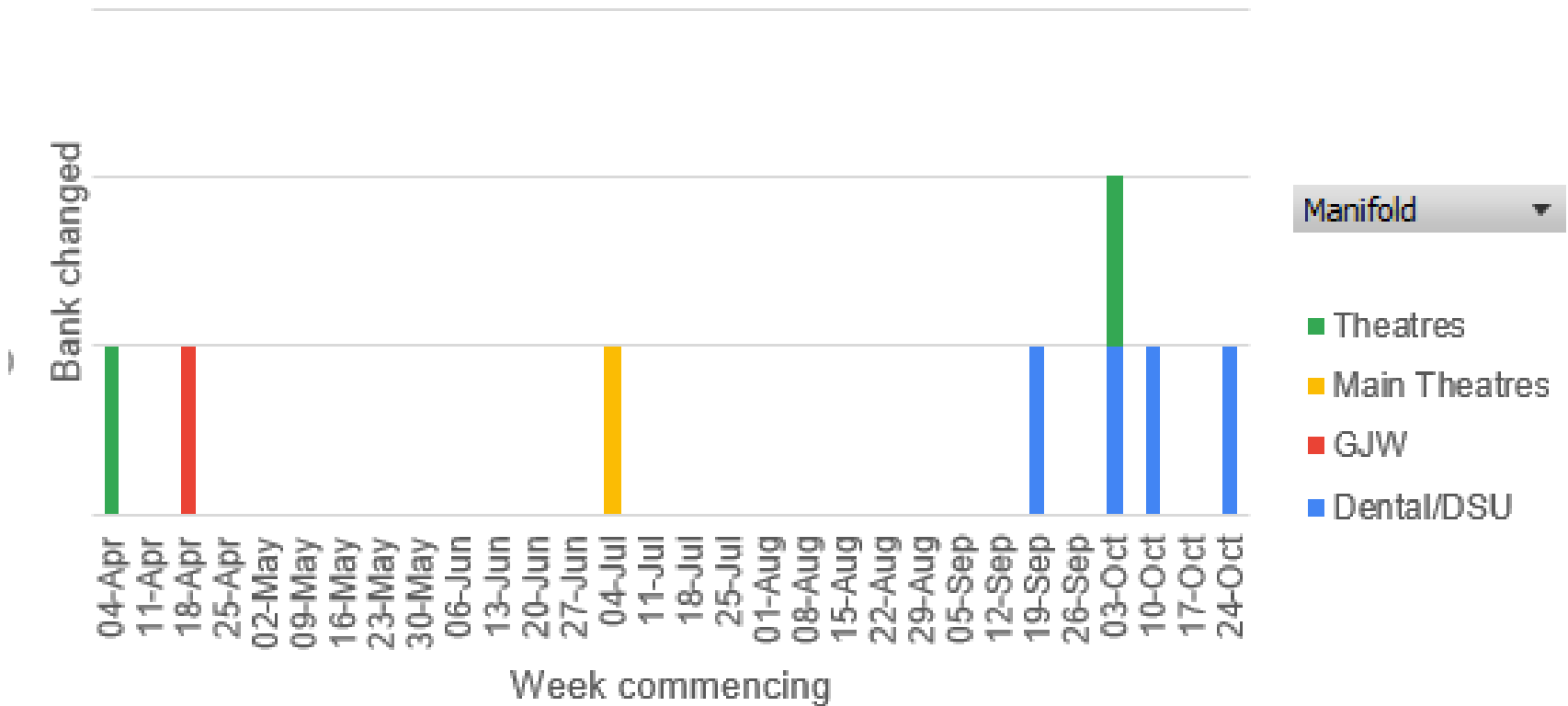
Recommendations to anyone looking to do something similar:

- Start with standalone manifolds that feed single clinical areas
- If done correctly, cylinders at decommissioned manifolds can be transferred and used at other manifolds (avoiding emissions waste)
- Stickers can be used to remind clinical staff not to use wall valves

Deliver – Lean Delivery Process



Count of Week manifold changed



Challenges at this stage:

- Time
- Securing access to manifold rooms

Recommendations to anyone looking to do something similar:

- Be persistent and consistent
- Speak regularly and often to medical gas porters
- Engage with BOC to freeze your order

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Deliver – Alternative Nitrous Oxide Supply



Challenges at this stage:

- Costs
- Procuring trolleys and flow adaptors

Recommendations to anyone looking to do something similar:

- Engage regularly and often with clinical staff in each area
- Engage clinical directors in this work and the decision making
- Business case
- Engage with sustainability leads

Next steps



1. Continue tracking our PDSAs
2. Use Healthier Futures Funding to continue to convert anaesthetic gas machines / reduce manifold sizes
3. Educate our staff and patients

Lessons Learned



The importance of a clinical audit to underpin and add momentum to whole process and reveal extent of waste

Buy-in and enthusiasm for project from decision makers and budget holders

NHS should have more influence with BOC (supplier) and emissions of returned gas, would be the most powerful change

How can we bring patients into the work?

Use of Quality Improvement methodology and team

Initial findings of NHS Lothian spearheaded by Alifia Chakera instrumental

Data from BOC only available monthly so not seeing impact of tests in the delivery data yet

Thank you!

Any Questions?

Evaluation form



Thank you!

<https://forms.office.com/r/ijuprzYQsb>

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