









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

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Quality Improvement for our patients, people and planet

In partnership with:

Barking, Havering and Redbridge
University Hospitals NHS Trust
Imperial College Healthcare NHS Trust
King's College Hospital NHS Foundation Trust
Somerset NHS Foundation Trust
The Leeds Teaching Hospitals NHS Trust
Shrewsbury and Telford Hospital NHS Trust
Yeovil District Hospital NHS Foundation Trust





Mute please

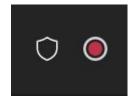


Chat

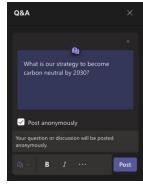


Quality
Improvement
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Recording



Q&A



Cameras on!



Use reactions





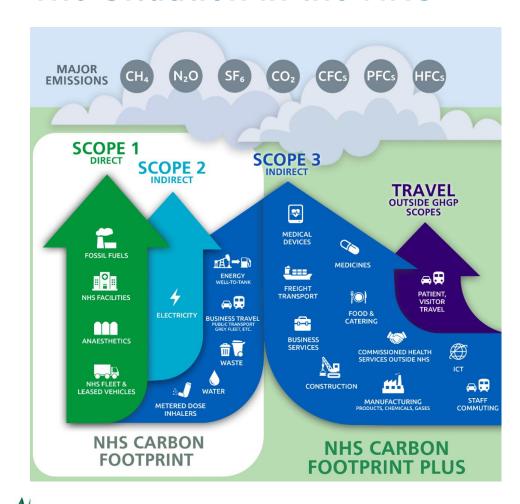


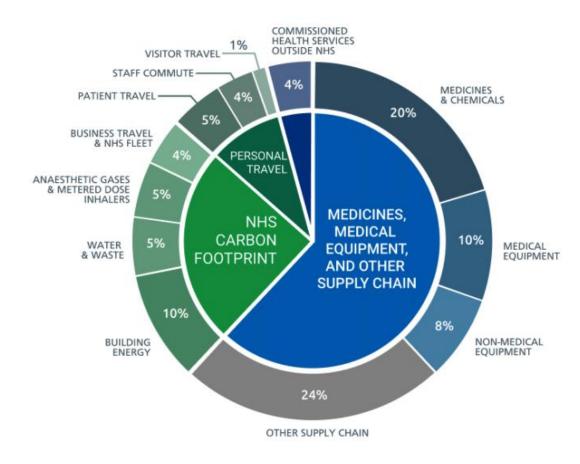




The Situation in the NHS













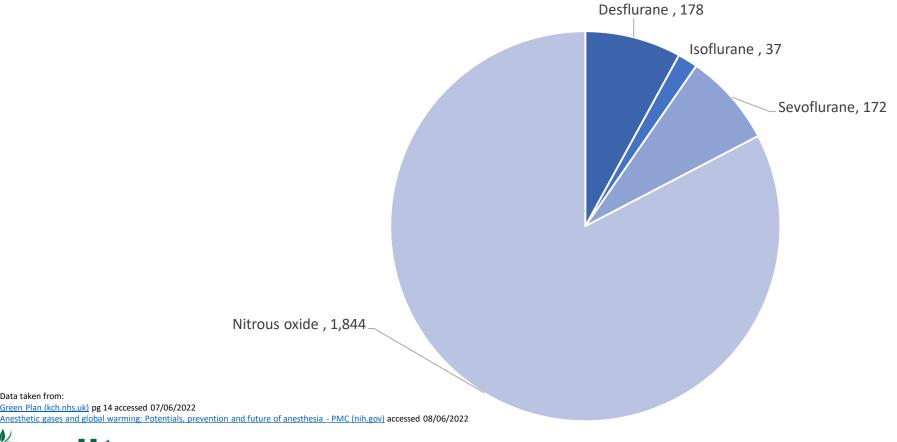




The Situation at King's College NHS Foundation Trust



Anaesthetic gas footprint at KCH 2020/2021





Data taken from:

Green Plan (kch.nhs.uk) pg 14 accessed 07/06/2022



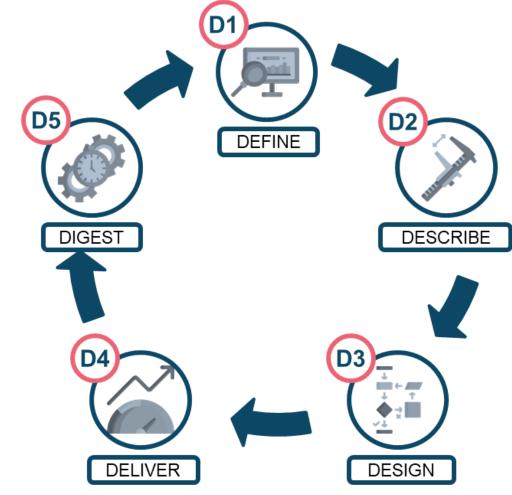






The King's Quality Improvement Method







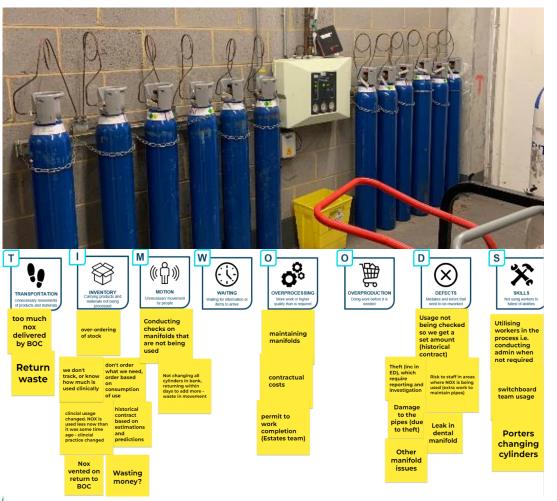








Describe







Challenges at this stage:

- Access to manifolds
- Collecting data to understand manifold turnover

- 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





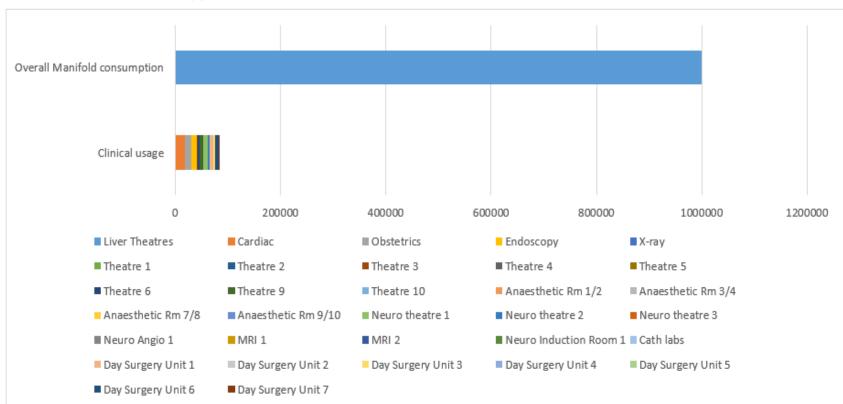






Describe

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

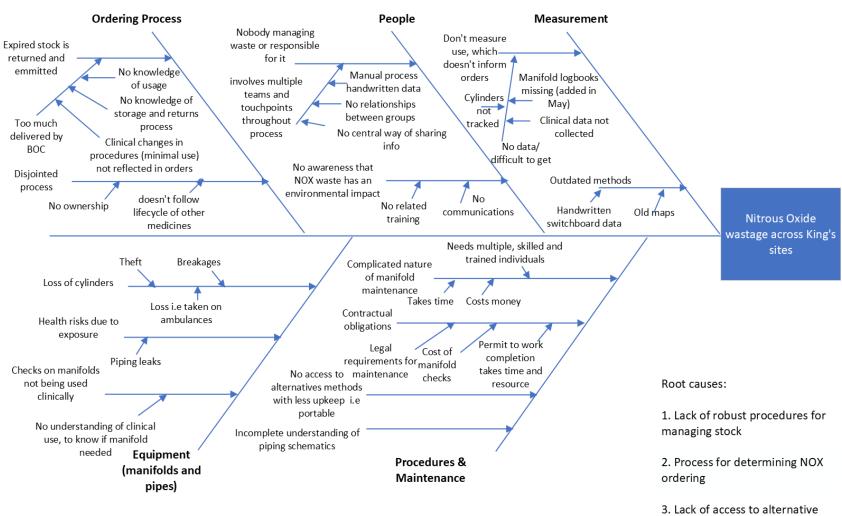
Recommendations to anyone looking to do something similar:

 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



Improvement for our patients, people and planet





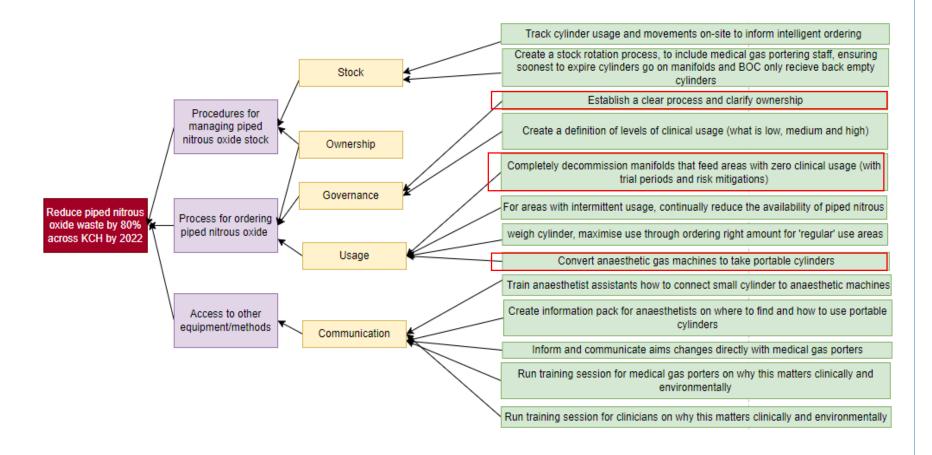
equipment





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)

				Estimated	July	Aug	Sept	Oct	Nov
	Task Name	Duration	W/C	completion W/C		1 8 15 22 29		3 10 17 24 31	7 14 21 28
1	Gather consumption data for Centenary Wing Manifold	7 days	18/07/22	18/07/22			_		
2	Calculate estimate costings	7 days	18/07/22	18/07/22					
3	Assemble brief project plan and case	3 days	25/07/22	25/07/22					
4	Meet with clinical leads and decision makers	1 day	08/08/22	08/08/22]				
5	Written agreement to proceed	1 day	15/08/22	15/08/22					
6	Agree budget for decommissioning work	1 day	15/08/22	15/08/22]				
7	Get budget approved/ signed-off	10 days	22/08/22	29/08/22]				
8	Agree target date for 3 week trial and decommission	1 days	29/08/22	29/08/22]				
10	Order any parts required for decommissioning	1 days	5/09/22	5/09/22]				
11	Locate alternative nox supply	7 days	5/09/22	5/09/22]				
12	Ensure availability of alternative supply for trial	7 days	12/09/22	12/09/22]				
13	Decide on permanency of alternative supply	10 days	12/09/22	19/09/22]				
14	Educate anaesthetists on how to use alternative supply	3 days	12/09/22	12/09/22]				
15	Set up direct-line between Liver theatres/Estates during trial	21 days	19/09/22	3/10/22]				
16	Run trial (cut off piped nox supply to Liver Theatres)	21 days	19/09/22	3/10/22					
15	Review trial	1 day	10/10/22	10/10/22]				
16	Inform stakeholders	1 day	17/10/22	17/10/22]				
17	Isolate the manifold supply (start decommission)	1 day	17/10/22	17/10/22					
18	Turn off the cylinder valves	1 day	17/10/22	17/10/22]				
19	Insert blanking plugs and AVSU	1 day	17/10/22	17/10/22]				
20	dis-activate local alarm	1 day	17/10/22	17/10/22]				
21	Confirm decommission	1 day	17/10/22	17/10/22					
22	Redistribute cylinders	2 days	24/10/22	24/10/22]				
23	Repurpose manifold room	6 days	24/10/22	31/10/22]				
24	Refresh G cylinder order supply count	3 days	31/10/22	31/10/22]				
25	Review	1 day	31/10/22	31/10/22					
26	Share learnings	1 day	31/10/22	7/11/22]				
_	-				-				









Challenges at this stage:

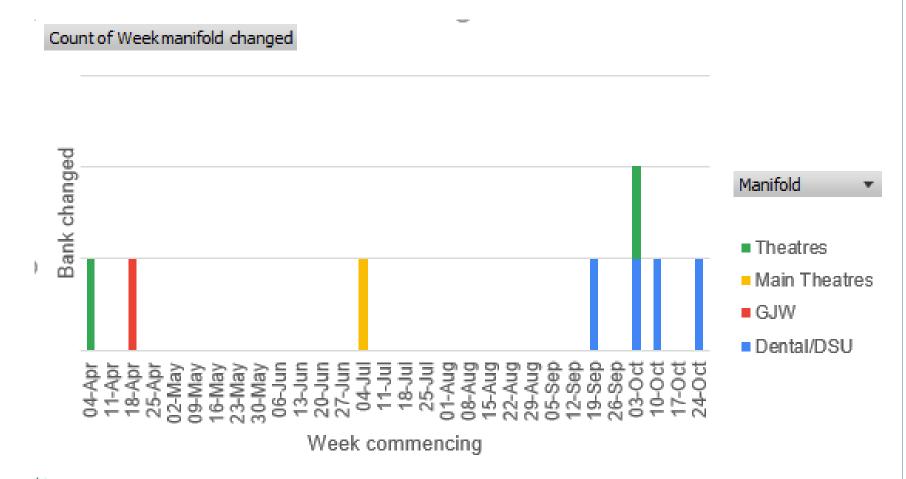
- Time of CEF colleagues
- Unexpected alarms in clinical areas at Liver theatres

- 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





Challenges at this stage:

- Time
- Securing access to manifold rooms

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











Deliver - Alternative Nitrous Oxide Supply















Challenges at this stage:

- Costs
- Procuring trolleys and flow adaptors

- 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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