SUSQI PROJECT REPORT

The effects of caffeine reduction on patient health at NGH, specifically focusing on bladder health, falls reduction, improvements in sleep and changes in incidents in Violence and Aggression; by switching to Decaffeinated (Decaf) tea and coffee on Inpatient Hospital wards.

Start date of Project: 02/09/2024
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Team Members:

- Jasmine Lowdon (Band 6 IPC nurse, Project Co-ordinator/Project lead)
- Holly Slyne (Associate Director of Infection Prevention & Control, Senior project advisor/mentor)
- Athira Sreelatha (Health Care Assistant, IPC, Project assistant)
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Background:

Caffeine is a stimulant with demonstrable effects on bladder health and continence in elderly patients (S. Coombes, 2024). Reducing caffeine through offering Decaf drinks has been shown to show an improvement in patient outcomes in terms of a reduction in incidences of falls (Stow Healthcare, 2024). This study also aims to measure whether switching to Decaf hot drinks improves continence, reduces falls/ violence and aggression, and improves patient sleep. Improving these will also have associated benefits in rates of UTIS, dehydration, skin irritation, toilet trips and blood pressure (Bladder and Bowel UK, 2022).

Research and/or quality improvement projects undertaken by University Hospitals Leicester, Rotherham NHS Trust, St Thomas's NHS Foundation Trust, and international hospitals support this, showing that caffeine consumption exasperates issues with continence and increases toileting requirements. For example, University Hospitals Leicester found a 30% decrease in toilet related falls by switching to Decaf hot drinks (Nursing Times, 2024).

With an increasingly squeezed NHS budget and the need to achieve net zero agenda by 2030, the reducing of incidents of incontinence, falls and aggression will have cost savings and positive environmental benefits. Falls reduction is beneficial to the NHS and the environment as it reduces the need for surgery, falls aftercare and resources (average cost of in-patient falls is £2,600/patient including assessments, monitoring, and interventions, even when no physical harm occurs. (Felgains. (n.d.).

Other benefits include a more efficient use of staff time, reduced continence resources (pads/ linen/barrier creams/ medications such as pain relief), minimizing water usage due to the reduced need to wash patient linen.

University Hospitals of Northampton NHS trust has a catchment of circa 880,000 patients and a bed capacity of 800. Currently the default hot drinks option served on the inpatient wards is caffeinated tea and coffee. Incontinence costs NGH circa £1 million a year in use of incontinence aids. There are also anticipated cost savings as by reducing toilet related falls and violence/ aggression it will result in a more efficient use of staff time, the need for further patient care (e.g. surgery/ physiotherapy) and the reduced environmental impact of cleaning and washing bedding.

By focusing on switching the hospital to Decaf drinks, the project aims to show demonstratable benefits to patient care, efficiency savings, staff wellbeing improvements, alongside environmental and financial savings from a reduction in waste of incontinence products, water usage, cleaning requirements, staff time and patient/staff safety. Improving patient health outcomes will also impact the patient family and carers by reducing the need for additional patient care and improved satisfaction in aftercare.

Both project leads, J. Lowdon (Band 6 IPC Nurse, FIT Council Deputy Chair) and H. Slyne (Director or IPC) are involved in the FIT (Falls, Infection Control and Tissue Viability) Council where Infection Control links with Falls and Tissue Viability to prevent patient harm. Currently the Council's work focuses on improving continence with inpatients at NGH looking at long term sustainable improvements in bladder health. Further to this IPC works across multiple wards and disciplines and observed incontinence as an issue over patient care and Infection Control; for example, incontinence leads to moisture lesions which can become infected and can lead to UTI's and increased bathroom visits. This can result in patient falls from urge incontinence and delirium post infection. This was shown by the project 'Have Confidence with Continence' by Falls, Infection Control and Tissue Viability Council (FIT Council) in the 2023 Green Team Competition, University Hospitals of Northamptonshire.

Specific Aims:

To show improvements in continence rates, toilet-related falls, changes in sleep patterns and incidents of aggression/violence by 20% by switching from caffeinated hot drinks offered on Brampton Ward to Decaf equivalents, in a 6-month period.

Methods:

Studying the system:

The scope of the project was narrowed to two Wards for a trial of the Decaf switch. Two elderly wards were selected due to high levels of incontinence, poor sleep and aggression identified on the wards. Ward sisters and nurses in the wards were also very interested in participating. We engaged with the ward team to implement baseline data measurement (details in the measurement section). The survey was led by the ward sister of the trial wards (Brampton and Knightly) with the nursing staff collecting and monitoring the trial outcomes via the survey provided, designed by the Project team.

As of time of writing (Feb '25), It has been discussed that Knightly Ward results should be removed from the study because only five patients on the Ward were having Caffeinated drinks as opposed to

all others on Decaf drinks/other drink/no drink at the onset of the project. It was felt that this would not provide a suitable baseline for the Ward to study. The switch has still occurred on Knightly ward with the Sister on the Ward stating that the benefits they have seen from the Study justify the continued use of Decaf. Catering has stated that this is not a problem for them and budgets.

Implementing the change:
Through engagement with the catering team, Decaf hot drinks became the default offering for all inpatients on Knightly and Brampton wards over the study period. Patients were given information over the benefits of Decaf drinks, that these were the new default option and that there would be no change to hot drink availability.

Prior to the study patients were not offered an option of caffeinated or Decaf drinks, with caffeinated being the default option. As part of the study and by engaging nursing and hosting staff, Decaf drinks are now provided by default at all patient refreshment times. Rather than using individual sachets Catering has provided Decaf drinks in bulk which requires no change to staff practice.

The Project team also aims to educate and ensure that upon discharge patients continue consuming Decaf drinks in their home settings as a continuation of the hospital switch to Decaf. Written/electronic educational leaflets will be provided to patients on discharge. This will bring an additional benefit to patient health and may reduce readmission rates by ensuring that patients continue to consume Decaf beverages.

Measurement:

Patient outcomes:

We are collecting data on the following patient outcomes

- Continence as measured by staff survey of continence issues during their hospital journey
- Measurements of reduction of continence products collected by JL via EPROC ordering data
- Aggression as recorded by nursing staff via a survey, patient records and Datix monitoring system
- Initial concerns of monitoring violence and aggression included factors such as individual subjectivity. The project team therefore used Datix monitoring to provide accurate data regarding changes in patient behaviour.
- Falls and associated outcomes: monitoring of patient falls as recorded by nursing and medical staff on the trial wards using Datix recording system. The data collected by the Falls team will also be used to look at original and long-term patient outcomes.
- Changes in sleep patterns: Measured by surveys
- Length of stay: Measured by data provided by discharge team
- Qualitative feedback will be collected verbally from patients regarding their experiences of the Decaf switch

Alongside out patient data we have reviewed the existing evidence base.

Environmental sustainability

The environmental impacts of the projects have been estimated using a hybrid methodology. The GHG emissions of the incontinence pads were estimated based on data from a previous Northampton GTC. The carbon footprint of the pads were estimate using a top-down environmentally extended input

output analysis (EEIOA) in which the cost of pads were multiplied a conversion factor from the 2021 UK Government SIC database. The GHG emissions of the Clinell wipe and pair of gloves were taken from Rizan et al (2021), and the GHG emissions of laundering of a sheet were taken from John et al (2024).

To estimate the GHG emissions associated with avoided falls, and EEIOA was undertaken. An average cost based on NHS data / literature is £2,600 per fall, this was converted into GHG emissions using the emission factor for human health services, taken from the 2021 UK Government SIC database.

Economic sustainability:
The Catering Manager has estimated a hospital wide switch would cost circa £30,000. Decaffeinated products are going to be provided in the same format as caffeinated ones, which are bulk catering packets. Sachets will not be used, which will have a positive environmental impact in terms of lower waste reduction.

However, the project aims to show that an improvement in patient care would have cost saving impacts that would outweigh the additional expenditure. Savings could be achieved via reduced use of incontinence products and reduced falls and associated care of injury.

Social sustainability:
The Project Team discussed the need to provide patient education with patients, relatives and carers when nearing discharge. A leaflet will also be provided to the patient on discharge via either the Ward Staff or Discharge Team.

Results:

Patient outcomes:
Data was collected for in-patients on Brampton ward prior to and following the change. Data is available on request.

The average age of patients was >75 years. Patient gender was not recorded. This was deemed by The Project Team to be indicative of the usual patient through-put of a General Medical Ward that would also be seen across the wider NHS.

Patients displaying signs of violence and aggression reduced by **66%.**

Patients with signs of urinary incontinence reduced by a **third.**

Patients needing toileting twice or more overnight reduced by a **fifth.**

Patients sleeping 6 or more hours a night improved by **40%.**

The relationship between increased sleep and the decaffeinated beverage intervention was significant (***p*=0.002**).

There was a **57% reduction** in total patient falls from the study period compared to the previous year same period.

Violence and aggression

The project showed the Decaf switch resulted in a 66% reduction in incidents of violence and aggression. By prioritising the reduction of violence and aggression in healthcare settings, hospitals can prevent adverse health outcomes, promote a safer environment, and improve overall patient care (Jones, C. B., Sousane, Z. et al. 2023).

Incontinence

Incontinence was reduced by 29%. This is important in prevention of health issues as urinary incontinence is associated with a poorer quality of life compared to controls, highlighting the importance of addressing this condition to improve overall wellbeing (Felde , G, Ebbesen, M et al. 2020).

Sleep

The number of patients sleeping 6 or more hours a night increased from 7% (n=1) before the Decaf beverages, to 47% (n=7) afterwards. This improvement in sleep duration is expected to positively influence patient experience, mood, and overall well-being, benefiting both patients and staff (Harvard Medical School, n.d.) while also reducing the risk of falls (S. Coombes 2024). A t-test analysis was conducted to determine the statistical significance of the observed differences, yielding a p-value of 0.002. This result suggests that the increase in sleep duration was significantly associated with the decaffeinated beverage intervention.

Falls

Moreover, in Brampton Ward, there was a 57% reduction in total patient falls during the study period compared to the same period in the previous year. However, additional fall prevention initiatives introduced by the Falls Team during this time may have contributed to this outcome, making it difficult to attribute the entire reduction solely to the intervention; however, given such a substantial drop not replicated in other areas it could be assumed that the switch contributed to this change.

Falls on hospital wards lead to increased resource consumption, impacting both patient care and environmental sustainability. Recent reviews of falls on Brampton ward highlighted the additional care required, including post-fall assessments, enhanced patient monitoring, and increased staff numbers required. In one case, a high-risk patient who had a fall required a 1 to 1 enhanced carer to maintain their safety, demonstrating the added strain on resources.

Long term health benefit

It has also been recognisied that measuring of patient outcomes and continuation of the benefits of drinking Decaf on Discharge would be impossible to do at this stage. However, there are plans to issue the patients with Information Leaflets on the benefits of continuing Decaf upon Discharge. Existing evidence (Drake, C, et al. 2013) suggests that reducing caffeine intake can improve sleep quality, mood, and overall well-being. Research indicates that better sleep is associated with lower risks of falls, aggression, and other health complications. These findings support the likely positive implications of switching patients to decaffeinated beverages in improving patient safety and experience.

Environmental sustainability:

Violence and aggression

It was not possible to measure the impact of violence and aggression reduction on the carbon footprint of care however this likely contributes to reduced resource use.

Incontinence

For each episode of incontinence, we estimate that 1 pad, 1 wipe, pair of gloves, and laundering a sheet will occur. This has a carbon footprint of 0.54 kg CO2e. Our data shows an average reduction of 25 episodes of incontinence per day (5 patients with a reduction of 5 incontinence episodes each per day). This is a saving of 2.7 kgCO2e per patient, or 13.5 kgCO2e per day.

Across an average length of stay (122 days), this is a saving of 1,647 kgCO2e saved. This is likely a conservative estimate as some patients require 2 staff each time to manage their incontinence. Projecting across one year based on 15 patients with a length of stay of 122 days each, we would save 4,941 kgCO2e, equivalent to driving 14,558 miles in an average car.

An improvement in continence has also anecdotally seen a reduction in the need to change bed linen and clothing. Consequently, this has seen a reduction in the need to use water for washing, washing solutions and heating.

It is anticipated that there will be a positive reduction in the use of incontinence pads, the disposal of which either requires incineration or landfill, where one pad takes up to 500 years to biodegrade (L. Nazarko, 2024). Although the study found a substantial reduction in incontinence, a decrease in the number of incontinence pads ordered by the ward has not yet been observed. This may be due to a lag between usage and ordering patterns, as wards may need more time to adjust their stock levels. Additionally, the ward is accommodating more patients than usual due to high NHS bed demand, which could also explain the lack of immediate change.

It is also possible that the project could reduce the number of catheters required, which would bring further savings which were not measured during the project period.

Sleep

It was not possible to measure the impact of improved sleep on the carbon footprint of care however this may contribute to reduced resource use such as shorter length of stay.

Falls

An average cost based on NHS data / literature is £2,600 per fall. The emission factor for human health services is 0.320 kgCO2e/£. This equates to 832 kgCO2e per fall.

In 2023, there was an average of 4 Falls a month from October to December reducing to an average of 2 falls a month from October to December in 2024. This is a cost saving of £5,200 and a Carbon saving of 1,664 kgCO2e per month. Projected across a year, this could bring savings of £62,400 and 19,968 kgCO2e, equivalent to driving 58,835 miles in an average car.

This may be attributable to as range of resources, such as high-energy medical devices such as x-ray or MRI/CT scanners and medical gases with high global warming potential such as nitrous oxide (A&E, Surgery), additional appointments such as therapy assessment and follow up.

While this project has a small sample size, a University Hospitals Leicester study found a 30% decrease in toilet related falls by switching to Decaf hot drinks (Nursing Times, 2024) which strengthens findings of our study.

Across the project:
All areas of improvement would have an impact on the use of pharmaceutical medications including continence medicines, pain-relief, anxiety drugs and sleep medication. It was not possible to measure medication reduction as part of this project, however given medicines contribute 20% of the carbon footprint of the NHS any reduction would contribute to savings.

Economic sustainability:
Whilst the initial costs of switching is estimated to be £30,000 per year hospital wide, it is anticipated that the wider saving from reduced resource use will offset any additional cost.

Continence
Reduced use of continence products: Initial data suggests £1,830 saved over 3 months, equating to £7,320 a year for one ward from reduced use of continence pads, Nettie Knickers and wipes. This does not include barrier cream costs thus the anticipated cost saving would be higher.

Falls
Based on an average cost to the NHS of £2,600 per patient fall, and a reduction of 2 falls per month on one ward alone, saving of £62,400 per year could be achieved, which covers the full cost of the transition.

With 30 wards at NGH, the potential savings from scale of these improvements to care are considerable.

While it was not possible to measure during the project, additional savings could be achieved via:

- Reducing laundering costs
- reduced length of stay. An low intensity bed stay costs £344.60/day (NHS England 2004).
- Hospital acquired infections linked to incontinence. Infections cost the NHS £7,074 million annually (Journal of Hospital Infection, 2021)
- Hospital acquired pressure injuries linked to incontinence and immobility cost the NHS £3,8million every day (NHS Improvement, 2018).

With ongoing staff education, patient engagement, and monitoring processes these savings could be maintained long term. Expanding these strategies across wider hospital settings and other healthcare institutions could lead to even greater efficiencies and improvements in patient outcomes.

Social impacts:
Patients

We attempted to get feedback from patients on the Wards but unfortunately only two were orientated to give feedback. Both stated they were not big tea and coffee drinkers with one stating that they only has one cup of tea/day and the other reported they prefer to drink hot chocolate. It is felt that the nature of patients on the Wards, many of which with a diagnosis of dementia, made it difficult to gain significant qualitative data for the study. However, it can be assumed that the change will have several positive impacts on patients;

- Reducing incontinence, falls and the need to ask for staff assistance will have a positive impact on patients' dignity and mental well-being
- A switch to Decaf would be more socially inclusive as all patients could be offered Decaf coffee and tea where Caffeine is contraindicated for medical reasons, e.g., heart conditions, liver problems, certain medications or pregnancy
- To ensure that social inclusion and patient choice is not affected it is recognised that whilst Decaf will be the default hot drink option, caffeinated drinks will be available on request. There have been no incidents of patients requesting a caffeinated drink.
- It is anticipated that discussing the benefits of the use of Decaf with patients, relatives and carers on discharge to their home environment would have a positive effect on community sustainability; possibly even reducing readmission (although it is acknowledged by the Team that this would be unmanageable to measure)

Staff

This change has not required additional resources, time or staff training as the method of drinks preparation remains the same.

Reducing incidences of violence and aggression, incontinence and falls can have a significant impact on staff morale by improving workload and patient care. With staff spending less time managing incontinence-related tasks, there is an opportunity to reallocate resources towards proactive patient care, falls prevention strategies, and overall patient well-being.

Discussion:

Results interpretation

There has been a marked reduction in incontinence, violence and aggression and falls by switching from Caffeinated to Decaffeinated drinks over the study period alongside improved sleep.

The Project Team have highlighted some limitations to the study and measurables that could be continued post-study.

- There is a small number of patients included in the study due to it taking place on one ward over a short period of time.
- The Study did not exclude short-term patients, for whom the switch to Decaf may not have had enough time to produce measurable effects, potentially affecting the overall results.
- There was no method of following up patient's post-discharge so tracking patient outcomes after discharge was not completed. This prevented a comprehensive evaluation of long-term benefits or sustained improvements in sleep and well-being.
- Delayed Stock Adjustments – While incontinence episodes decreased, the volume of pads ordered remained unchanged. This highlighted the need for better stock management systems and a gradual adjustment period.

- High Patient Turnover – Increased patient admissions as the hospital experienced peak NHS demand made it difficult to isolate study effects, demonstrating the need for longer-term follow-up data.

The project was put through as a QI project and all staff were willing to conduct the surveys. There was even interest from wards outside the project to partake. No patients/staff have complained about the switch to Decaf drinks and only patients across the two wards requested to opt out.

There was no need for additional staff training as the provision of drinks are the same. However, it has been important to educate staff and the Discharge Team to promote Decaf use continues in the home environment. The Project Team have written an educational leaflet for patients/relatives upon Discharge.

Given the significant positive results observed from this study the project team aim to expand it to all the medical wards within the hospital. This step would test the intervention's effectiveness across a wider range of patient populations to gain further reliable data on benefits of the switch. If positive trends continue, the initiative would then be extended to the entire hospital, ensuring a hospital-wide approach. This will need to go through financial approval given the anticipated cost increase of £30,000 per year.

Beyond NGH, the team aim to expand the project in to care homes and longer-term patient wards, where patient follow-up is possible. The controlled environment in these settings would allow for more accurate monitoring of outcomes, ensuring a clearer understanding of the long-term benefits of reducing caffeine intake. The change could be introduced to all NHS Trusts due to the significant positive benefits observed when patients are switched to Decaf option as a default. To facilitate this expansion, the following next steps are recommended:

- Collaboration with Care Homes & Long-Term Facilities to assess feasibility and develop implementation guidelines.
- Stakeholder Engagement – Present findings to hospital leadership and the University of Northampton to encourage wider adoption.
- Current project team to attend the Nutrition and Hydration group at NGH to present their findings.
- Development of Training & Awareness Materials – Educate healthcare staff on the benefits of Decaf drinks on patient care.
- Policy Advocacy & NHS Collaboration – Work towards incorporating the initiative into NHS best practices and guidelines for hydration and falls prevention.

This structured, phased approach will ensure a sustainable and evidence-based expansion of the project, maximising its impact on patient safety and well-being.

Conclusions

This Project shows substantial evidence regarding the impact of switching to Decaf drinks in terms of improved patient health outcomes and potential benefits on population health and sustainability of the extension of the switch to help NGH meet its targets.

The study has provided valuable evidence supporting the benefits of switching patients to Decaf drinks. Positive outcomes include improved sleep, reduced agitation, reduced falls and a decrease in incontinence episodes for patients, all of which contribute to enhanced patient well-being and staff efficiency. Additionally, the study highlights potential cost savings related to reduced incontinence product usage, lower laundry demands, and optimized staff time. These findings reinforce the importance of small but impactful interventions in improving overall patient care and hospital resource management.

Several factors were critical to the project's success:

- Staff Engagement and Training – Ensuring that nurses and healthcare assistants understood the rationale behind the switch helped secure strong frontline support.
- Patient and Family Education – Providing clear information about the benefits of Decaf drinks prior to the switch verbally and by a leaflet increased patient acceptance and compliance.
- Interdisciplinary Collaboration – Engaging with nursing teams and carers ensured a well-coordinated approach.

Steps Taken to Ensure Lasting Change and Spread Learning

To embed the study's findings into routine practice and encourage further adoption, the hospital needs to implement the following:

- Educational Leaflets – Distributed to staff, patients, and carers to reinforce the benefits of caffeine reduction.
- Staff Discussions and Training – Ongoing conversations with the discharge team, ward staff, and carers to encourage continued compliance.
- Monitoring and Feedback Loops – Establishing regular data reviews to track patient outcomes and adjust practices as needed.
- Integration into Care Plans – Encouraging the inclusion of caffeine reduction strategies in standard patient care plans.

Hospital's Plans for Expansion and Sustainability

The hospital is keen to expand and integrate the initiative more widely:

- Extending to Additional Wards – The next step is to implement the intervention across all medical wards to assess broader feasibility.
- Long-Term Adoption Across the Hospital – If sustained benefits continue, the hospital will work towards making caffeine reduction part of standard patient care protocols.
- Collaboration with other NHS Trusts – Sharing results with partner institutions to promote wider adoption across multiple hospitals.
- Policy and Procurement Changes – Reviewing stock ordering policies to ensure that ward supplies reflect actual patient needs and usage patterns.

Data Collection on Wider Engagement and Cultural Change

To measure long-term impact and cultural shifts, the Project Team plans to collect data on:

- Sustained reductions in incontinence episodes and related resource usage.
- Patient and staff feedback on the acceptability and effectiveness of the switch to Decaf.
- Environmental and cost benefits, including reduced laundry demands and product waste.
- Changes in staff workload and time spent on incontinence-related care.

By embedding these practices and expanding the initiative, this study indicates switching patient tea trolleys to Decaf as the default option will drive meaningful improvements in patient care, resource management, and sustainability while contributing to a wider culture shift in healthcare hydration strategies.

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Appendices

Patient leaflet

NHS
University Hospitals of Northamptonshire
NHS Group

Patient Information Leaflet

Important Information About Caffeine intake and Bladder Health

Caffeine, commonly found in tea and coffee, acts as a stimulant and can irritate the bladder. This irritation may lead to symptoms such as:
- Increasing your need to urinate more meaning extra trips to the toilet
- By using the bathroom more you are increasing your risk of having a fall, particularly at night which may require further care
- Disturbances in your sleep by needing to wake during the night to visit the toilet
- Increased risk of incontinence that may require you to use pads or aids
- It may increase your feeling of anxiety surrounding your bladder habits

Benefits of Switching to Decaffeinated Drinks:
- **Improved Bladder Health:** Reducing your urgency, frequency and night-time trips to the toilet, reducing your risk of a fall from a trip on your way to the bathroom.
- **Better Sleep:** Helps you stay asleep longer by reducing the need to use the toilet or nervousness around sleeping with incontinence.
- **Lower Bowel Irritation:** Eases digestive discomfort, bloating and stomach upsets thereby making you feel more comfortable during your day.
- **Enhanced Hydration:** Helps maintain proper levels of water in your body which is vital to your overall health.
- **No Change in your Routine –** We hope to show you that the benefits you experience when with us of drinking to Decaf encourages you to continue using Decaf drinks at home.

Upcoming Trial: Decaffeinated Drinks
The Ward is switching to decaffeinated drinks on the drinks trolley for a trial period with the aim of improving your health and stay on the Ward. This will not affect how many times you are offered a hot drink nor affect the time it takes to get it to you.

During this period, we will be gathering data on falls, sleep quality, and incontinence to evaluate the benefits, to you and the hospital, of switching to decaffeinated drinks.

Your Participation:
- If you do not wish to participate in the trial, please inform your nurse and your data will be excluded. Patients will not be individually identified.
- If you still prefer caffeinated tea or coffee, please inform your host and they will provide your request.

We appreciate your cooperation and hope this initiative will improve your overall health and well-being which is the greatest importance to your Care Team.

For any questions or concerns, please do not hesitate to speak with your nurse.

Critical success factors

Select factors that were key to the success of the project:

People	Process	Resources	Context
☐ Patient involvement and/or appropriate information for patients - to raise awareness and understanding of intervention ☐ Staff engagement ☐ MDT / Cross-department communication ☐ Skills and capability of staff X Team/service agreement that there is a problem and changes are suitable to trial (Knowledge and understanding of the issue) ☐ Support from senior organisational or system leaders	☐ clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice ☐ systematic and coordinated approach ☐ clear, measurable targets X long-term strategy for sustaining and embedding change developed in planning phase ☐ integrating the intervention into the natural workflow, team functions, technology systems, and incentive structures of the team/service/organisation	☐ Dedicated time ☐ QI training / information resources and organisation process / support ☐ Infrastructure capable of providing teams with information, data and equipment needed X Research / evidence of change successfully implemented elsewhere ☐ Financial investment	☐ aims aligned with wider service, organisational or system goals. X Links to patient benefits / clinical outcomes ☐ Links to staff benefits ☐ 'Permission' given through the organisational context, capacity and positive change culture.