Quality Improvement Report

The effect of a `Sip til Send´ policy on patient satisfaction: a quality improvement project

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Summary

Patients often are nil by mouth for prolonged periods pre-operatively, which is associated with adverse effects including discomfort, anxiety, thirst and nausea. As a result, several hospitals have introduced a more liberal regimen of pre-operative drinking, with patients encouraged to sip small volumes of water until transfer to the operating theatre (`Sip til Send´). The impact of `Sip til Send´ on patient satisfaction is still to be determined. We hypothesised that the introduction of a `Sip til Send´ policy would increase patient's satisfaction with their pre-operative fluid management regimen. We conducted a staged implementation of a `Sip til Send´ quality improvement initiative in two campuses of a large tertiary teaching hospital. This involved a targeted education and implementation programme that was refined and delivered through `plan, do, study and act´ cycles. Patient satisfaction with their pre-operative fluid management was measured by rating the statement ``I am happy with the management of pre-operative drinking´´, against a five-point Likert scale (0, strongly disagree; 1, disagree; 2, neutral; 3, agree; and 4, strongly agree). Patient satisfaction with pre-operative fluid management was high at baseline, with pooled data for both campuses showing a median (IQR [range]) satisfaction score of 4 (3–4 [1–4]). After the implementation of `Sip til Send´, this improved to a median (IQR [range]) satisfaction score of 4 (4–4 [2–4]) ($p < 0.001$). The introduction of a `Sip til Send´ policy resulted in an increase in patient satisfaction. Key factors in successful implementation included the provision of a clear explanation of the underlying rationale to patients, nursing and anaesthetic staff, and establishing the policy as the default position for all elective patients.

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Introduction

Pre-operative fasting is recommended to reduce the risk of pulmonary aspiration of gastric contents. National guidelines suggest that no clear fluid should be taken orally within 2 h of induction of anaesthesia [1–3]. However, due to logistical difficulties in determining the precise timing of surgery, patients are often kept nil by mouth for prolonged periods [4] which is associated with a number of adverse effects including discomfort; anxiety; thirst; and nausea [5]. As a result, several hospitals have introduced a more liberal regimen of pre-operative drinking, with patients encouraged to sip small volumes of water until transfer to the operating theatre (`Sip til Send´). This has led to decreased fluid fasting times [4, 6] and reductions in the incidence of postoperative nausea, vomiting and thirst [6].

The impact of `Sip til Send´ on patient satisfaction is still to be determined. Pre-operative thirst is the most common cause of patient discomfort [7] but this does not appear to result in a reduction in overall patient satisfaction with their peri-operative care

[8]. We hypothesised that the introduction of a `Sip til Send´ policy would increase patient satisfaction with their pre-operative fluid management regimen.

Methods

We conducted a staged implementation of a `Sip til Send´ quality improvement initiative across both campuses of Sheffield Teaching Hospitals NHS Foundation Trust (Royal Hallamshire Hospital (RHH) and Northern General Hospital (NGH)). The project was registered with the local service improvement team and, as the work was done in support of a Bachelor of Medical Sciences (BMedSci) project, the study was also reviewed by the ethics committee of the University of Sheffield. As this was deemed a service evaluation project, the requirement for written consent was waived by both approval bodies. The timeline of the quality improvement project is shown in Figure 1. We conducted several cycles of `plan, do, study, act´ (PDSA). After analysis of data from each cycle, the processes were refined and adjusted to improve uptake. The details of all interventions are described in the results.

Patient demographic data and fasting times were collected. Patient thirst was measured using the peri-operative thirst discomfort questionnaire [9] (possible score range 0–14). Patient satisfaction with their pre-operative fluid management was measured by asking patients to rate the statement ``I am happy with the management of pre-operative drinking´´ against a five-point Likert scale (0, strongly disagree; 1, disagree; 2, neutral; 3, agree; and 4, strongly agree). Episodes of harm associated with `Sip til Send´ (e.g. pulmonary aspiration or regurgitation) were measured through analysis of the local adverse incidence reporting system.

As this study was undertaken as part of a time-limited student project for one of the authors (AM), a formal power calculation was not undertaken a priori and a pragmatic convenience sample was selected based on the time available for data collection. Statistical analyses were done using SPSS statistics, version: 28.0.0.0 (IBM, Armonk, NY, USA). Student's t-test and chi-squared tests were used to compare normally and non-normally distributed data respectively. As the interventions were implemented over a short period of time, the effect of time as a variable was not considered.

Results

This quality improvement project was reported according to the Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) [10] and the results are summarised in Table 1. The project started on 13/12/2022 with final data collection on 09/03/2023.

PDSA cycles at RHH

After baseline data collection, we implemented a new `Sip til Send´ protocol (available as online Supporting Information, Appendix S1) for all patients having elective surgery. The protocol mirrored that already in place in another NHS hospital [11], with patients allowed to drink 170 ml water per hour until collected for theatre. The protocol, which included a discussion of the evidence base for the change, was communicated to all local anaesthetists via email. Anaesthetists were encouraged to inform

	Start date	End date	Dec-22	Jan-22	Feb-22	Mar-22
Baseline data collection (RHH campus)	13/12/2022	22/12/2022				
Introduction STS (RHH campus)	09/01/2023	10/02/2023				
Focussed staff education (RHH campus)	09/01/2023	19/01/2023				
Baseline data collection (NGH campus)	23/01/2023	27/01/2023				
Introduction STS as opt-out (NGH campus)	30/01/2023	Continuing				
Post-intervention 1 data collection (RHH campus)	03/02/2023	08/02/2023				
Introduction STS as opt-out (RHH campus)	10/02/2023	Continuing				
Focussed staff education (RHH campus)	09/02/2023	09/02/2023				
Post-intervention data collection (NGH campus)	27/02/2023	03/03/2023				
Post-intervention 2 data collection (RHH campus)	06/03/2023	09/03/2023				

Figure 1 Gantt run chart showing interventions made during the establishment and evaluation of a `Sip til Send´ (STS) initiative. RHH, Royal Hallamshire Hospital; NGH, Northern General Hospital.

Table 1 Demographics, thirst discomfort and satisfaction of patients before and after introduction of a sip´ til send policy. Values are mean (SD), number (proportion) or median (IQR [range]).

	Baseline RHH n = 96	Baseline NGH n = 26	Baseline total n = 122	Post-intervention-1 RHH n = 39	Post-intervention-2 RHH n = 55	Post-intervention NGH n = 41	Post-intervention total n = 135
Sex; female	58 (60%)	14 (54%)	72 (59%)	20 (51%)	32 (58%)	22 (54%)	74 (55%)
Age; y	54 (18)	57 (16)	54 (18)	54 (12)	54 (16)	54 (15)	54 (16)
PTDS							
My mouth is dry	0 (0–1 [0–2])	1 (0–1 [0–2])	0.5 (0–1 [0–2])	0 (0–1 [0–1])	1 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–1 [0–1])
My lips are dry	1 (0–1 [0–2])	0.5 (0–1 [0–2])	1 (0–1 [0–2])	0 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–1 [0–1)]
My tongue is thick	0 (0–0 [0–1])	0 (0–1 [0–1])	0 (0–0 [0–1])	0 (0–1 [0–1])	0 (0–0 [0–1])	0 (0–0 [0–1])	0 (0–0 [0–1])
My saliva is thick	0 (0–0 [0–2])	0 (0–1 [0–1])	0 (0–1 [0–2])	0 (0–1 [0–1])	0 (0–0 [0–1])	0 (0–0 [0–1)]	0 (0–0 [0–1)]
My throat is dry	0 (0–1 [0–2])	0 (0–1 [0–2])	0 (0–1 [0–2])	0 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–0 [0–1])	0 (0–0[0–1])
I have a bad taste in my mouth	0 (0–0 [0–2])	0 (0–0 [0–1])	0 (0–0 [0–2])	0 (0–1 [0-])	0 (0–0 [0–1])	0 (0–0 [0–1])	0 (0–0 [0–1])
I want to drink water	1 (0–1 [0–2])	1 (0–1 [0–2])	1 (0–1 [0–2])	1 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–1 [0–1])	0 (0–1 [0–1])
Total PTDS score	2.8 (2.5)	3.2 (2.5)	2.9 (2.5)	2 (1.8)	2 (1.8)	2 (1.8)	1.9 (1.7)*
Patient satisfaction	4 (3–4 [1–4])	4 (3–4 [1–4])	4 (3–4 [1–4])	4 (4–4 [3–4])	4 (4–4 [2–4])	4 (4–4 [0–4])	4 (4–4 [2–4])*
Food fasting times; h	13.4 (4.5)	15.1 (6.6)	11.7 (5.4)	13.7 (2.5)	13.7 (3.8)	19.0 (21.7)	15.4 (12.5)
Clear fluid fasting times; h	5.3 (3.6)	5.6 (3.7)	7.4 (5.9)	2.8 (3.3)	1.4 (2.2)	0.9 (2.3)	1.6 (2.7)*
Patients fluid fasting > 4 h	51 (53.1%)	12 (46.2%)	63 (51.7%)	9 (20.5%)	2 (3.6%)	3 (7.1%)	14 (10.4%)*

PTDS, peri-operative thirst discomfort scale. NGH, Northern General Hospital; RHH, Royal Hallamshire Hospital.
Note: The shaded values indicate the combined data.
*$p < 0.001$.

the nursing staff on the theatre admissions ward if they were happy for `Sip til Send´ to be used for their patients. Repeat data collection showed 9/39 (20.5%) of patients were still fluid fasted for > 4 h before surgery (Table 1). Only 20/39 (51.3%) of patients were on the `Sip til Send´ pathway.

Two main barriers to implementation of our new policy were identified: first, difficulty in communication between the anaesthetists and nursing staff as to which patients were allowed to `Sip til Send´; and second, patients themselves being reticent to drink for fear of cancellation. To address this, we made `Sip til Send´ an `opt-out´ policy, whereby all patients were placed on this pathway unless their anaesthetist stated otherwise. We also created information placards for the patient's tables (available as online Supporting Information, Appendix S2) which communicated the pathway to the nursing staff and encouraged the patients to drink water. Repeat data collection showed this to improve fasting times, with 2/55 (3.6%) patients fluid fasting for > 4 h and a reduction in mean (SD) fluid fasting time from 2.8 (3.3) h to 1.4 (2.2) h. The number of patients on the `Sip til Send´ pathway had increased to 38/55 (69.1%).

PDSA cycles at NGH

After baseline data collection, we implemented the new `Sip til Send´ policy. However, having already learnt lessons during the implementation at the RHH campuses, we made `Sip til Send´ the default position (i.e. opt out rather than opt in) and provided

the same information placards from the outset. This resulted in similar improvements in fluid fasting times as that seen after the second intervention at RHH (Table 1) and thus only a single cycle was required.

Patient satisfaction with pre-operative fluid management was high at baseline, with pooled data for both campuses showing a median (IQR [range]) satisfaction score of 4 (3–4 [1–4]). This improved after implementation of `Sip til Send´, primarily due to a reduction in the number of dissatisfied patients (Table 1). Reported pre-operative thirst also improved with a significant reduction in mean (SD) peri-operative thirst discomfort score (2.9 (2.5) vs. 1.9 (1.7); $p < 0.001$).

There were no reports of any adverse events such as regurgitation or pulmonary aspiration during the study period.

Discussion

We have shown that the introduction of a `Sip til Send´ policy for elective patients results in a significant reduction in fluid fasting times and improvement in patient satisfaction with pre-operative fluid management.

Within our centre, the `Think and Drink´ initiative where fluid intake up to 2 h pre-operatively is encouraged, has been in place for several years. Despite this, our baseline fluid fasting times were > 11 h, illustrating the logistical difficulties in managing individualised fluid plans during busy operating lists with unpredictable timings. `Sip til Send´ allowed our fluid fasting times to improve to < 2 h on average without any increase in work for our anaesthetic or nursing staff. As many patients arrive at the hospital not having drunk since the previous evening [12], we suggest that `Sip til Send´ is the most effective way to avoid prolonged fluid fasting in patients having elective surgery.

Our patient satisfaction levels at baseline were high despite prolonged fluid fasting times. This is in line with other work showing that even though thirst is the most common patient complaint [7], this does not impact on patient satisfaction overall [8]. Most assessment tools to measure patient satisfaction in anaesthesia have focussed on communication and information provision [13]. Whilst this is a key aspect of anaesthetic care, thirst can be viewed as a modifiable postoperative complication, and the occurrence of complications does reduce patient satisfaction [14]. In addition, more liberal fluid regimens may help reduce the incidence of other complications which patients view as important, such as postoperative nausea and vomiting (PONV) [6].

There are some limitations to our work. The study was not powered to detect the safety of `Sip til Send´ in terms of adverse events such as aspiration of gastric contents. However, given the risk of aspiration is low (≈ 1 in 7000) [15], any trial would require over 300,000 patients to detect a difference (with 90% power and $p < 0.05$), assuming that `Sip til Send´ increases the incidence of aspiration by 10 times. We also did not assess for postoperative benefits of `Sip til Send´ such as reductions in PONV or improved haemodynamic stability. Our findings are limited to the drinking of water, and further work is needed to determine the risks and benefits of other fluids (e.g. tea and coffee, with or without milk). We also did not record what fluid volumes were drunk by patients and the optimal volume and/or rate of ingestion is still unknown.

In conclusion, we have shown that the introduction of a `Sip til Send´ policy resulted in reduced fluid fasting times and increased patient satisfaction. Key factors in successful implementation included the clear explanation of the underlying rationale to patients, nursing and anaesthetic staff, and establishment of the policy as the default position for all elective patients.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. `Sip til Send´ protocol documentation.

Appendix S2. `Sip til Send´ instruction placard for patients and nursing staff.